Department of Defense
Fiscal Year (FY) 2024 Budget Estimates

March 2023

Office of the Secretary Of Defense

Defense-Wide Justification Book Volume 3 of 5

Research, Development, Test & Evaluation, Defense-Wide

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Department of Defense
FY 2024 President's Budget
Exhibit R-1 FY 2024 President's Budget
Total Obligational Authority
(Dollars in Thousands)

Mar 2023

Appropriation	FY 2022 Actuals	FY 2023 Less Supplementals Enactment	FY 2023 Supplementals Enactment*	FY 2023 Total Enactment	FY 2024 Request
Research, Development, Test and Evaluation, Defense-Wide	7,274,653	9,905,670		9,905,670	9,072,174
Total Research, Development, Test, & Evaluation	**7,274,653**	**9,905,670**		**9,905,670**	**9,072,174**

*Includes enacted funding in the Ukraine Supplemental Appropriation Act, 2023 (Division B of Public Law 117-180) and Additional Ukraine Supplemental Appropriation Act, 2023 (Division M of Public Law 117-328).

Department of Defense
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Exhibit R-1 FY 2024 President's Budget
Total Obligational Authority
(Dollars in Thousands)

Mar 2023

	FY 2022 Actuals	FY 2023 Less Supplementals Enactment	FY 2023 Supplementals Enactment*	FY 2023 Total Enactment	FY 2024 Request
Summary Recap of Budget Activities					
Basic Research	330,161	389,777		389,777	348,128
Applied Research	226,201	258,930		258,930	275,387
Advanced Technology Development	1,767,706	3,080,147		3,080,147	2,005,670
Advanced Component Development & Prototypes	2,228,232	2,648,736		2,648,736	2,814,666
System Development & Demonstration	271,330	617,670		617,670	990,682
Management Support	1,649,296	1,913,967		1,913,967	1,377,693
Operational Systems Development	447,838	980,685		980,685	1,238,593
Software And Digital Technology Pilot Programs	353,889	15,758		15,758	21,355
Total Research, Development, Test, & Evaluation	**7,274,653**	**9,905,670**		**9,905,670**	**9,072,174**
Summary Recap of FYDP Programs					
General Purpose Forces	2,833	3,034		3,034	3,112
Intelligence and Communications	506,366	159,133		159,133	232,609
Guard and Reserve Forces					5,530
Research and Development	6,765,454	9,743,503		9,743,503	8,731,923
Administration and Associated Activities					99,000
Total Research, Development, Test, & Evaluation	**7,274,653**	**9,905,670**		**9,905,670**	**9,072,174**

*Includes enacted funding in the Ukraine Supplemental Appropriation Act, 2023 (Division B of Public Law 117-180) and Additional Ukraine Supplemental Appropriation Act, 2023 (Division M of Public Law 117-328).

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Guard and Reserve Forces					5,530
Research and Development	6,765,454	9,743,503		9,743,503	8,731,923
Administration and Associated Activities					99,000
Total Research, Development, Test, & Evaluation	**7,274,653**	**9,905,670**		**9,905,670**	**9,072,174**

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Mar 2023

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Secretary of Defense	7,274,653	9,905,670		9,905,670	9,072,174
Total Research, Development, Test and Evaluation, Defense-Wide	7,274,653	9,905,670		9,905,670	9,072,174

*Includes enacted funding in the Ukraine Supplemental Appropriation Act, 2023 (Division B of Public Law 117-180) and Additional Ukraine Supplemental Appropriation Act, 2023 (Division M of Public Law 117-328).

Defense-Wide
FY 2024 President's Budget
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Total Obligational Authority
(Dollars in Thousands)

Mar 2023

Appropriation: 0400D Research, Development, Test and Evaluation, Defense-Wide

Line No	Program Element Number	Item	Act	Sec	FY 2022 Actuals	FY 2023 Less Supplementals Enactment	FY 2023 Supplementals Enactment*	FY 2023 Total Enactment
3	0601108D8Z	High Energy Laser Research Initiatives	01	U	19,708	21,257		21,257
4	0601110D8Z	Basic Research Initiatives	01	U	74,115	93,673		93,673
6	0601120D8Z	National Defense Education Program	01	U	140,061	174,347		174,347
7	0601228D8Z	Historically Black Colleges and Universities/Minority Institutions	01	U	96,277	100,500		100,500
	Basic Research				**330,161**	**389,777**		**389,777**
9	0602000D8Z	Joint Munitions Technology	02	U	20,309	22,961		22,961
11	0602128D8Z	Promotion and Protection Strategies	02	U		3,275		3,275
12	0602230D8Z	Defense Technology Innovation	02	U	17,075	19,067		19,067
13	0602234D8Z	Lincoln Laboratory Research Program	02	U	53,522	45,844		45,844
14	0602251D8Z	Applied Research for the Advancement of S&T Priorities	02	U	57,251	62,904		62,904
18	0602668D8Z	Cyber Security Research	02	U	24,587	42,139		42,139
19	0602675D8Z	Social Sciences for Environmental Security	02	U		4,000		4,000
24	0602751D8Z	Software Engineering Institute (SEI) Applied Research	02	U	9,245	10,153		10,153
25	0602890D8Z	High Energy Laser Research	02	U	44,212	48,587		48,587
26	0602891D8Z	FSRM Modelling	02	U				
	Applied Research				**226,201**	**258,930**		**258,930**
28	0603000D8Z	Joint Munitions Advanced Technology	03	U	29,706	34,065		34,065
29	0603021D8Z	National Security Innovation Capital	03	U				
30	0603121D8Z	SO/LIC Advanced Development	03	U	4,665	4,919		4,919
31	0603122D8Z	Combating Terrorism Technology Support	03	U	137,971	153,114		153,114

*Includes enacted funding in the Ukraine Supplemental Appropriation Act, 2023 (Division B of Public Law 117-180) and Additional Ukraine Supplemental Appropriation Act, 2023 (Division M of Public Law 117-328).

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(Dollars in Thousands)

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Appropriation: 0400D Research, Development, Test and Evaluation, Defense-Wide

Line No	Program Element Number	Item	Act	Sec	FY 2024 Request
3	0601108D8Z	High Energy Laser Research Initiatives	01	U	16,329
4	0601110D8Z	Basic Research Initiatives	01	U	71,783
6	0601120D8Z	National Defense Education Program	01	U	159,549
7	0601228D8Z	Historically Black Colleges and Universities/Minority Institutions	01	U	100,467
	Basic Research				**348,128**
9	0602000D8Z	Joint Munitions Technology	02	U	19,157
11	0602128D8Z	Promotion and Protection Strategies	02	U	3,219
12	0602230D8Z	Defense Technology Innovation	02	U	55,160
13	0602234D8Z	Lincoln Laboratory Research Program	02	U	46,858
14	0602251D8Z	Applied Research for the Advancement of S&T Priorities	02	U	66,866
18	0602668D8Z	Cyber Security Research	02	U	17,437
19	0602675D8Z	Social Sciences for Environmental Security	02	U	4,718
24	0602751D8Z	Software Engineering Institute (SEI) Applied Research	02	U	11,168
25	0602890D8Z	High Energy Laser Research	02	U	48,804
26	0602891D8Z	FSRM Modelling	02	U	2,000
	Applied Research				**275,387**
28	0603000D8Z	Joint Munitions Advanced Technology	03	U	37,706
29	0603021D8Z	National Security Innovation Capital	03	U	15,085
30	0603121D8Z	SO/LIC Advanced Development	03	U	30,102
31	0603122D8Z	Combating Terrorism Technology Support	03	U	75,593

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Line No	Program Element Number	Item	Act	Sec	FY 2022 Actuals	FY 2023 Less Supplementals Enactment	FY 2023 Supplementals Enactment*	FY 2023 Total Enactment
32	0603133D8Z	Foreign Comparative Testing	03	U	24,885	26,802		26,802
37	0603183D8Z	Joint Hypersonic Technology Development &Transition	03	U	49,900	60,156		60,156
38	0603225D8Z	Joint DoD-DoE Munitions Technology Development	03	U	18,341	17,279		17,279
42	0603288D8Z	Analytic Assessments	03	U	23,067	29,227		29,227
43	0603289D8Z	Advanced Innovative Analysis and Concepts	03	U	45,050	53,176		53,176
44	0603330D8Z	Quantum Application	03	U				
45	0603338D8Z	Defense Modernization and Prototyping	03	U	93,463			
46	0603342D8Z	Defense Innovation Unit (DIU)	03	U	36,537	69,925		69,925
47	0603375D8Z	Technology Innovation	03	U	38,695	18,505		18,505
48	0603379D8Z	Advanced Technical Integration	03	U				
50	0603527D8Z	RETRACT LARCH	03	U	95,599	79,493		79,493
51	0603618D8Z	Joint Electronic Advanced Technology	03	U	17,710	24,155		24,155
52	0603648D8Z	Joint Capability Technology Demonstrations	03	U	99,341			
53	0603662D8Z	Networked Communications Capabilities	03	U	2,919	3,125		3,125
54	0603680D8Z	Defense-Wide Manufacturing Science and Technology Program	03	U	251,105	747,442		747,442
57	0603716D8Z	Strategic Environmental Research Program	03	U	89,518	88,411		88,411
59	0603727D8Z	Joint Warfighting Program	03	U	2,078	2,411		2,411
64	0603769D8Z	Distributed Learning Advanced Technology Development	03	U	5,911	201		201
65	0603781D8Z	Software Engineering Institute	03	U	14,127	12,306		12,306
66	0603838D8Z	Defense Innovation Acceleration (DIA)	03	U		293,504		293,504

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Appropriation: 0400D Research, Development, Test and Evaluation, Defense-Wide

Line No	Program Element Number	Item	Act	Sec	FY 2024 Request
32	0603133D8Z	Foreign Comparative Testing	03	U	27,078
37	0603183D8Z	Joint Hypersonic Technology Development &Transition	03	U	52,292
38	0603225D8Z	Joint DoD-DoE Munitions Technology Development	03	U	19,567
42	0603288D8Z	Analytic Assessments	03	U	24,328
43	0603289D8Z	Advanced Innovative Analysis and Concepts	03	U	55,626
44	0603330D8Z	Quantum Application	03	U	75,000
45	0603338D8Z	Defense Modernization and Prototyping	03	U	
46	0603342D8Z	Defense Innovation Unit (DIU)	03	U	104,729
47	0603375D8Z	Technology Innovation	03	U	123,837
48	0603379D8Z	Advanced Technical Integration	03	U	11,000
50	0603527D8Z	RETRACT LARCH	03	U	57,401
51	0603618D8Z	Joint Electronic Advanced Technology	03	U	19,793
52	0603648D8Z	Joint Capability Technology Demonstrations	03	U	
53	0603662D8Z	Networked Communications Capabilities	03	U	11,197
54	0603680D8Z	Defense-Wide Manufacturing Science and Technology Program	03	U	252,965
57	0603716D8Z	Strategic Environmental Research Program	03	U	60,387
59	0603727D8Z	Joint Warfighting Program	03	U	2,749
64	0603769D8Z	Distributed Learning Advanced Technology Development	03	U	
65	0603781D8Z	Software Engineering Institute	03	U	16,699
66	0603838D8Z	Defense Innovation Acceleration (DIA)	03	U	257,110

Defense-Wide
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Total Obligational Authority
(Dollars in Thousands)

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Line No	Program Element Number	Item	Act	Sec	FY 2022 Actuals	FY 2023 Less Supplementals Enactment	FY 2023 Supplementals Enactment*	FY 2023 Total Enactment
67	0603924D8Z	High Energy Laser Advanced Technology Program	03	U	81,173	111,149		111,149
68	0603941D8Z	Test & Evaluation Science & Technology	03	U	463,080	972,372		972,372
69	0603945D8Z	AUKUS Innovation Initiatives	03	U				
70	0603950D8Z	National Security Innovation Network	03	U	34,876	79,268		79,268
71	0604055D8Z	Operational Energy Capability Improvement	03	U	107,989	199,142		199,142
	Advanced Technology Development				**1,767,706**	**3,080,147**		**3,080,147**
74	0603161D8Z	Nuclear and Conventional Physical Security Equipment RDT&E ADC&P	04	U	27,802	40,706		40,706
75	0603600D8Z	WALKOFF	04	U	123,439	133,795		133,795
76	0603851D8Z	Environmental Security Technical Certification Program	04	U	120,120	122,638		122,638
92	0603923D8Z	Coalition Warfare	04	U	5,000	11,154		11,154
93	0604011D8Z	Next Generation Information Communications Technology (5G)	04	U	327,714	248,466		248,466
94	0604016D8Z	Department of Defense Corrosion Program	04	U	3,168	3,166		3,166
97	0604124D8Z	Chief Digital and Artificial Intelligence Officer (CDAO) - MIP	04	U		70,790		70,790
99	0604250D8Z	Advanced Innovative Technologies	04	U	756,117	1,147,555		1,147,555
100	0604294D8Z	Trusted & Assured Microelectronics	04	U	682,139	644,326		644,326
101	0604331D8Z	Rapid Prototyping Program	04	U	133,317	109,189		109,189
103	0604341D8Z	Defense Innovation Unit (DIU) Prototyping	04	U	15,585	41,902		41,902
104	0604400D8Z	Department of Defense (DoD) Unmanned System Common Development	04	U	7,478	7,583		7,583
106	0604555D8Z	Operational Energy Capability Improvement - Non S&T	04	U	23,069	39,479		39,479

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67	0603924D8Z	High Energy Laser Advanced Technology Program	03	U	111,799
68	0603941D8Z	Test & Evaluation Science & Technology	03	U	345,384
69	0603945D8Z	AUKUS Innovation Initiatives	03	U	25,000
70	0603950D8Z	National Security Innovation Network	03	U	21,575
71	0604055D8Z	Operational Energy Capability Improvement	03	U	171,668
	Advanced Technology Development				**2,005,670**
74	0603161D8Z	Nuclear and Conventional Physical Security Equipment RDT&E ADC&P	04	U	76,764
75	0603600D8Z	WALKOFF	04	U	143,486
76	0603851D8Z	Environmental Security Technical Certification Program	04	U	117,196
92	0603923D8Z	Coalition Warfare	04	U	12,103
93	0604011D8Z	Next Generation Information Communications Technology (5G)	04	U	179,278
94	0604016D8Z	Department of Defense Corrosion Program	04	U	3,185
97	0604124D8Z	Chief Digital and Artificial Intelligence Officer (CDAO) - MIP	04	U	34,350
99	0604250D8Z	Advanced Innovative Technologies	04	U	1,085,826
100	0604294D8Z	Trusted & Assured Microelectronics	04	U	810,839
101	0604331D8Z	Rapid Prototyping Program	04	U	110,291
103	0604341D8Z	Defense Innovation Unit (DIU) Prototyping	04	U	
104	0604400D8Z	Department of Defense (DoD) Unmanned System Common Development	04	U	2,643
106	0604555D8Z	Operational Energy Capability Improvement - Non S&T	04	U	53,726

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Line No	Program Element Number	Item	Act	Sec	FY 2022 Actuals	FY 2023 Less Supplementals Enactment	FY 2023 Supplementals Enactment*	FY 2023 Total Enactment
108	0604682D8Z	Wargaming and Support for Strategic Analysis (SSA)	04	U	3,284	3,229		3,229
109	0604790D8Z	Rapid Defense Experimentation Reserve (RDER)	04	U		24,758		24,758
124	0305245D8Z	Intelligence Capabilities and Innovation Investments	04	U				
126	0901579D8Z	Office of Strategic Capital (OSC)	04	U				
	Advanced Component Development & Prototypes				**2,228,232**	**2,648,736**		**2,648,736**
130	0604123D8Z	Chief Digital and Artificial Intelligence Officer (CDAO) - Dem/Val Activities	05	U		278,340		278,340
131	0604161D8Z	Nuclear and Conventional Physical Security Equipment RDT&E SDD	05	U	5,480	6,482		6,482
133	0604771D8Z	Joint Tactical Information Distribution System (JTIDS)	05	U	20,589	9,030		9,030
137	0605022D8Z	Defense Exportability Program	05	U	55,312	30,145		30,145
138	0605027D8Z	OUSD(C) IT Development Initiatives	05	U	46,573	5,938		5,938
142	0605210D8Z	Defense-Wide Electronic Procurement Capabilities	05	U	6,847	6,949		6,949
143	0605294D8Z	Trusted & Assured Microelectronics	05	U	111,159	252,963		252,963
145	0605772D8Z	Nuclear Command, Control, & Communications	05	U	3,824	3,654		3,654
146	0305304D8Z	DoD Enterprise Energy Information Management (EEIM)	05	U	2,133	8,121		8,121
147	0305310D8Z	CWMD Systems: System Development and Demonstration	05	U	19,413	16,048		16,048
148	0505167D8Z	Domestic Preparedness Against Weapons Of Mass Destruction	05	U				
	System Development & Demonstration				**271,330**	**617,670**		**617,670**
150	0604774D8Z	Defense Readiness Reporting System (DRRS)	06	U	7,435	8,878		8,878
151	0604875D8Z	Joint Systems Architecture Development	06	U	7,529	6,610		6,610

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Line No	Program Element Number	Item	Act	Sec	FY 2024 Request
108	0604682D8Z	Wargaming and Support for Strategic Analysis (SSA)	04	U	3,206
109	0604790D8Z	Rapid Defense Experimentation Reserve (RDER)	04	U	79,773
124	0305245D8Z	Intelligence Capabilities and Innovation Investments	04	U	3,000
126	0901579D8Z	Office of Strategic Capital (OSC)	04	U	99,000
	Advanced Component Development & Prototypes				**2,814,666**
130	0604123D8Z	Chief Digital and Artificial Intelligence Officer (CDAO) - Dem/Val Activities	05	U	615,246
131	0604161D8Z	Nuclear and Conventional Physical Security Equipment RDT&E SDD	05	U	6,229
133	0604771D8Z	Joint Tactical Information Distribution System (JTIDS)	05	U	9,775
137	0605022D8Z	Defense Exportability Program	05	U	18,981
138	0605027D8Z	OUSD(C) IT Development Initiatives	05	U	5,456
142	0605210D8Z	Defense-Wide Electronic Procurement Capabilities	05	U	6,899
143	0605294D8Z	Trusted & Assured Microelectronics	05	U	297,586
145	0605772D8Z	Nuclear Command, Control, & Communications	05	U	4,110
146	0305304D8Z	DoD Enterprise Energy Information Management (EEIM)	05	U	8,159
147	0305310D8Z	CWMD Systems: System Development and Demonstration	05	U	14,471
148	0505167D8Z	Domestic Preparedness Against Weapons Of Mass Destruction	05	U	3,770
	System Development & Demonstration				**990,682**
150	0604774D8Z	Defense Readiness Reporting System (DRRS)	06	U	12,746
151	0604875D8Z	Joint Systems Architecture Development	06	U	8,426

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152	0604940D8Z	Central Test and Evaluation Investment Development (CTEIP)	06	U	994,683	1,267,535		1,267,535
153	0604942D8Z	Assessments and Evaluations	06	U	22,392	4,607		4,607
155	0605100D8Z	Joint Mission Environment Test Capability (JMETC)	06	U	70,217	189,199		189,199
157	0605128D8Z	Classified Program USD(P)	06	U	108,112	145,800		145,800
158	0605142D8Z	Systems Engineering	06	U	38,629	38,585		38,585
159	0605151D8Z	Studies and Analysis Support - OSD	06	U	4,127	5,219		5,219
160	0605161D8Z	Nuclear Matters-Physical Security	06	U	16,159	15,039		15,039
161	0605170D8Z	Support to Networks and Information Integration	06	U	4,585	9,449		9,449
162	0605200D8Z	General Support to OUSD(Intelligence and Security)	06	U	10,451	11,112		11,112
166	0605502D8Z	Small Business Innovative Research	06	U	158,670			
170	0605790D8Z	Small Business Innovation Research (SBIR)/ Small Business Technology Transfer	06	U	3,628	3,820		3,820
171	0605797D8Z	Maintaining Technology Advantage	06	U	25,884	32,812		32,812
172	0605798D8Z	Defense Technology Analysis	06	U	33,989	55,565		55,565
175	0605804D8Z	Development Test and Evaluation	06	U	26,320	26,049		26,049
178	0606005D8Z	Special Activities	06	U				
179	0606100D8Z	Budget and Program Assessments	06	U	13,481	15,098		15,098
180	0606114D8Z	Analysis Working Group (AWG) Support	06	U		4,700		4,700
181	0606135D8Z	Chief Digital and Artificial Intelligence Officer (CDAO) Activities	06	U		13,132		13,132
182	0606225D8Z	ODNA Technology and Resource Analysis	06	U	4,897	3,323		3,323

*Includes enacted funding in the Ukraine Supplemental Appropriation Act, 2023 (Division B of Public Law 117-180) and Additional Ukraine Supplemental Appropriation Act, 2023 (Division M of Public Law 117-328).

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Appropriation: 0400D Research, Development, Test and Evaluation, Defense-Wide

Line No	Program Element Number	Item	Act	Sec	FY 2024 Request
152	0604940D8Z	Central Test and Evaluation Investment Development (CTEIP)	06	U	833,792
153	0604942D8Z	Assessments and Evaluations	06	U	5,810
155	0605100D8Z	Joint Mission Environment Test Capability (JMETC)	06	U	187,421
157	0605128D8Z	Classified Program USD(P)	06	U	
158	0605142D8Z	Systems Engineering	06	U	39,949
159	0605151D8Z	Studies and Analysis Support - OSD	06	U	6,292
160	0605161D8Z	Nuclear Matters-Physical Security	06	U	21,043
161	0605170D8Z	Support to Networks and Information Integration	06	U	10,504
162	0605200D8Z	General Support to OUSD(Intelligence and Security)	06	U	2,980
166	0605502D8Z	Small Business Innovative Research	06	U	
170	0605790D8Z	Small Business Innovation Research (SBIR)/ Small Business Technology Transfer	06	U	3,831
171	0605797D8Z	Maintaining Technology Advantage	06	U	38,923
172	0605798D8Z	Defense Technology Analysis	06	U	60,404
175	0605804D8Z	Development Test and Evaluation	06	U	37,353
178	0606005D8Z	Special Activities	06	U	18,088
179	0606100D8Z	Budget and Program Assessments	06	U	14,427
180	0606114D8Z	Analysis Working Group (AWG) Support	06	U	4,200
181	0606135D8Z	Chief Digital and Artificial Intelligence Officer (CDAO) Activities	06	U	17,247
182	0606225D8Z	ODNA Technology and Resource Analysis	06	U	3,386

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Line No	Program Element Number	Item	Act	Sec	FY 2022 Actuals	FY 2023 Less Supplementals Enactment	FY 2023 Supplementals Enactment*	FY 2023 Total Enactment
183	0606300D8Z	Defense Science Board	06	U		2,500		2,500
184	0606301D8Z	Aviation Safety Technologies	06	U				
186	0606771D8Z	Cyber Resiliency and Cybersecurity Policy	06	U	34,450	51,901		51,901
188	0203345D8Z	Defense Operations Security Initiative (DOSI)	06	U	2,833	3,034		3,034
194	0303260D8Z	Defense Military Deception Program Office (DMDPO)	06	U	825			
198	0305245D8Z	Intelligence Capabilities and Innovation Investments	06	U	60,000			
	Management Support				**1,649,296**	**1,913,967**		**1,913,967**
205	0607210D8Z	Industrial Base Analysis and Sustainment Support	07	U	342,242	830,294		830,294
206	0607310D8Z	Counterproliferation Special Projects: Operational Systems Development	07	U	17,953	15,427		15,427
218	0303140D8Z	Information Systems Security Program	07	U	69,191	43,135		43,135
228	0305104D8Z	Defense Industrial Base (DIB) Cyber Security Initiative	07	U		10,000		10,000
236	0305172D8Z	Combined Advanced Applications	07	U		49,380		49,380
239	0305186D8Z	Policy R&D Programs	07	U	4,540	8,818		8,818
240	0305199D8Z	Net Centricity	07	U	12,651	17,192		17,192
247	0305245D8Z	Intelligence Capabilities and Innovation Investments	07	U		4,575		4,575
250	0305387D8Z	Homeland Defense Technology Transfer Program	07	U	1,261	1,864		1,864
261	0505167D8Z	Domestic Preparedness Against Weapons Of Mass Destruction	07	U				
	Operational Systems Development				**447,838**	**980,685**		**980,685**
278	0608648D8Z	Acquisition Visibility - Software Pilot Program	08	U	17,537	15,758		15,758

*Includes enacted funding in the Ukraine Supplemental Appropriation Act, 2023 (Division B of Public Law 117-180) and Additional Ukraine Supplemental Appropriation Act, 2023 (Division M of Public Law 117-328).

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Line No	Program Element Number	Item	Act	Sec	FY 2024 Request
183	0606300D8Z	Defense Science Board	06	U	2,352
184	0606301D8Z	Aviation Safety Technologies	06	U	213
186	0606771D8Z	Cyber Resiliency and Cybersecurity Policy	06	U	45,194
188	0203345D8Z	Defense Operations Security Initiative (DOSI)	06	U	3,112
194	0303260D8Z	Defense Military Deception Program Office (DMDPO)	06	U	
198	0305245D8Z	Intelligence Capabilities and Innovation Investments	06	U	
	Management Support				**1,377,693**
205	0607210D8Z	Industrial Base Analysis and Sustainment Support	07	U	1,017,141
206	0607310D8Z	Counterproliferation Special Projects: Operational Systems Development	07	U	12,713
218	0303140D8Z	Information Systems Security Program	07	U	97,171
228	0305104D8Z	Defense Industrial Base (DIB) Cyber Security Initiative	07	U	25,655
236	0305172D8Z	Combined Advanced Applications	07	U	52,736
239	0305186D8Z	Policy R&D Programs	07	U	6,263
240	0305199D8Z	Net Centricity	07	U	23,275
247	0305245D8Z	Intelligence Capabilities and Innovation Investments	07	U	
250	0305387D8Z	Homeland Defense Technology Transfer Program	07	U	1,879
261	0505167D8Z	Domestic Preparedness Against Weapons Of Mass Destruction	07	U	1,760
	Operational Systems Development				**1,238,593**
278	0608648D8Z	Acquisition Visibility - Software Pilot Program	08	U	21,355

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Line No	Program Element Number	Item	Act	Sec	FY 2022 Actuals	FY 2023 Less Supplementals Enactment	FY 2023 Supplementals Enactment*	FY 2023 Total Enactment
281	0308588D8Z	Algorithmic Warfare Cross Functional Teams - Software Pilot Program	08	U	336,352			
	Software And Digital Technology Pilot Programs				**353,889**	**15,758**		**15,758**
Total Research, Development, Test and Evaluation, Defense-Wide					**7,274,653**	**9,905,670**		**9,905,670**

*Includes enacted funding in the Ukraine Supplemental Appropriation Act, 2023 (Division B of Public Law 117-180) and Additional Ukraine Supplemental Appropriation Act, 2023 (Division M of Public Law 117-328).

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Line No	Program Element Number	Item	Act	Sec	FY 2024 Request
281	0308588D8Z	Algorithmic Warfare Cross Functional Teams - Software Pilot Program	08	U	
		Software And Digital Technology Pilot Programs			**21,355**
		Total Research, Development, Test and Evaluation, Defense-Wide			**9,072,174**

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Line No	Program Element Number	Item	Act	Sec	FY 2022 Actuals	FY 2023 Less Supplementals Enactment	FY 2023 Supplementals Enactment*	FY 2023 Total Enactment
3	0601108D8Z	High Energy Laser Research Initiatives	01	U	19,708	21,257		21,257
4	0601110D8Z	Basic Research Initiatives	01	U	74,115	93,673		93,673
6	0601120D8Z	National Defense Education Program	01	U	140,061	174,347		174,347
7	0601228D8Z	Historically Black Colleges and Universities/Minority Institutions	01	U	96,277	100,500		100,500
	Basic Research				**330,161**	**389,777**		**389,777**
9	0602000D8Z	Joint Munitions Technology	02	U	20,309	22,961		22,961
11	0602128D8Z	Promotion and Protection Strategies	02	U		3,275		3,275
12	0602230D8Z	Defense Technology Innovation	02	U	17,075	19,067		19,067
13	0602234D8Z	Lincoln Laboratory Research Program	02	U	53,522	45,844		45,844
14	0602251D8Z	Applied Research for the Advancement of S&T Priorities	02	U	57,251	62,904		62,904
18	0602668D8Z	Cyber Security Research	02	U	24,587	42,139		42,139
19	0602675D8Z	Social Sciences for Environmental Security	02	U		4,000		4,000
24	0602751D8Z	Software Engineering Institute (SEI) Applied Research	02	U	9,245	10,153		10,153
25	0602890D8Z	High Energy Laser Research	02	U	44,212	48,587		48,587
26	0602891D8Z	FSRM Modelling	02	U				
	Applied Research				**226,201**	**258,930**		**258,930**
28	0603000D8Z	Joint Munitions Advanced Technology	03	U	29,706	34,065		34,065
29	0603021D8Z	National Security Innovation Capital	03	U				
30	0603121D8Z	SO/LIC Advanced Development	03	U	4,665	4,919		4,919
31	0603122D8Z	Combating Terrorism Technology Support	03	U	137,971	153,114		153,114

*Includes enacted funding in the Ukraine Supplemental Appropriation Act, 2023 (Division B of Public Law 117-180) and Additional Ukraine Supplemental Appropriation Act, 2023 (Division M of Public Law 117-328).

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Line No	Program Element Number	Item	Act	Sec	FY 2024 Request
3	0601108D8Z	High Energy Laser Research Initiatives	01	U	16,329
4	0601110D8Z	Basic Research Initiatives	01	U	71,783
6	0601120D8Z	National Defense Education Program	01	U	159,549
7	0601228D8Z	Historically Black Colleges and Universities/Minority Institutions	01	U	100,467
	Basic Research				**348,128**
9	0602000D8Z	Joint Munitions Technology	02	U	19,157
11	0602128D8Z	Promotion and Protection Strategies	02	U	3,219
12	0602230D8Z	Defense Technology Innovation	02	U	55,160
13	0602234D8Z	Lincoln Laboratory Research Program	02	U	46,858
14	0602251D8Z	Applied Research for the Advancement of S&T Priorities	02	U	66,866
18	0602668D8Z	Cyber Security Research	02	U	17,437
19	0602675D8Z	Social Sciences for Environmental Security	02	U	4,718
24	0602751D8Z	Software Engineering Institute (SEI) Applied Research	02	U	11,168
25	0602890D8Z	High Energy Laser Research	02	U	48,804
26	0602891D8Z	FSRM Modelling	02	U	2,000
	Applied Research				**275,387**
28	0603000D8Z	Joint Munitions Advanced Technology	03	U	37,706
29	0603021D8Z	National Security Innovation Capital	03	U	15,085
30	0603121D8Z	SO/LIC Advanced Development	03	U	30,102
31	0603122D8Z	Combating Terrorism Technology Support	03	U	75,593

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Line No	Program Element Number	Item	Act	Sec	FY 2022 Actuals	FY 2023 Less Supplementals Enactment	FY 2023 Supplementals Enactment*	FY 2023 Total Enactment
32	0603133D8Z	Foreign Comparative Testing	03	U	24,885	26,802		26,802
37	0603183D8Z	Joint Hypersonic Technology Development &Transition	03	U	49,900	60,156		60,156
38	0603225D8Z	Joint DoD-DoE Munitions Technology Development	03	U	18,341	17,279		17,279
42	0603288D8Z	Analytic Assessments	03	U	23,067	29,227		29,227
43	0603289D8Z	Advanced Innovative Analysis and Concepts	03	U	45,050	53,176		53,176
44	0603330D8Z	Quantum Application	03	U				
45	0603338D8Z	Defense Modernization and Prototyping	03	U	93,463			
46	0603342D8Z	Defense Innovation Unit (DIU)	03	U	36,537	69,925		69,925
47	0603375D8Z	Technology Innovation	03	U	38,695	18,505		18,505
48	0603379D8Z	Advanced Technical Integration	03	U				
50	0603527D8Z	RETRACT LARCH	03	U	95,599	79,493		79,493
51	0603618D8Z	Joint Electronic Advanced Technology	03	U	17,710	24,155		24,155
52	0603648D8Z	Joint Capability Technology Demonstrations	03	U	99,341			
53	0603662D8Z	Networked Communications Capabilities	03	U	2,919	3,125		3,125
54	0603680D8Z	Defense-Wide Manufacturing Science and Technology Program	03	U	251,105	747,442		747,442
57	0603716D8Z	Strategic Environmental Research Program	03	U	89,518	88,411		88,411
59	0603727D8Z	Joint Warfighting Program	03	U	2,078	2,411		2,411
64	0603769D8Z	Distributed Learning Advanced Technology Development	03	U	5,911	201		201
65	0603781D8Z	Software Engineering Institute	03	U	14,127	12,306		12,306
66	0603838D8Z	Defense Innovation Acceleration (DIA)	03	U		293,504		293,504

*Includes enacted funding in the Ukraine Supplemental Appropriation Act, 2023 (Division B of Public Law 117-180) and Additional Ukraine Supplemental Appropriation Act, 2023 (Division M of Public Law 117-328).

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Line No	Program Element Number	Item	Act	Sec	FY 2024 Request
32	0603133D8Z	Foreign Comparative Testing	03	U	27,078
37	0603183D8Z	Joint Hypersonic Technology Development &Transition	03	U	52,292
38	0603225D8Z	Joint DoD-DoE Munitions Technology Development	03	U	19,567
42	0603288D8Z	Analytic Assessments	03	U	24,328
43	0603289D8Z	Advanced Innovative Analysis and Concepts	03	U	55,626
44	0603330D8Z	Quantum Application	03	U	75,000
45	0603338D8Z	Defense Modernization and Prototyping	03	U	
46	0603342D8Z	Defense Innovation Unit (DIU)	03	U	104,729
47	0603375D8Z	Technology Innovation	03	U	123,837
48	0603379D8Z	Advanced Technical Integration	03	U	11,000
50	0603527D8Z	RETRACT LARCH	03	U	57,401
51	0603618D8Z	Joint Electronic Advanced Technology	03	U	19,793
52	0603648D8Z	Joint Capability Technology Demonstrations	03	U	
53	0603662D8Z	Networked Communications Capabilities	03	U	11,197
54	0603680D8Z	Defense-Wide Manufacturing Science and Technology Program	03	U	252,965
57	0603716D8Z	Strategic Environmental Research Program	03	U	60,387
59	0603727D8Z	Joint Warfighting Program	03	U	2,749
64	0603769D8Z	Distributed Learning Advanced Technology Development	03	U	
65	0603781D8Z	Software Engineering Institute	03	U	16,699
66	0603838D8Z	Defense Innovation Acceleration (DIA)	03	U	257,110

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Line No	Program Element Number	Item	Act	Sec	FY 2022 Actuals	FY 2023 Less Supplementals Enactment	FY 2023 Supplementals Enactment*	FY 2023 Total Enactment
67	0603924D8Z	High Energy Laser Advanced Technology Program	03	U	81,173	111,149		111,149
68	0603941D8Z	Test & Evaluation Science & Technology	03	U	463,080	972,372		972,372
69	0603945D8Z	AUKUS Innovation Initiatives	03	U				
70	0603950D8Z	National Security Innovation Network	03	U	34,876	79,268		79,268
71	0604055D8Z	Operational Energy Capability Improvement	03	U	107,989	199,142		199,142
	Advanced Technology Development				**1,767,706**	**3,080,147**		**3,080,147**
74	0603161D8Z	Nuclear and Conventional Physical Security Equipment RDT&E ADC&P	04	U	27,802	40,706		40,706
75	0603600D8Z	WALKOFF	04	U	123,439	133,795		133,795
76	0603851D8Z	Environmental Security Technical Certification Program	04	U	120,120	122,638		122,638
92	0603923D8Z	Coalition Warfare	04	U	5,000	11,154		11,154
93	0604011D8Z	Next Generation Information Communications Technology (5G)	04	U	327,714	248,466		248,466
94	0604016D8Z	Department of Defense Corrosion Program	04	U	3,168	3,166		3,166
97	0604124D8Z	Chief Digital and Artificial Intelligence Officer (CDAO) - MIP	04	U		70,790		70,790
99	0604250D8Z	Advanced Innovative Technologies	04	U	756,117	1,147,555		1,147,555
100	0604294D8Z	Trusted & Assured Microelectronics	04	U	682,139	644,326		644,326
101	0604331D8Z	Rapid Prototyping Program	04	U	133,317	109,189		109,189
103	0604341D8Z	Defense Innovation Unit (DIU) Prototyping	04	U	15,585	41,902		41,902
104	0604400D8Z	Department of Defense (DoD) Unmanned System Common Development	04	U	7,478	7,583		7,583
106	0604555D8Z	Operational Energy Capability Improvement - Non S&T	04	U	23,069	39,479		39,479

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Line No	Program Element Number	Item	Act	Sec	FY 2024 Request
67	0603924D8Z	High Energy Laser Advanced Technology Program	03	U	111,799
68	0603941D8Z	Test & Evaluation Science & Technology	03	U	345,384
69	0603945D8Z	AUKUS Innovation Initiatives	03	U	25,000
70	0603950D8Z	National Security Innovation Network	03	U	21,575
71	0604055D8Z	Operational Energy Capability Improvement	03	U	171,668
	Advanced Technology Development				**2,005,670**
74	0603161D8Z	Nuclear and Conventional Physical Security Equipment RDT&E ADC&P	04	U	76,764
75	0603600D8Z	WALKOFF	04	U	143,486
76	0603851D8Z	Environmental Security Technical Certification Program	04	U	117,196
92	0603923D8Z	Coalition Warfare	04	U	12,103
93	0604011D8Z	Next Generation Information Communications Technology (5G)	04	U	179,278
94	0604016D8Z	Department of Defense Corrosion Program	04	U	3,185
97	0604124D8Z	Chief Digital and Artificial Intelligence Officer (CDAO) - MIP	04	U	34,350
99	0604250D8Z	Advanced Innovative Technologies	04	U	1,085,826
100	0604294D8Z	Trusted & Assured Microelectronics	04	U	810,839
101	0604331D8Z	Rapid Prototyping Program	04	U	110,291
103	0604341D8Z	Defense Innovation Unit (DIU) Prototyping	04	U	
104	0604400D8Z	Department of Defense (DoD) Unmanned System Common Development	04	U	2,643
106	0604555D8Z	Operational Energy Capability Improvement - Non S&T	04	U	53,726

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Line No	Program Element Number	Item	Act	Sec	FY 2022 Actuals	FY 2023 Less Supplementals Enactment	FY 2023 Supplementals Enactment*	FY 2023 Total Enactment
108	0604682D8Z	Wargaming and Support for Strategic Analysis (SSA)	04	U	3,284	3,229		3,229
109	0604790D8Z	Rapid Defense Experimentation Reserve (RDER)	04	U		24,758		24,758
124	0305245D8Z	Intelligence Capabilities and Innovation Investments	04	U				
126	0901579D8Z	Office of Strategic Capital (OSC)	04	U				
	Advanced Component Development & Prototypes				**2,228,232**	**2,648,736**		**2,648,736**
130	0604123D8Z	Chief Digital and Artificial Intelligence Officer (CDAO) - Dem/Val Activities	05	U		278,340		278,340
131	0604161D8Z	Nuclear and Conventional Physical Security Equipment RDT&E SDD	05	U	5,480	6,482		6,482
133	0604771D8Z	Joint Tactical Information Distribution System (JTIDS)	05	U	20,589	9,030		9,030
137	0605022D8Z	Defense Exportability Program	05	U	55,312	30,145		30,145
138	0605027D8Z	OUSD(C) IT Development Initiatives	05	U	46,573	5,938		5,938
142	0605210D8Z	Defense-Wide Electronic Procurement Capabilities	05	U	6,847	6,949		6,949
143	0605294D8Z	Trusted & Assured Microelectronics	05	U	111,159	252,963		252,963
145	0605772D8Z	Nuclear Command, Control, & Communications	05	U	3,824	3,654		3,654
146	0305304D8Z	DoD Enterprise Energy Information Management (EEIM)	05	U	2,133	8,121		8,121
147	0305310D8Z	CWMD Systems: System Development and Demonstration	05	U	19,413	16,048		16,048
148	0505167D8Z	Domestic Preparedness Against Weapons Of Mass Destruction	05	U				
	System Development & Demonstration				**271,330**	**617,670**		**617,670**
150	0604774D8Z	Defense Readiness Reporting System (DRRS)	06	U	7,435	8,878		8,878
151	0604875D8Z	Joint Systems Architecture Development	06	U	7,529	6,610		6,610

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Line No	Program Element Number	Item	Act	Sec	FY 2024 Request
108	0604682D8Z	Wargaming and Support for Strategic Analysis (SSA)	04	U	3,206
109	0604790D8Z	Rapid Defense Experimentation Reserve (RDER)	04	U	79,773
124	0305245D8Z	Intelligence Capabilities and Innovation Investments	04	U	3,000
126	0901579D8Z	Office of Strategic Capital (OSC)	04	U	99,000
	Advanced Component Development & Prototypes				**2,814,666**
130	0604123D8Z	Chief Digital and Artificial Intelligence Officer (CDAO) - Dem/Val Activities	05	U	615,246
131	0604161D8Z	Nuclear and Conventional Physical Security Equipment RDT&E SDD	05	U	6,229
133	0604771D8Z	Joint Tactical Information Distribution System (JTIDS)	05	U	9,775
137	0605022D8Z	Defense Exportability Program	05	U	18,981
138	0605027D8Z	OUSD(C) IT Development Initiatives	05	U	5,456
142	0605210D8Z	Defense-Wide Electronic Procurement Capabilities	05	U	6,899
143	0605294D8Z	Trusted & Assured Microelectronics	05	U	297,586
145	0605772D8Z	Nuclear Command, Control, & Communications	05	U	4,110
146	0305304D8Z	DoD Enterprise Energy Information Management (EEIM)	05	U	8,159
147	0305310D8Z	CWMD Systems: System Development and Demonstration	05	U	14,471
148	0505167D8Z	Domestic Preparedness Against Weapons Of Mass Destruction	05	U	3,770
	System Development & Demonstration				**990,682**
150	0604774D8Z	Defense Readiness Reporting System (DRRS)	06	U	12,746
151	0604875D8Z	Joint Systems Architecture Development	06	U	8,426

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Appropriation: 0400D Research, Development, Test and Evaluation, Defense-Wide

Line No	Program Element Number	Item	Act	Sec	FY 2022 Actuals	FY 2023 Less Supplementals Enactment	FY 2023 Supplementals Enactment*	FY 2023 Total Enactment
152	0604940D8Z	Central Test and Evaluation Investment Development (CTEIP)	06	U	994,683	1,267,535		1,267,535
153	0604942D8Z	Assessments and Evaluations	06	U	22,392	4,607		4,607
155	0605100D8Z	Joint Mission Environment Test Capability (JMETC)	06	U	70,217	189,199		189,199
157	0605128D8Z	Classified Program USD(P)	06	U	108,112	145,800		145,800
158	0605142D8Z	Systems Engineering	06	U	38,629	38,585		38,585
159	0605151D8Z	Studies and Analysis Support - OSD	06	U	4,127	5,219		5,219
160	0605161D8Z	Nuclear Matters-Physical Security	06	U	16,159	15,039		15,039
161	0605170D8Z	Support to Networks and Information Integration	06	U	4,585	9,449		9,449
162	0605200D8Z	General Support to OUSD(Intelligence and Security)	06	U	10,451	11,112		11,112
166	0605502D8Z	Small Business Innovative Research	06	U	158,670			
170	0605790D8Z	Small Business Innovation Research (SBIR)/ Small Business Technology Transfer	06	U	3,628	3,820		3,820
171	0605797D8Z	Maintaining Technology Advantage	06	U	25,884	32,812		32,812
172	0605798D8Z	Defense Technology Analysis	06	U	33,989	55,565		55,565
175	0605804D8Z	Development Test and Evaluation	06	U	26,320	26,049		26,049
178	0606005D8Z	Special Activities	06	U				
179	0606100D8Z	Budget and Program Assessments	06	U	13,481	15,098		15,098
180	0606114D8Z	Analysis Working Group (AWG) Support	06	U		4,700		4,700
181	0606135D8Z	Chief Digital and Artificial Intelligence Officer (CDAO) Activities	06	U		13,132		13,132
182	0606225D8Z	ODNA Technology and Resource Analysis	06	U	4,897	3,323		3,323

*Includes enacted funding in the Ukraine Supplemental Appropriation Act, 2023 (Division B of Public Law 117-180) and Additional Ukraine Supplemental Appropriation Act, 2023 (Division M of Public Law 117-328).

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Appropriation: 0400D Research, Development, Test and Evaluation, Defense-Wide

Line No	Program Element Number	Item	Act	Sec	FY 2024 Request
152	0604940D8Z	Central Test and Evaluation Investment Development (CTEIP)	06	U	833,792
153	0604942D8Z	Assessments and Evaluations	06	U	5,810
155	0605100D8Z	Joint Mission Environment Test Capability (JMETC)	06	U	187,421
157	0605128D8Z	Classified Program USD(P)	06	U	
158	0605142D8Z	Systems Engineering	06	U	39,949
159	0605151D8Z	Studies and Analysis Support - OSD	06	U	6,292
160	0605161D8Z	Nuclear Matters-Physical Security	06	U	21,043
161	0605170D8Z	Support to Networks and Information Integration	06	U	10,504
162	0605200D8Z	General Support to OUSD(Intelligence and Security)	06	U	2,980
166	0605502D8Z	Small Business Innovative Research	06	U	
170	0605790D8Z	Small Business Innovation Research (SBIR)/ Small Business Technology Transfer	06	U	3,831
171	0605797D8Z	Maintaining Technology Advantage	06	U	38,923
172	0605798D8Z	Defense Technology Analysis	06	U	60,404
175	0605804D8Z	Development Test and Evaluation	06	U	37,353
178	0606005D8Z	Special Activities	06	U	18,088
179	0606100D8Z	Budget and Program Assessments	06	U	14,427
180	0606114D8Z	Analysis Working Group (AWG) Support	06	U	4,200
181	0606135D8Z	Chief Digital and Artificial Intelligence Officer (CDAO) Activities	06	U	17,247
182	0606225D8Z	ODNA Technology and Resource Analysis	06	U	3,386

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Appropriation: 0400D Research, Development, Test and Evaluation, Defense-Wide

Line No	Program Element Number	Item	Act	Sec	FY 2022 Actuals	FY 2023 Less Supplementals Enactment	FY 2023 Supplementals Enactment*	FY 2023 Total Enactment
183	0606300D8Z	Defense Science Board	06	U		2,500		2,500
184	0606301D8Z	Aviation Safety Technologies	06	U				
186	0606771D8Z	Cyber Resiliency and Cybersecurity Policy	06	U	34,450	51,901		51,901
188	0203345D8Z	Defense Operations Security Initiative (DOSI)	06	U	2,833	3,034		3,034
194	0303260D8Z	Defense Military Deception Program Office (DMDPO)	06	U	825			
198	0305245D8Z	Intelligence Capabilities and Innovation Investments	06	U	60,000			
	Management Support				**1,649,296**	**1,913,967**		**1,913,967**
205	0607210D8Z	Industrial Base Analysis and Sustainment Support	07	U	342,242	830,294		830,294
206	0607310D8Z	Counterproliferation Special Projects: Operational Systems Development	07	U	17,953	15,427		15,427
218	0303140D8Z	Information Systems Security Program	07	U	69,191	43,135		43,135
228	0305104D8Z	Defense Industrial Base (DIB) Cyber Security Initiative	07	U		10,000		10,000
236	0305172D8Z	Combined Advanced Applications	07	U		49,380		49,380
239	0305186D8Z	Policy R&D Programs	07	U	4,540	8,818		8,818
240	0305199D8Z	Net Centricity	07	U	12,651	17,192		17,192
247	0305245D8Z	Intelligence Capabilities and Innovation Investments	07	U		4,575		4,575
250	0305387D8Z	Homeland Defense Technology Transfer Program	07	U	1,261	1,864		1,864
261	0505167D8Z	Domestic Preparedness Against Weapons Of Mass Destruction	07	U				
	Operational Systems Development				**447,838**	**980,685**		**980,685**
278	0608648D8Z	Acquisition Visibility - Software Pilot Program	08	U	17,537	15,758		15,758

*Includes enacted funding in the Ukraine Supplemental Appropriation Act, 2023 (Division B of Public Law 117-180) and Additional Ukraine Supplemental Appropriation Act, 2023 (Division M of Public Law 117-328).

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Appropriation: 0400D Research, Development, Test and Evaluation, Defense-Wide

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183	0606300D8Z	Defense Science Board	06	U	2,352
184	0606301D8Z	Aviation Safety Technologies	06	U	213
186	0606771D8Z	Cyber Resiliency and Cybersecurity Policy	06	U	45,194
188	0203345D8Z	Defense Operations Security Initiative (DOSI)	06	U	3,112
194	0303260D8Z	Defense Military Deception Program Office (DMDPO)	06	U	
198	0305245D8Z	Intelligence Capabilities and Innovation Investments	06	U	
	Management Support				**1,377,693**
205	0607210D8Z	Industrial Base Analysis and Sustainment Support	07	U	1,017,141
206	0607310D8Z	Counterproliferation Special Projects: Operational Systems Development	07	U	12,713
218	0303140D8Z	Information Systems Security Program	07	U	97,171
228	0305104D8Z	Defense Industrial Base (DIB) Cyber Security Initiative	07	U	25,655
236	0305172D8Z	Combined Advanced Applications	07	U	52,736
239	0305186D8Z	Policy R&D Programs	07	U	6,263
240	0305199D8Z	Net Centricity	07	U	23,275
247	0305245D8Z	Intelligence Capabilities and Innovation Investments	07	U	
250	0305387D8Z	Homeland Defense Technology Transfer Program	07	U	1,879
261	0505167D8Z	Domestic Preparedness Against Weapons Of Mass Destruction	07	U	1,760
	Operational Systems Development				**1,238,593**
278	0608648D8Z	Acquisition Visibility - Software Pilot Program	08	U	21,355

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Appropriation: 0400D Research, Development, Test and Evaluation, Defense-Wide

Line No	Program Element Number	Item	Act	Sec	FY 2022 Actuals	FY 2023 Less Supplementals Enactment	FY 2023 Supplementals Enactment*	FY 2023 Total Enactment
281	0308588D8Z	Algorithmic Warfare Cross Functional Teams - Software Pilot Program	08	U	336,352			
	Software And Digital Technology Pilot Programs				**353,889**	**15,758**		**15,758**
Total Secretary of Defense					**7,274,653**	**9,905,670**		**9,905,670**

*Includes enacted funding in the Ukraine Supplemental Appropriation Act, 2023 (Division B of Public Law 117-180) and Additional Ukraine Supplemental Appropriation Act, 2023 (Division M of Public Law 117-328).

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Appropriation: 0400D Research, Development, Test and Evaluation, Defense-Wide

Line No	Program Element Number	Item	Act	Sec	FY 2024 Request
281	0308588D8Z	Algorithmic Warfare Cross Functional Teams - Software Pilot Program	08	U	
	Software And Digital Technology Pilot Programs				**21,355**
Total Secretary of Defense					**9,072,174**

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6	01	0601120D8Z	National Defense Education Program (NDEP)	Volume 3 - 17
7	01	0601228D8Z	Historically Black Colleges and Universities and Minority-Serving Institutions	Volume 3 - 27

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31	03	0603122D8Z	Combating Terrorism Technology Support	Volume 3 - 117
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42	03	0603288D8Z	Science and Technology (S&T) Analytic Assessments	Volume 3 - 181
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51	03	0603618D8Z	Joint Electronic Advanced Technology	Volume 3 - 241
52	03	0603648D8Z	Joint Capability Technology Demonstration (JCTD)	Volume 3 - 253
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65	03	0603781D8Z	Software Engineering Institute (SEI)	Volume 3 - 327
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General Support to OUSD(I)	0605200D8Z	162	06	Volume 3 - 925
High Energy Laser Advanced Development	0603924D8Z	67	03	Volume 3 - 369
High Energy Laser Development	0602890D8Z	25	02	Volume 3 - 93
High Energy Laser Research Initiatives	0601108D8Z	3	01	Volume 3 - 1
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Homeland Defense Technology Transfer Program	0305387D8Z	250	07	Volume 3 - 1127
Industrial Base Analysis and Sustainment Support	0607210D8Z	205	07	Volume 3 - 1039
Information Systems Security Program	0303140D8Z	218	07	Volume 3 - 1073
Intelligence Capabilities and Innovation Investments	0305245D8Z	124	04	Volume 3 - 693

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Intelligence Capabilities and Innovation Investments	0305245D8Z	198	06	Volume 3 - 1037
Intelligence Capabilities and Innovation Investments	0305245D8Z	247	07	Volume 3 - 1121
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Joint Electronic Advanced Technology	0603618D8Z	51	03	Volume 3 - 241
Joint Hypersonic Technology Development & Transition	0603183D8Z	37	03	Volume 3 - 169
Joint Mission Environment Test Capability (JMETC)	0605100D8Z	155	06	Volume 3 - 877
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Next Generation Information Communications Technology (5G)	0604011D8Z	93	04	Volume 3 - 483
Nuclear Command Control and Communications (NC3)	0605772D8Z	145	05	Volume 3 - 809
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Nuclear and Conventional Physical Security, Nuclear Forensics, Resilience, Survivability	0603161D8Z	74	04	Volume 3 - 429
Nuclear and Conventional Physical Security, Nuclear Forensics, Resilience, Survivability	0604161D8Z	131	05	Volume 3 - 721
ODNA Technology & Resource Analysis	0606225D8Z	182	06	Volume 3 - 1005
OUSD(C) IT Development Initiative	0605027D8Z	138	05	Volume 3 - 761
Office of Strategic Capital (OSC)	0901579D8Z	126	04	Volume 3 - 699
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Operational Energy Capability Improvement (OECI)	0604055D8Z	71	03	Volume 3 - 421
Policy R&D Programs	0305186D8Z	239	07	Volume 3 - 1101
Promotion and Protection Strategies	0602128D8Z	11	02	Volume 3 - 41
Quantum Sciences Technology	0603330D8Z	44	03	Volume 3 - 195
Rapid Defense Experimentation Reserve (RDER)	0604790D8Z	109	04	Volume 3 - 681
Rapid Prototyping Program	0604331D8Z	101	04	Volume 3 - 595
Retract Larch	0603527D8Z	50	03	Volume 3 - 239
SO/LIC Advanced Development	0603121D8Z	30	03	Volume 3 - 113
Science and Technology (S&T) Analytic Assessments	0603288D8Z	42	03	Volume 3 - 181

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Securing the Defense Industrial Base (DIB): Cybersecurity Maturity Model Certification (CMMC)	0305104D8Z	228	07	Volume 3 - 1087
Small Business Innovation Research (SBIR) Small Business Technology Transfer (STTR)	0605790D8Z	170	06	Volume 3 - 941
Small Business Innovation Research/Small Business Technology Transfer (SBIR/ STTR)	0605502D8Z	166	06	Volume 3 - 931
Social Science Research for Climate and Environmental Change	0602675D8Z	19	02	Volume 3 - 79
Software Engineering Institute (SEI)	0603781D8Z	65	03	Volume 3 - 327
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Special Activities	0606005D8Z	178	06	Volume 3 - 985
Strategic Environmental Research and Development Program (SERDP)	0603716D8Z	57	03	Volume 3 - 309
Studies and Analysis Support – OSD	0605151D8Z	159	06	Volume 3 - 905
Support for Analysis Working Group	0606114D8Z	180	06	Volume 3 - 995
Support to Networks and Information Integration (NII)	0605170D8Z	161	06	Volume 3 - 919
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Technology Innovation	0603375D8Z	47	03	Volume 3 - 227
Test and Evaluation Science and Technology	0603941D8Z	68	03	Volume 3 - 373
Trusted and Assured Microelectronics	0604294D8Z	100	04	Volume 3 - 541
Trusted and Assured Microelectronics	0605294D8Z	143	05	Volume 3 - 783
WALKOFF	0603600D8Z	75	04	Volume 3 - 455

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Wargaming & Support for Strategic Analysis (SSA)	0604682D8Z	108	04	Volume 3 - 673

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 1: *Basic Research*	**R-1 Program Element (Number/Name)** PE 0601108D8Z / *High Energy Laser Research Initiatives*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	0.000	19.708	21.257	16.329	-	16.329	16.652	17.005	17.361	17.740	Continuing	Continuing
108: *Joint Directed Energy Basic Research*	0.000	19.708	21.257	16.329	-	16.329	16.652	17.005	17.361	17.740	Continuing	Continuing

Note

New Start (Y/N): No

This Program will focus on fundamental science supporting future Directed Energy (DE) technologies divided into DE Sources, and Beam Control and Propagation.

A. Mission Description and Budget Item Justification

This program supports the Department's initiatives to Defend the Homeland, Deter Aggression and Prevail in Conflict, and Build Sustainable and Long-Term Advantage.

This program funds basic research aimed at developing fundamental scientific knowledge to support future Department of Defense Directed Energy weapon systems through the Joint Directed Energy Transition Office. This program funds multi-disciplinary research institutes to conduct research on laser, laser beam control and high power microwave technologies. Additionally, this program supports research efforts through academia to stimulate student interest in directed energy and encourage graduate research in topics related to high energy lasers and high power microwaves. Efforts in this program have been coordinated through the Department of Defense Science and Technology Executive Committee process to harmonize efforts and eliminate duplication.

This budget activity includes scientific study and experimentation directed toward increasing fundamental knowledge and understanding in those fields of the physical, engineering, environmental, and life sciences related to long-term national security needs.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	20.342	16.257	16.616	-	16.616
Current President's Budget	19.708	21.257	16.329	-	16.329
Total Adjustments	-0.634	5.000	-0.287	-	-0.287
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	5.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	-0.634	-	-0.287	-	-0.287

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 1: *Basic Research*	**R-1 Program Element (Number/Name)** PE 0601108D8Z / *High Energy Laser Research Initiatives*

Congressional Add Details ($ in Millions, and Includes General Reductions)

	FY 2022	FY 2023
Project: 108: *Joint Directed Energy Basic Research*		
Congressional Add: *High Energy Laser Research*	5.000	5.000
Congressional Add Subtotals for Project: 108	5.000	5.000
Congressional Add Totals for all Projects	5.000	5.000

Change Summary Explanation

The FY 2024 reduction of $0.287 million is comprised of a realignment of $0.362 million to support Historically Black Colleges and Universities/Minority Serving Institutions program, which is a priority of the Under Secretary of Defense for Research and Engineering (USD(R&E)), and $0.017 million to support departmental priorities and an economic assumption increase of $0.092 million.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 1	R-1 Program Element (Number/Name) PE 0601108D8Z / *High Energy Laser Research Initiatives*	Project (Number/Name) 108 / *Joint Directed Energy Basic Research*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
108: *Joint Directed Energy Basic Research*	0.000	19.708	21.257	16.329	-	16.329	16.652	17.005	17.361	17.740	Continuing	Continuing

Note

This Program will focus on fundamental science supporting future Directed Energy (DE) technologies divided into DE Sources, and Beam Control and Propagation.

A. Mission Description and Budget Item Justification

This program funds basic research aimed at developing fundamental scientific knowledge to support future Department of Defense Directed Energy weapon systems through the Joint Directed Energy Transition Office. This program funds multi-disciplinary research institutes to conduct research on laser, laser beam control and high power microwave technologies. In addition, this program supports research efforts through academia to stimulate student interest in directed energy and encourage graduate research in topics related to high energy lasers and high power microwaves. Efforts in this program have been coordinated through the Department of Defense Science and Technology Executive Committee process to harmonize efforts and eliminate duplication.

This budget activity includes scientific study and experimentation directed toward increasing fundamental knowledge and understanding in those fields of the physical, engineering, environmental, and life sciences related to long-term national security needs.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Directed Energy Foundational Research	14.708	16.257	16.329
Description: Improve the fundamental understanding and modeling of high energy laser and high power microwave sources and devices. Improve the fundamental understanding and modeling of beam control technologies as they relate to high energy laser applications and high power microwaves. Conduct research in atmospheric characterization, metrology, control systems, algorithms, waveguides, antennas and beam control component technology.			
FY 2023 Plans: Continue the investigation into innovative laser technologies, in diode-pumped lasers, fiber, and solid state laser technologies. Monitor national and international efforts to leverage technology advancements. Investigate innovative high-power laser technologies. Investigate innovative microwave technologies, in microwave sources, antennas, and related microwave component technologies. Continue overseas efforts to leverage international microwave technology advancements. Continue the investigation into innovative high power microwave technologies.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 1	**R-1 Program Element (Number/Name)** PE 0601108D8Z / *High Energy Laser Research Initiatives*	**Project (Number/Name)** 108 / *Joint Directed Energy Basic Research*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Initiate new research of innovative high energy laser beam control and high power microwave antenna architectures. Leverage international research developments and technology advancements where possible. ***FY 2024 Plans:*** Investigate innovative laser technologies that show potential in power scalability for high energy laser applications, alternative defense capabilities, counter capabilities, and counter-counter capabilities. Monitor national and international efforts to leverage technology advancements. Conduct foundational research on laser technologies to gain more understanding on scalability and utility. Investigate innovative microwave technologies, in microwave sources, antennas, and related microwave component technologies. Perform overseas efforts to leverage international microwave technology advancements. Continue the investigation into innovative high power microwave technologies. Investigate innovative high energy laser beam control phenomenology and methods of measuring, modeling, and manipulating laser beam propagation. Investigate high power microwave antenna architectures with potential to revolutionize performance. Leverage international research developments and technology advancements where possible. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The increase of $0.072 million between FY 2023 and FY 2024 reflects an inflationary adjustment.			
Accomplishments/Planned Programs Subtotals	14.708	16.257	16.329

	FY 2022	FY 2023
Congressional Add: High Energy Laser Research	5.000	5.000
FY 2022 Accomplishments: Funds will be used to establish a DE Center of Excellence under the Joint DE Transition Office to conduct basic research in high energy lasers and high power microwaves. ***FY 2023 Plans:*** Funds will be used to establish a DE Center of Excellence under the Joint DE Transition Office to conduct basic research in high energy lasers and high power microwaves.		
Congressional Adds Subtotals	5.000	5.000

C. Other Program Funding Summary ($ in Millions)

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 1	**R-1 Program Element (Number/Name)** PE 0601108D8Z / *High Energy Laser Research Initiatives*	**Project (Number/Name)** 108 / *Joint Directed Energy Basic Research*

C. Other Program Funding Summary ($ in Millions)

Remarks

NA

D. Acquisition Strategy

NA

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 1: *Basic Research*	**R-1 Program Element (Number/Name)** PE 0601110D8Z / *Basic Research Initiatives*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	-	74.115	93.673	71.783	-	71.783	77.753	81.839	86.219	88.155	Continuing	Continuing
010: *Basic Research Initiatives*	-	28.267	42.931	6.665	-	6.665	9.220	10.875	12.598	14.196	Continuing	Continuing
016: *Minerva Research Initiative*	-	14.000	17.143	17.013	-	17.013	17.190	17.391	17.682	18.071	Continuing	Continuing
060: *Vannevar Bush Faculty Fellowship*	-	31.848	33.599	48.105	-	48.105	51.343	53.573	55.939	55.888	Continuing	Continuing

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

Basic research provides the Department of Defense (DoD) with a deep and broad awareness of current directions in areas of research important to U.S. military capabilities – including physics and the physical sciences, materials science, chemistry and chemical engineering, electrical engineering, mathematics, computer science, mechanical and aerodynamic engineering, ocean sciences, biological sciences, and the social sciences, among others. Basic research sustains scientific and engineering communities as it generates the critical technical knowledge underpinnings of DoD capabilities. Basic research allows exploration and discovery, yielding disruptive non-incremental advances that can improve or radically change military capabilities, strategy, and operations.

The Basic Research Initiatives program element (PE) supports the defense basic research enterprise in three critical areas: Strategic Support for Basic Research (SSBR), the Minerva Research Initiative (MRI), and the Vannevar Bush Faculty Fellowship (VBFF) Program.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	76.702	62.386	63.847	-	63.847
Current President's Budget	74.115	93.673	71.783	-	71.783
Total Adjustments	-2.587	31.287	7.936	-	7.936
• Congressional General Reductions	-	-0.013			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	31.300			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-2.576	-			
• Program Adjustments	-0.011	-	7.936	-	7.936

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 1: *Basic Research*	**R-1 Program Element (Number/Name)** PE 0601110D8Z / *Basic Research Initiatives*

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2022	FY 2023
Project: 010: *Basic Research Initiatives*		
Congressional Add: *Defense Experimental Program to Stimulate Competitive Research (DEPSCoR)*	19.000	20.000
Congressional Add: *Asymmetric Threat Analysis*	8.000	-
Congressional Add: *Central American Open Source Research Initiative and Coalition*	-	1.300
Congressional Add: *Global Competition Analysis Net Assessment*	-	10.000
Congressional Add Subtotals for Project: 010	27.000	31.300
Project: 016: *Minerva Research Initiative*		
Congressional Add: *Minerva Research Initiative*	10.000	-
Congressional Add Subtotals for Project: 016	10.000	-
Congressional Add Totals for all Projects	37.000	31.300

Change Summary Explanation

The increase of $7.936 million in FY 2024 is comprised of a realignment of $1.389 million to support the Historically Black Colleges and Universities/ Minority Serving Institutions program, which is a priority of the Under Secretary of Defense for Research and Engineering (USD(R&E)), and a realignment of $0.067 million to support departmental priorities. Additionally, this increase includes $2.040 for supporting the new Bush Fellows Research Team (BFRST) (2-year program) and nation-wide, cross-agency and international workshops; an increase of $7.000 will enhance the Vannevar Bush Faculty Fellowship (VBFF) program and expand International Multidisciplinary University Research Initiative/Bilateral Academic Research Initiative (MURI/BARI); and an increase of $0.352 million for economic assumptions.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 1	R-1 Program Element (Number/Name) PE 0601110D8Z / *Basic Research Initiatives*	Project (Number/Name) 010 / *Basic Research Initiatives*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
010: *Basic Research Initiatives*	-	28.267	42.931	6.665	-	6.665	9.220	10.875	12.598	14.196	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Basic Research Initiatives project, Project Code 010, includes Strategic Support for Basic Research (SSBR). SSBR supports oversight, policies, and initiatives to create conditions that allow defense basic research investments to produce high-payoff, transformative scientific breakthroughs for the Department, which can open new approaches of technology dominance and mastery of new domains of warfare. SSBR initiatives support the five Basic Research Office strategic goals: (1) support the modernization priorities set by the Office of the Secretary of Defense (OSD); (2) coordinate and conduct oversight of DoD basic research programs; (3) improve the science and engineering workforce and public outreach; (4) enhance university-industry collaboration; and (5) engage with the academic research community and international partners.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Strategic Support for Basic Research (SSBR)	1.267	4.631	6.665

Description: SSBR supports oversight, policies, and initiatives to create conditions that allow defense basic research investments to produce high-payoff, transformative scientific breakthroughs for the Department, which can open new approaches of technology dominance and mastery of new domains of warfare. SSBR initiatives support the five Basic Research Office strategic goals: (1) support the modernization priorities set by the Office of the Secretary of Defense (OSD); (2) coordinate and conduct oversight of DoD basic research programs; (3) improve the science and engineering workforce and public outreach; (4) enhance university-industry collaboration; and (5) engage with the academic research community and international partners.

FY 2023 Plans:

Continue the Bush Fellows Research Study Team (BFRST) program. Award a new class of fellows according to the critical priorities of the Department. In addition, the Basic Research Office will conduct a series of workshops aimed at generating cross-agency strategies to enhance university-government-industry collaborations, as well as with our international partners.

FY 2024 Plans:

Continue executing the Bush Fellows Research Study Team (BRFST) program to completion in FY 2024. Conduct a series of workshops aimed at generating cross-agency strategies to enhance university-government-industry collaborations, as well as with our international partners. Continue studies of the effectiveness of past DoD investments and high priority basic research in advancing new technologies and new capabilities for the Nation. Continue to analyze university-related business practices for improvement and efficiency and support for scientific expertise to oversee science and engineering initiatives.

FY 2023 to FY 2024 Increase/Decrease Statement:

The increase from FY 2023 and FY 2024 is reflective of an OUSD(R&E) enhancement to the Strategic Support for Basic Research (SSBR) program, supporting the new BFRST (2-year program) and nation-wide, cross-agency and international workshops. The BFRST will provide strategic awareness of DoD mission needs to selected representatives of the U.S. academic community,

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 1	**R-1 Program Element (Number/Name)** PE 0601110D8Z / *Basic Research Initiatives*	**Project (Number/Name)** 010 / *Basic Research Initiatives*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
and facilitate exchange of ideas without filter. This leads to better comprehension and higher DoD relevance of future University research, as well as better leveraging of that community for guidance in determining future S&T directions. The workshops provide opportunities for a broader sample of the academic community to provide this guidance on technological areas, and help OSD assess the scientific trends, in order to determine future technological priorities for the DoD.			
Title: Vannevar Bush Faculty Fellowship (VBFF) Program Increase ***Description:*** The VBFF Program ensures the DoD has a research portfolio that supports highly creative, innovative, and productive university researchers. The objectives of the program are to: (1) support scientific research that may lead to extraordinary outcomes of relevance to the DoD; (2) educate and train students and post-doctoral researchers for the defense and national security workforce; (3) foster long-term relationships between university researchers and the Department; (4) familiarize select university researchers and their students with DoD's current and future challenges through research and engagement with DoD-employed scientists; and (5) increase the number of exceptionally talented technical experts contributing to the DoD's mission. ***FY 2023 Plans:*** The FY 2023 budget will allow for a restoration of a robust and consistent Laboratory University Collaboration Initiative (LUCI) program, which provides opportunities for the S&T workforce in the DoD laboratories to leverage the Vannevar Bush Faculty Fellowship (VBFF) expertise and accelerate the development of new ideas for the DoD mission. The program will extend international partnerships with the initiation of a joint Multidisciplinary University Research Initiative (MURI)-class program, targeted at specific, high-priority scientific topics and partner countries with extraordinary expertise, based on consultation with VBFF fellows. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The FY 2024 funding request of $7.000 million for the VBFF has been administratively realigned to project 060.	-	7.000	-
Accomplishments/Planned Programs Subtotals	1.267	11.631	6.665

	FY 2022	FY 2023
Congressional Add: Defense Experimental Program to Stimulate Competitive Research (DEPSCoR)	19.000	20.000
FY 2022 Accomplishments: Continued and expanded efforts to connect academic researchers in underrepresented states to DoD research problems. The increased funding for DEPSCoR allowed the		

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 1	**R-1 Program Element (Number/Name)** PE 0601110D8Z / *Basic Research Initiatives*	**Project (Number/Name)** 010 / *Basic Research Initiatives*

	FY 2022	FY 2023
Department to reach more universities and researchers capable of performing DoD research, and allowed for more awards for both research collaborations and capacity building opportunities. ***FY 2023 Plans:*** The increased funding will allow the Department to continue to support research collaboration and capacity building awards to academic researchers addressing DoD research problems. It will also allow the Department to increase outreach efforts to university researchers in underrepresented states.		
Congressional Add: Asymmetric Threat Analysis ***FY 2022 Accomplishments:*** The funding increase supported social science research related to asymmetric threats and the collaborative structure established with Assistant Secretary of Defense for Special Operations/ Low-Intensity Conflict (Policy-SO/LIC) and Joint Special Operations University (JSOU)/United States Special Operations Command (SOCOM) to manage research on asymmetric competition, including the support of relevant datasets used widely by the research community studying asymmetric threats. This program will continue through the National Consortium for the Study of Terrorism and Responses to Terrorism (START) at the University of Maryland and its Applied Research Laboratory for Intelligence and Security (ARLIS) University-Affiliated Research Center (UARC).	8.000	-
Congressional Add: Central American Open Source Research Initiative and Coalition ***FY 2023 Plans:*** The OUSD(R&E) Basic Research Office is finalizing a research plan for FY 2023 to set the direction of this funding increase reflecting the intent by Congress.	-	1.300
Congressional Add: Global Competition Analysis Net Assessment ***FY 2023 Plans:*** The OUSD(R&E) Basic Research Office is finalizing a research plan for FY 2023 to set the direction of this funding increase reflecting the intent by Congress.	-	10.000
Congressional Adds Subtotals	27.000	31.300

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 1	R-1 Program Element (Number/Name) PE 0601110D8Z / *Basic Research Initiatives*	Project (Number/Name) 016 / *Minerva Research Initiative*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
016: *Minerva Research Initiative*	-	14.000	17.143	17.013	-	17.013	17.190	17.391	17.682	18.071	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Minerva Research Initiative (MRI) includes three primary components: (1) a university-based social science basic research grant program, funded in partnership with Air Force and Navy University Research Initiatives; (2) the Defense Education and Civilian University Research (DECUR) Partnership program for professional military education (PME) institutions; and (3) a collaboration with the Congressionally-established United States Institute of Peace (USIP) to award research support to advanced graduate students and early career scholars working on security and peace. All components contribute to Minerva's goals of revitalizing connections between the DoD and academic social science communities and building cultural and foreign area knowledge on topics ranging from China-Russia great power competition, National Defense Strategy (NDS) strategic priorities, to geopolitical power projection strategies in a multi-polar world. This deeper scientific understanding will provide a more informed basis to shape doctrine, analysis, and other strategic and operational decisions made by war planners and warfighters.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Minerva Research Initiative (MRI)	4.000	17.143	17.013

Description: The Minerva Research Initiative includes three primary components: (1) a university-based social science basic research grant program, funded in partnership with Air Force and Navy University Research Initiatives; (2) the Defense Education and Civilian University Research (DECUR) Partnership program for professional military education (PME) institutions; and (3) a collaboration with the Congressionally-established USIP to award research support to advanced graduate students and early career scholars working on security and peace. All components contribute to Minerva's goals of revitalizing connections between the DoD and academic social science communities and building cultural and foreign area knowledge on topics ranging from China-Russia great power competition, National Defense Strategy (NDS) strategic priorities, to geopolitical power projection strategies in a multi-polar world. This deeper scientific understanding will provide a more informed basis to shape doctrine, analysis, and other strategic and operational decisions made by war planners and warfighters.

FY 2023 Plans:

With the FY 2023 base budget, Minerva will support research on understanding the social, cultural, behavioral, economic, and political context in which DoD operates. This includes university grants and projects partnering with PME Institutions. Furthermore, the program will continue collaboration with the operational community on all issues for which it has developed expertise among the social science community. It will help implement the DoD plan for social, management, and information sciences as guided by the language in section 220 of the National Defense Authorization Act for FY 2021, and it will continue collaboration with the USIP in supporting advanced doctoral students pursuing research on DoD topics of interest.

FY 2024 Plans:

Plans for FY 2024 are similar in scope to those in FY 2023 and will ensure the sustainment of the university-based social science basic research program, Defense Education and Civilian University Research (DECUR) partnership program, and the

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 1	**R-1 Program Element (Number/Name)** PE 0601110D8Z / *Basic Research Initiatives*	**Project (Number/Name)** 016 / *Minerva Research Initiative*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
congressionally established United States Institute of Peace (USIP) research awards for early career peace and security scholars. In addition, funding will support outreach activities that build trusted networks between the DoD and academic social science communities, and ensure new scientific knowledge is discoverable. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Decrease will result in a minor reduction in scope for the MRI program in FY 2024.			
Accomplishments/Planned Programs Subtotals	4.000	17.143	17.013

	FY 2022	FY 2023
Congressional Add: Minerva Research Initiative	10.000	-
FY 2022 Accomplishments: Increased continuity in social science research and allowed additional focus on social science research in the National Defense Strategy priority areas. Funding allowed for topics other than climate change to be included in the next Minerva solicitation.		
Congressional Adds Subtotals	10.000	-

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 1	R-1 Program Element (Number/Name) PE 0601110D8Z / *Basic Research Initiatives*	Project (Number/Name) 060 / *Vannevar Bush Faculty Fellowship*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
060: *Vannevar Bush Faculty Fellowship*	-	31.848	33.599	48.105	-	48.105	51.343	53.573	55.939	55.888	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Vannevar Bush Faculty Fellowship (VBFF) program supports world-class researchers in scientific areas of critical importance to the DoD and ensures the cultivation of exceptional talent. Fellows' research spans a broad set of emerging scientific areas with transformative potential, including Quantum Information Science, Novel Engineered Materials, Cognitive Neuroscience and human-machine interfaces, Engineering Biology, Applied and Computational Mathematics, Networks, Machine Learning and Artificial Intelligence, Manufacturing Science, and others. The program delivers the most innovative and transformational scientific ideas of relevance to the DoD, from the top scientists in the Nation. The program fosters close connections between academia and the defense science and engineering (S&E) enterprise, a primary goal of Strategic Support for Basic Research (SSBR) efforts. Fellows provide the Department the deep scientific expertise from today's leading research universities and collaborate with defense scientists and engineers. This program actively engages and coordinates basic research across the Department.

The project includes support for the Laboratory-University Collaboration Initiative (LUCI) program, which is designed to team scientists in the DoD laboratories with top academic researchers from the programs sponsored or overseen by the Office of the Secretary of Defense (in particular, the VBFF fellows), in order to collaboratively perform basic research on a topic of their choice. Three-year grants allow a deep exchange of ideas between academic and DoD research communities, bring the most recent scientific breakthroughs closer to DoD relevance, and greatly expand the skills and knowledge of the S&E workforce within the laboratories.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Vannevar Bush Faculty Fellowship (VBFF) Program	31.848	33.599	41.105
Description: The Vannevar Bush Faculty Fellowship (VBFF) Program ensures the DoD has a research portfolio that supports highly creative, innovative, and productive university researchers. The objectives of the program are to: (1) support scientific research that may lead to extraordinary outcomes of relevance to the DoD; (2) educate and train students and post-doctoral researchers for the defense and national security workforce; (3) foster long-term relationships between university researchers and the Department; (4) familiarize select university researchers and their students with DoD's current and future challenges through research and engagement with DoD-employed scientists; and (5) increase the number of exceptionally talented technical experts contributing to the DoD's mission. FY 2022 Accomplishments: Supported 46 Vannevar Bush Fellows and collaborative research efforts with 27 Laboratory-University Collaboration Initiative (LUCI) Fellows from DoD Service Laboratories. Reviewed and updated research topic areas with input from DoD S&T community. Organized and executed a competition to select a new class of Vannevar Bush Fellows. Organized and executed the Vannevar Bush annual meeting, along with science communication training. Organized and conducted site visits to establish communication			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 1	**R-1 Program Element (Number/Name)** PE 0601110D8Z / *Basic Research Initiatives*	**Project (Number/Name)** 060 / *Vannevar Bush Faculty Fellowship*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
with new Vannevar Bush Fellows and explain the program objectives and opportunities. Organized and executed a competition for the LUCI program. Conducted review of LUCI projects in DoD laboratories and reported the scientific progress and impacts. ***FY 2023 Plans:*** Plans for FY 2023 are similar in type to those of FY 2022, but expanded in scope due to the budget increase. As a first priority, the FY 2023 budget will allow restoration of a robust and consistent Laboratory University Collaboration Initiative (LUCI) program (currently, the program can only fund one set of awards every other year), with a class size that is consistent with the program initiation levels and the opportunities provided by the DoD's S&T workforce for innovative and transitional ideas. The second and smaller scope extension allows the funding of a VBFF class size that is also consistent with the number of high-level, highly worthy proposals submitted by world-class investigators at U.S. universities (from 8 to 9 or 10, depending on the quality of proposals). Funding in the amount of $7.000 million will be administratively realigned from project 010 to project 060 in FY 2023 for the Vannevar Bush Faculty Fellowship Program. This funding increase will support the creation of international collaboration programs of University team research, modeled after the MURI, with specific partner nations and for high-priority research areas. ***FY 2024 Plans:*** The FY 2024 budget continues the programs initiated in FY 2023, which will allow for the expansion and acceleration of transition and leverage of scientific expertise towards the DoD mission capability. Funding in the amount of $7.000 million will be administratively realigned from project 010 to project 060 in FY 2024 for the Vannevar Bush Faculty Fellowship Program. This funding increase will support the creation of international collaboration programs of University team research, modeled after the MURI, with specific partner nations and for high-priority research areas. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The increase from FY 2023 and FY 2024 is reflective of an OUSD(R&E) enhancement to the VBFF program, which will continue to support and expand the International Multidisciplinary University Research Initiative (MURI) program, started in FY 2023.			
Title: Research Grant Programs	0.000	-	7.000
Description: Enhance VBFF program and expand International Multidisciplinary University Research Initiative/Bilateral Academic Research Initiative (MURI/BARI) ***FY 2024 Plans:*** This FY 2024 funding will build a comprehensive research program on the development of new mathematical theory and computer science tools for the predictive modeling of complex social behavior at multiple scales. It will create a collaborative academic research program, incorporating multiple disciplines, providing the seed for a new field of science. It follows and builds upon early			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 1	**R-1 Program Element (Number/Name)** PE 0601110D8Z / *Basic Research Initiatives*	**Project (Number/Name)** 060 / *Vannevar Bush Faculty Fellowship*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
exploratory research done under the SOMA program, part of a FY 2020 Congressional Add (Cyber Research). The program will be executed in close collaboration with MINERVA for addressing social science challenges of critical relevance to the DOD. Additionally, these funds will be used to expand the number of LUCI and VBFF fellows and to enhance our international MURI/ BARI engagement. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The increase of $7.000 million in FY 2024 will allow for enhancements to the VBFF by building a comprehensive research program for predictive modeling of complex social behavior, expand the number of VBFF and LUCI fellows and enhance international engagements.			
Accomplishments/Planned Programs Subtotals	31.848	33.599	48.105

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 1: *Basic Research*	**R-1 Program Element (Number/Name)** PE 0601120D8Z / *National Defense Education Program (NDEP)*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	-	140.061	174.347	159.549	-	159.549	171.357	182.008	185.207	188.612	Continuing	Continuing
120: *National Defense Education Program (NDEP)*	-	140.061	174.347	159.549	-	159.549	171.357	182.008	185.207	188.612	Continuing	Continuing

A. Mission Description and Budget Item Justification

This program supports the Department's initiatives to Build Sustainable and Long-Term Advantage and Taking Care of People.

The National Defense Education Program (NDEP): (1) Fosters and enhances the Department of Defense's (DoD) ability to develop and access high-quality science, technology, engineering, and mathematics (STEM) talent vital to national defense, now and in the future; (2) Is executed by the Office of the Under Secretary of Defense for Research and Engineering (OUSD(R&E)); (3) Aligned to the Federal STEM Strategy, the NDEP addresses critical STEM education and talent development challenges using a continuous learning structure and evidence-based approaches; (4) Activities align with the Department's vision of a diverse STEM talent pool readily accessible to serve our Nation and evolve the Department's competitive edge; (5) DoD STEM and NDEP activities engage in assessment and evaluation practices as outlined by the Office of Management and Budget and the Government Accountability Office; and (6) Aligns to the DoD science, technology, engineering, and mathematics (STEM) Strategy in support of the National Defense Strategy and the DoD science and technology (S&T) modernization priorities.

Specifically, the NDEP is part of the broader Department-wide effort under DoD STEM, which works collectively with partners from academia, industry non-profit organizations, defense laboratories, and other government entities to: (1) build strong foundations for STEM literacy; (2) increase diversity, equity, and inclusion in STEM; and (3) prepare the STEM workforce of the future.

NDEP activities further support the DoD STEM effort in providing authentic learning experiences through a variety of education and outreach initiatives in the form of scholarships, internships, enrichment activities, competitions, and mentorships by leveraging partners from industry, academia, and other government organizations with a shared STEM mission. The DoD STEM programs span across all age groups, including kindergarten through twelfth grade (K-12) students and teachers and postsecondary, undergraduate, and graduate students.

The NDEP's portfolio includes: the Science, Mathematics, and Research for Transformation (SMART) program; STEM Education and Outreach efforts including the Defense STEM Education Consortium (DSEC); and specific Congressionally directed programs, to include the Manufacturing Engineering Education Program (MEEP) and broader NDEP funding opportunities in STEM education and workforce development. The SMART program awards highly competitive scholarships-for-service to undergraduate and graduate students in 21 STEM academic disciplines and hires the students, upon graduation, into DoD's workforce. As part of the SMART experience, scholars engage in internships that allow for relevant hands-on research and work experiences in DoD facilities, thereby enhancing their educational experience.

Since its inception as a pilot program in FY 2005, SMART has awarded approximately 4,200 scholarships to students pursuing undergraduate to doctoral studies. To date, nearly 2,800 students have completed their academic pursuit and transitioned into DoD employment with over 1,000 more currently pursuing their SMART-funded

degree. Over 2,000 participants have successfully completed the program through their DoD Service commitment. SMART ensures the Department has a steady infusion of high-quality technical talent, prepared in areas of critical importance to DoD, and ready to apply their technical knowledge, skills, and abilities to fulfill DoD's mission.

The NDEP will continue to support the preparation of dependents of members of the armed forces for careers in STEM as enacted under 10 USC 2192(b) in FY 2020.

STEM education and outreach activities and awardees through NDEP Congressional Adds will continue to engage military connected students in collaboration with the Department of Defense Education Activity (DoDEA).

Additionally, where feasible, NDEP activities will also support the Supporting Veterans in STEM Careers Act, enacted in FY 2020. Science, technology, engineering, and mathematics (STEM) Education and Outreach is a multitude of cohesive and coordinated activities for PreK-16 students, teachers, and schools, especially those for underrepresented and underserved communities, to include military connected students. In March 2019, the Defense STEM Education Consortium (DSEC) was established to facilitate these efforts.

The DSEC is a consortium model approach that leverages a collaborative ecosystem/partnership between academia, industry, not-for-profit organizations, and government that aims to broaden STEM literacy and develop a diverse and agile workforce to power the United States' innovative defense infrastructure. The DSEC is a five-year, $89.000 million investment, which comprises a diverse consortium of program partners and is designed to leverage evidence-based approaches to inspire and develop the U.S. science and technology future workforce. Finally, the DSEC is designed to evolve over time and has built-in Innovation Bloc (IB) funding which allows the consortium to address emerging issues in STEM education and potential gaps within the portfolio.

The DoD consistently seeks innovative scientific and technological solutions to address current and future military requirements. The MEEP will enhance existing, or establish new education programs (or collection of programs), to better position the current and next generation manufacturing workforce to produce military systems and components that assure technological superiority for the Department.

The Biotechnology Education Program (BIOTECH) will establish new educational programs that align with BIOTECH Modernization priorities.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 1: *Basic Research*	**R-1 Program Element (Number/Name)** PE 0601120D8Z / *National Defense Education Program (NDEP)*

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	144.841	132.347	142.716	-	142.716
Current President's Budget	140.061	174.347	159.549	-	159.549
Total Adjustments	-4.780	42.000	16.833	-	16.833
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	42.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-4.758	-			
• Program Adjustments	-0.022	-	16.833	-	16.833

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2022	FY 2023
Project: 120: *National Defense Education Program (NDEP)*		
Congressional Add: *Civics Education*	2.000	-
Congressional Add: *SMART Diversification Activities*	2.000	2.000
Congressional Add: *STEM Programs*	14.000	-
Congressional Add: *Civil Society*	15.000	15.000
Congressional Add: *Manufacturing Engineering Education Program (MEEP)*	-	15.000
Congressional Add: *World Language Advancement and Readiness*	-	10.000
Congressional Add Subtotals for Project: 120	33.000	42.000
Congressional Add Totals for all Projects	33.000	42.000

Change Summary Explanation

FY 2024 funding increase is comprised of a realignment of $3.106 million to support the Historically Black Colleges and Universities/ Minority Serving Institutions program, which is a priority of the Under Secretary of Defense for Research and Engineering (USD(R&E)); $0.149 million to support departmental priorities; increase of $19.300 for workforce development in Science, Mathematics and Research for Transformation (SMART) and $0.788 for economic assumptions.

C. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Workforce Development - Science, Mathematics, and Research for Transformation (SMART) Defense Education Program	84.063	103.900	131.658

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 1: *Basic Research*	**R-1 Program Element (Number/Name)** PE 0601120D8Z / *National Defense Education Program (NDEP)*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Description: Description: SMART is a scholarship-for-service program that provides support to high performing U.S. graduate and undergraduate students in 21 academic science, technology, engineering, and mathematics (STEM) disciplines identified as areas of future workforce priorities for the DoD. The disciplines align with the Department's Science and Technology (S&T) priorities and emerging scientific research areas, such as: Aeronautical and Astronautical Engineering; Biomedical Engineering; Biosciences; Chemical Engineering; Chemistry; Civil Engineering; Cognitive, Neural, and Behavioral Sciences; Computer and Computational Sciences/Computer Engineering; Electrical Engineering; Environmental Sciences; Geosciences; Industrial and Systems Engineering; Information Sciences; Materials Science and Engineering; Mathematics; Mechanical Engineering; Naval Architecture and Ocean Engineering; Nuclear Engineering; Oceanography; Operations Research; and Physics. Upon completion of their degree, students fulfill a service commitment to the Department on a one-to-one payback per year of education funded. Since FY 2005, the SMART program has awarded approximately 3,400 scholarships to scholars engaging with 211 sponsoring facilities across the entire DoD, including the Army, Navy, Air Force and other DoD agencies. Over 90% of the participants have successfully completed, or are on track to complete, both their SMART-funded degree pursuit and their DoD employment agreement. Oversight of the SMART program falls under the purview of Office of the Under Secretary of Defense for Research and Engineering (OUSD(R&E)) with execution at the Component level. Two types of individuals participate in the program: (1) retention scholars who are current DoD employees; and (2) recruitment scholars who are students enrolled in undergraduate and graduate programs and represent new technical expertise for the Department. Internships provide Science, Mathematics, and Research for Transformation (SMART) scholars with an opportunity to engage in the DoD science and technology enterprise through research and work experiences in defense laboratories, thereby enhancing their educational experience and understanding the relevance of DoD research priority areas. ***FY 2023 Plans:*** • Award 350-400 new scholars (projected). • Implement strategic Historically Black Colleges and Universities/ Minority Serving Institutions (HBCU/MI) initiative to increase diversity of the applicant pool and awareness of research and STEM initiatives that meet DoD Component and Laboratory mission needs and the modernization priority areas.			

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 1: *Basic Research*	**R-1 Program Element (Number/Name)** PE 0601120D8Z / *National Defense Education Program (NDEP)*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
• Conduct an annual forum for current and prospective DoD sponsoring facilities (SFs) to highlight SMART program benefits, share best practices, and enhance technical engagement with scholars, HBCU/MIs, and OSD leadership. • Continue to optimize SMART Information Management System (SIMS) to identify process efficiencies in data collection, communication, and virtual engagement with scholars, SFs, SMART Advisory Council, program office and support staff. • Increase SEED research grant awards to scholars who have pursued a PhD through the SMART program and are currently in the service commitment phase of their scholarship. ***FY 2024 Plans:*** • Award 450-500 new scholars (projected). • Continue strategic HBCU/MI initiative to increase diversity of the applicant pool and awareness of research and STEM initiatives that meet DoD Component and Laboratory mission needs and the modernization priority areas. • Conduct an annual forum for current and prospective DoD sponsoring facilities (SFs) to highlight SMART program benefits, share best practices, and enhance technical engagement with scholars, HBCU/MIs, and OSD leadership. • Continue to optimize SMART Information Management System (SIMS) to identify process efficiencies in data collection, communication, and virtual engagement with scholars, SFs, SMART Advisory Council, program office and support staff. • Increase SEED research grant awards to scholars who have pursued a PhD through the Science, Mathematics, and Research for Transformation (SMART) program and are currently in the service commitment phase of their scholarship. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The increase of $27.758 million allows the program to increase the number of scholarships to be awarded in FY 2024 by an additional 150 scholarships which will help meet the DoD's workforce needs. In addition, the increase will allow the program to support upwards of 50 existing and new successful SMART SEED grants allowing PhD scholars during their employment obligation phase, as well as provide opportunities to establish strategic partnerships aimed at broadening diversity among program applicants.			
Title: Science, Technology, Engineering, and Mathematics (STEM) Education and Outreach	20.998	26.447	25.891

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 1: *Basic Research*	**R-1 Program Element (Number/Name)** PE 0601120D8Z / *National Defense Education Program (NDEP)*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Description: The STEM Education and Outreach activities provides learners and educators across the pre-K to 16+ continuum unique experiences aimed to inspire, cultivate, and develop exceptional STEM talent poised to tackle evolving defense technological challenges. In order to build a workforce that solves national defense needs and challenges, the DoD recognizes the necessity for increased participation of underserved groups in STEM activities and education programs. Investments are made to promote participation in national-level STEM programs and initiatives and provide authentic learning experiences for students and teachers across the globe. STEM Education and Outreach activities are aligned to the Department's STEM Strategic Plan, support the Federal STEM Education Strategic Plan, and enable the Department to have enduring access to STEM talent, now and into the future. ***FY 2023 Plans:*** • Continue to provide STEM Education and Outreach activities with emphasis on authentic hands-on experiences to students and teachers and evaluate the effectiveness of the increased outreach. • Continue to leverage Defense STEM Education Consortium (DSEC) partnerships, STEM ecosystems, and other government partnerships to amplify awareness and broaden reach. • Continue to participate in inter- and intra-departmental collaboration with stakeholders to achieve Federal and DoD STEM objectives. • Continue to expand the experience of DoD supported STEM education and outreach opportunities to reach all populations, through consideration of the barriers faced by underserved and underrepresented populations. • Publish a five-year report on establishing baseline metrics and reporting on EAC efforts across the Department. ***FY 2024 Plans:*** • Continue to provide STEM Education and Outreach activities with emphasis on authentic hands-on experiences to students and teachers and evaluate the effectiveness of the increased outreach. • Continue to leverage Defense STEM Education Consortium (DSEC) partnerships, STEM ecosystems, and other government partnerships to amplify awareness and broaden reach.			

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 1: *Basic Research*	**R-1 Program Element (Number/Name)** PE 0601120D8Z / *National Defense Education Program (NDEP)*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
• Continue to participate in inter- and intra-departmental collaboration with stakeholders to achieve Federal and DoD STEM objectives. • Continue the experience of DoD supported STEM education and outreach opportunities to reach all populations, through consideration of the barriers faced by underserved and underrepresented populations. • Publish a five-year report on establishing baseline metrics and reporting on EAC efforts across the Department. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The decrease of $0.556 million is due to an anticipated reduction in contract support costs.			
Title: Biotechnology (BIOTECH) Education Program ***Description:*** In order to build a Biotechnology Education Program (BIOTECH) workforce that solves national defense needs and challenges, the DoD recognizes the importance of supporting domestic programs that motivate young people to pursue education and career opportunities in biotechnology. ***FY 2023 Plans:*** Support DoD and Federal Science, Technology, Engineering, and Mathematics (STEM) Education Strategy and Department's Biotechnology (BIOTECH) Roadmap in building biotechnology literacy, diversity and inclusion, and developing the future biotech workforce. ***FY 2024 Plans:*** Support DoD and Federal STEM Education Strategy and Department's BIOTECH Roadmap in building biotechnology literacy, diversity and inclusion, and developing the future biotech workforce. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** No change for FY 2024.	2.000	2.000	2.000
Accomplishments/Planned Programs Subtotals	107.061	132.347	159.549

	FY 2022	FY 2023
Congressional Add: Civics Education	2.000	-
FY 2022 Accomplishments: Section 234 of the National Defense Authorization Act (NDAA) for FY 2020 established a pilot program to enhance educational offerings that address critical thinking and media literacy;		

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 1: *Basic Research*	**R-1 Program Element (Number/Name)** PE 0601120D8Z / *National Defense Education Program (NDEP)*

	FY 2022	FY 2023
voting and other forms of political and civic engagement; understanding the U.S. law, history, and Government; and interest in employment and careers in public service. Funding was applied to outreach activities to amplify the public's awareness of Science, Technology, Engineering, and Mathematics (STEM) careers in the Department.		
Congressional Add: SMART Diversification Activities ***FY 2022 Accomplishments:*** The program increase will support the requirements of Sections 242 and 250 of the NDAA for FY 2021 and the Department's strategic goals in Diversity, Equity, Inclusion, and Accessibility. Funding was used to increase the number of scholarship awards, establish incentivized strategic recruiting partnerships with Historically Black Colleges and Universities/ Minority Serving Institutions (HBCU/MI) and affinity groups, and/or support new program initiatives to support underrepresented scholars during their service commitment phase. These efforts lend to the Science, Mathematics, and Research for Transformation (SMART) Program's strategic goal of diversifying the applicant and award pools, which will ultimately diversify the Department's technical talent needed to address critical technologies now and in the future. ***FY 2023 Plans:*** The program will continue to support the requirements of Sections 242 and 250 of the FY 2021 NDAA and the Department's strategic goals in Diversity, Equity, Inclusion, and Accessibility. Funding will be executed under the SMART cooperative agreement award to increase the number of scholarship awards, establish incentivized strategic partnerships with HBCU/MIs and affinity groups, and/or support new program initiatives to support historically underrepresented scholars during their service commitment phase. These efforts lend to the SMART Program's strategic goal of diversifying the applicant and award pools, which will ultimately diversify the Department's technical talent needed to address critical technologies now and in the future.	2.000	2.000
Congressional Add: STEM Programs ***FY 2022 Accomplishments:*** Pursued projects in partnership with organizations with an established history of providing scholarships to students pursuing an education in these fields.	14.000	-
Congressional Add: Civil Society	15.000	15.000

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 1: *Basic Research*	**R-1 Program Element (Number/Name)** PE 0601120D8Z / *National Defense Education Program (NDEP)*

	FY 2022	FY 2023
FY 2022 Accomplishments: Identified and worked with universities with ethics and public affairs programs to promote civil society education and outreach, including among military and non-military communities. ***FY 2023 Plans:*** Publish an open competition under the NDEP Broad Agency Announcement to identify, award, and work with universities with ethics and public affairs programs to promote civil society education and outreach, including among military and non-military communities.		
Congressional Add: Manufacturing Engineering Education Program (MEEP) ***FY 2023 Plans:*** Publish an open competition under the NDEP Broad Agency Announcement to identify, award, and work with academia, industry, not-for-profit organization, local and/or state educational agencies to enhance existing programs in manufacturing engineering education to further the mission of the department; or the establishment of new programs in manufacturing engineering education as described under 10 U.S. Code 4843. Coordinate with DoD Manufacturing Technology Program's Education and Workforce Development, and the DoD Industrial Base Analysis and Sustainment.	-	15.000
Congressional Add: World Language Advancement and Readiness ***FY 2023 Plans:*** Subject effort will be re-allocated to the Department of Defense Education Activity (DoDEA). DoDEA has executed World Language grants in 2019 upon enactment of the World Language Advancement and Readiness Act.	-	10.000
Congressional Adds Subtotals	33.000	42.000

D. Other Program Funding Summary ($ in Millions)

N/A

Remarks

E. Acquisition Strategy

N/A

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 1: *Basic Research*	**R-1 Program Element (Number/Name)** PE 0601228D8Z *I Historically Black Colleges and Universities and Minority-Serving Institutions*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	-	96.277	100.500	100.467	-	100.467	100.596	100.720	100.817	100.918	Continuing	Continuing
448: *Historically Black Colleges and Universities and Minority-Serving Institutions*	-	96.277	100.500	100.467	-	100.467	100.596	100.720	100.817	100.918	Continuing	Continuing

Note

New Start (Y/N): N

A. Mission Description and Budget Item Justification

The Historically Black Colleges and Universities and Minority-Serving Institutions (HBCU/MI) program provides support in fields of science and engineering that are important to national defense. The Department of Defense (DoD) HBCU/MI Program encourages participation of small minority schools and large minority research institutions. The program is authorized by 10 U.S.C. § 4144. This competitive program provides support through grants, cooperative agreements, or contracts for research, education assistance, and instrumentation purchases.

Work in this program provides a foundation to enhance participation of HBCUs/MIs in DoD research. Programs are structured to: build infrastructure; strengthen research and educational opportunities at HBCUs/MIs and increase the number of minority graduates in the science, technology, engineering, and mathematics (STEM) disciplines; and build a more diverse pool of scientists and engineers to meet future workforce needs.

The program includes funding for Centers of Excellence (COEs) established at HBCUs/MIs to focus on DoD science and technology priorities. Centers currently funded through cooperative agreements include Minority Women in STEM, Quantum Science, Fully Networked C4, Artificial Intelligence/Machine Learning, Aerospace, Biotechnology, and Materials Science. The Centers are administered by the Army Research Laboratory.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 1: *Basic Research*	**R-1 Program Element (Number/Name)** PE 0601228D8Z *I Historically Black Colleges and Universities and Minority-Serving Institutions*

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	99.902	33.288	34.300	-	34.300
Current President's Budget	96.277	100.500	100.467	-	100.467
Total Adjustments	-3.625	67.212	66.167	-	66.167
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	67.212			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-3.610	-			
• Program Adjustments	-0.015	-	66.167	-	66.167

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2022	FY 2023
Project: 448: *Historically Black Colleges and Universities and Minority-Serving Institutions*		
Congressional Add: *HBCU/MI Program Increase*	68.864	66.712
Congressional Add: *Integrated Research and Training in Artificial Intelligence and Machine Learning for ROTC Students*	-	0.500
Congressional Add Subtotals for Project: 448	68.864	67.212
Congressional Add Totals for all Projects	68.864	67.212

Change Summary Explanation

The FY 2024 increase of $66.167 million will allow for more grants to be awarded, to augment research activities and to elevate HBCU/MI research portfolios in achieving R-1 status on the Carnegie Classification scale, increase STEM opportunities, collaboration, and training for HBCU/MI scholars to advance their skills in DoD critical technology areas. In addition, it will allow for greater HBCU/MI involvement in defense research activities and promote the advancement of research and development capabilities at HBCUs/MIs.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 1	R-1 Program Element (Number/Name) PE 0601228D8Z / *Historically Black Colleges and Universities and Minority-Serving Institutions*	Project (Number/Name) 448 / *Historically Black Colleges and Universities and Minority-Serving Institutions*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
448: *Historically Black Colleges and Universities and Minority-Serving Institutions*	-	96.277	100.500	100.467	-	100.467	100.596	100.720	100.817	100.918	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Historically Black Colleges and Universities and Minority-Serving Institutions (HBCU/MI) program provides support in fields of science and engineering that are important to national defense. The Department of Defense (DoD) HBCU/MI Program encourages participation of small minority schools and large minority research institutions. The program is authorized by 10 U.S.C. § 4144. This competitive program provides support through grants or contracts for research, education assistance, instrumentation purchases, and technical assistance as described below.

• Research: The research grants further knowledge in the basic scientific disciplines through theoretical and experimental activities. Collaborative research allows university professors to work directly with military laboratories or other universities.

• Education: Education assistance funds are used by minority institutions to strengthen their academic programs in science, technology, engineering, and mathematics (STEM), thereby increasing the number of under-represented minorities obtaining undergraduate and graduate degrees in these fields. These grants provide equipment, scholarships, cooperative work/study opportunities, visiting faculty programs, summer internship programs, and a variety of other enhancements designed to support students and to encourage them to pursue careers in STEM.

• Instrumentation purchases: The program allows universities to purchase basic laboratory equipment, such as lasers and spectrometers, for enhancements to the basic research efforts.

• Technical assistance: The funds are used to design programs that enhance the ability of minority institutions to successfully compete for future Defense funding by assisting the HBCU/MI community in areas such as proposal writing and administration of grants and contracts.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Historically Black Colleges and Universities and Minority-Serving Institutions (HBCU/MI)	27.413	33.288	100.467
Description: The HBCU/MI program provides support for research, education, and collaboration with DoD facilities and personnel. The research grants further knowledge in the basic scientific and engineering disciplines through theoretical and empirical activities. Collaborative research allows university professors to work directly with DoD laboratories or other universities.			
FY 2023 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 1	**R-1 Program Element (Number/Name)** PE 0601228D8Z / *Historically Black Colleges and Universities and Minority-Serving Institutions*	**Project (Number/Name)** 448 / *Historically Black Colleges and Universities and Minority-Serving Institutions*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Conduct annual competition of the HBCU/MI program for basic research, student support, and/or equipment/instrumentation. Continue research and educational collaboration with the DoD laboratories. Continue the summer internship and faculty fellowship programs. Continue Centers of Excellence in support of the USD(R&E) critical technology areas and the National Defense Strategy in the areas needed to expand STEM opportunities for underrepresented minorities. Conduct annual review of the Centers. Conduct outreach activities, to include one webinar and two technical assistance workshops to expose HBCUs/MIs to opportunities in the DoD. Maintain minority STEM recruitment efforts in partnership with the Science, Mathematics and Research for Transformation (SMART) Scholarship for Service Program as encouraged by Section 250 in the FY 2021 National Defense Authorization Act (NDAA). Continue support of HBCU/MI Pilot Initiative with the SMART Scholarship Program to develop and train the next generation of STEM leaders. Encourage HBCU/MI students to apply for SMART scholarships through targeted outreach including joint webinars focused on fostering a community of diversity and the STEM workforce. Continue to examine recommendations provided by the National Academies of Sciences, Engineering, and Medicine in the report to Congress on defense research at HBCUs and other MIs as required by Section 262 of the FY 2020 NDAA.			
FY 2024 Plans: Conduct annual competition of the HBCU/MI program for basic research, student support, and/or equipment/instrumentation. Continue research and educational collaboration with the DoD laboratories. Continue the summer internship and faculty fellowship programs. Continue Centers of Excellence in support of the USD(R&E) critical technology areas and the National Defense Strategy in the areas needed to expand STEM opportunities for underrepresented minorities. Conduct annual review of the Centers. Conduct outreach activities, to include one webinar and two technical assistance workshops to expose HBCUs/MIs to opportunities in the DoD. Maintain minority STEM recruitment efforts in partnership with the Science, Mathematics and Research for Transformation (SMART) Scholarship for Service Program as encouraged by Section 250 of the National Defense Authorization Act (NDAA) for FY 2021. Continue support of HBCU/MI Pilot Initiative with the SMART Scholarship Program to develop and train the next generation of STEM leaders. Encourage HBCU/MI students to apply for SMART scholarships through targeted outreach including joint webinars focused on fostering a community of diversity and the STEM workforce. Continue to examine recommendations provided by the National Academies of Sciences, Engineering, and Medicine (NASEM) in the report to Congress on defense research at HBCUs and other MIs as required by Section 262 of the NDAA for FY 2020. Support efforts for R-2 HBCUs/MIs with high potential to elevate research activity in science and engineering disciplines critical to the national security functions of DoD and attain R-1 status on the Carnegie Classification scale. Collaborate with the Air Force for the establishment of the first HBCU university affiliated research center in tactical autonomy to foster HBCU R-1 Research Classification and generate STEM scholar interest in DoD science and technology priorities. Collaborate with the Office of Naval Research (ONR) on STEM, education, and workforce programs to diversify the available pool of scientists and engineers available to DoD in critical technology areas. Team with ONR to expand fellowship programs that engage HBCU/MI faculty in DoD research, including both the 10-week Summer Fellows program and the Distinguished Fellows Program supporting			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 1	**R-1 Program Element (Number/Name)** PE 0601228D8Z / *Historically Black Colleges and Universities and Minority-Serving Institutions*	**Project (Number/Name)** 448 / *Historically Black Colleges and Universities and Minority-Serving Institutions*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
appointments ranging from one semester to one year. Collaborate with the Air Force Research Laboratory Minority Leaders Program to assist HBCUs/MIs in developing both the research and contracting skills necessary to compete for DoD research opportunities. Issue two discrete funding opportunities for basic research awards and equipment awards to increase research and educational capability of HBCUs/MIs. Expand the HBCU/MI internship program to increase basic research ecosystem of additional underrepresented minorities pursuing STEM disciplines important to national defense. Provide funding supplement to the multidisciplinary university research initiative (MURI) program specifically for HBCU/MI participation in defense research and to strengthen collaboration between university teams proposing MURI projects. Establish a center of excellence focusing on DoD S&T critical technology area to strengthen HBCU/MI involvement in defense research activities. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The increase of $67.179 million from FY 2023 to FY 2024 will allow for greater HBCU/MI involvement in defense research activities and to promote the advancement of research and development capabilities at HBCUs/MIs. Funding will be used to advance the research and development capabilities of HBCUs/MIs by increasing the number of grants from approximately 60 to 120 awards. Funding will allow greater expansion of research activity and elevate HBCU/MI research portfolios in achieving R-1 status on the Carnegie Classification scale. In addition, funding will expand STEM opportunities, collaboration, and training for HBCU/MI scholars to advance skills in DoD critical technology areas.			
Accomplishments/Planned Programs Subtotals	27.413	33.288	100.467

	FY 2022	FY 2023
Congressional Add: HBCU/MI Program Increase	68.864	66.712
FY 2022 Accomplishments: Awarded 60 equipment and instrumentation awards to HBCUs/MIs totaling $28.5 million. Invested $27 million to three HBCUs to elevate research activity in science and engineering disciplines and to facilitate growth to reach R-1 status on the Carnegie Classification scale. Placed 52 interns at 10 defense laboratories as well as OSD organizations, to receive hands-on research experiences and foster interest in DoD careers. Hosted an HBCU/MI technical assistance workshop at Durham, North Carolina. Conducted STEM Town Halls in collaboration with the National Academies of Sciences, Engineering, and Medicine. Conducted joint webinars for Science, Mathematics and Research for Transformation (SMART) scholarship program and HBCU/MI Program with participation by HBCU/MI scholars: 'Fostering a Community of Diversity'. Supported the Office of Naval Research (ONR) Distinguished Faculty Fellows. Supported the Air Force Research Laboratory		

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 1	**R-1 Program Element (Number/Name)** PE 0601228D8Z / *Historically Black Colleges and Universities and Minority-Serving Institutions*	**Project (Number/Name)** 448 / *Historically Black Colleges and Universities and Minority-Serving Institutions*

	FY 2022	FY 2023
Minority Leaders Program. Supported the Air Force program to establish a university affiliated research center (UARC) for tactical autonomy at an HBCU.		
FY 2023 Plans: Issue two discrete funding opportunities for basic research awards and equipment awards to increase research and educational capability of HBCUs/MIs. Continue research and educational collaboration with the DoD laboratories. Continue the summer internship and faculty fellowship programs. Continue Centers of Excellence in support of the USD(R&E) critical technology areas and the National Defense Strategy in the areas needed to expand STEM opportunities for underrepresented minorities. Conduct annual review of the Centers. Conduct outreach activities, to include one webinar and two technical assistance workshops to expose HBCUs/MIs to opportunities in the DoD. Maintain minority STEM recruitment efforts in partnership with the Science, Mathematics and Research for Transformation (SMART) Scholarship for Service Program as encouraged by Section 250 of the NDAA for FY 2021. Continue support of HBCU/MI Pilot Initiative with the SMART Scholarship Program to develop and train the next generation of STEM leaders. Encourage HBCU/MI students to apply for SMART scholarships through targeted outreach including joint webinars focused on fostering a community of diversity and the STEM workforce. Continue to examine recommendations provided by the National Academies of Sciences, Engineering, and Medicine (NASEM) in the report to Congress on defense research at HBCUs and other MIs as required by Section 262 of the NDAA for FY 2020. Continue efforts for R-2 HBCUs/MIs with high potential to elevate research activity in science and engineering disciplines critical to the national security functions of DoD and attain R-1 status on the Carnegie Classification scale. Continue collaboration with the Air Force for the establishment of the first HBCU university affiliated research center (UARC) in tactical autonomy to foster HBCU R-1 Research Classification and generate STEM scholar interest in DoD science and technology priorities. Collaborate with the Office of Naval Research (ONR) on STEM, education, and workforce programs to diversify the available pool of scientists and engineers available to DoD in critical technology areas. Team with ONR to expand fellowship programs that engage HBCU/MI faculty in DoD research, including both the 10-week Summer Fellows program and the Distinguished Fellows Program supporting appointments ranging from one semester to one year. Continue to collaborate with the Air Force Research Laboratory Minority Leaders Program to assist HBCUs/MIs in developing both the research and contracting skills necessary to compete for DoD research opportunities. Expand the HBCU/MI internship program to increase basic research ecosystem of additional underrepresented minorities pursuing STEM disciplines important to national defense. Provide funding supplement to the multidisciplinary university research initiative (MURI) program specifically for HBCU/MI participation in defense research and to strengthen		

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 1	**R-1 Program Element (Number/Name)** PE 0601228D8Z / *Historically Black Colleges and Universities and Minority-Serving Institutions*	**Project (Number/Name)** 448 / *Historically Black Colleges and Universities and Minority-Serving Institutions*

	FY 2022	FY 2023
collaboration between university teams proposing MURI projects. Establish centers of excellence focusing on DoD S&T critical technology areas to strengthen HBCU/MI involvement in defense research activities.		
Congressional Add: Integrated Research and Training in Artificial Intelligence and Machine Learning for ROTC Students ***FY 2023 Plans:*** Funding will be used to increase STEM opportunities, collaboration, and training for HBCU/MI ROTC scholars to advance their skills in DoD critical technology areas. Funding will be used to increase ROTC students' research and training in AI/ML supporting the research activity at the Center of Excellence (COE) in Big Data Analytics established at Prairie View A&M University as stipulated in the Division C Defense Appropriations (requested by Rep. Michael McCaul (R-TX)). The execution is aligned with the objectives of the Big Data COE to increase students' competency in big data and AI/ML disciplines. The funding is consistent with DoD's continued partnership with the COE and the Department's goal of diversifying STEM education and workforce initiatives.	-	0.500
Congressional Adds Subtotals	68.864	67.212

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 2: *Applied Research*	**R-1 Program Element (Number/Name)** PE 0602000D8Z / *Joint Munitions Technology*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	-	20.309	22.961	19.157	-	19.157	19.530	19.955	20.373	20.816	Continuing	Continuing
076: *Enhanced Munitions*	-	20.309	22.961	19.157	-	19.157	19.530	19.955	20.373	20.816	Continuing	Continuing

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

This program supports the Department's initiatives to Deter Aggression, Defend the Homeland, and Build Sustainable and Long-Term Advantage.

This program conducts cross-cutting, foundational research improving the lethality, range, reliability, safety, survivability, and effectiveness of kinetic weapon systems to rapidly advance U.S. capabilities necessary for the Joint Fight. The program technology objectives include: high-speed weapon delivery, longer range precision effects, networked and collaborative systems of systems, agility at the engagement level, increased capacity / affordable munitions, survivability during delivery and target engagement, and open systems architecture. The program develops enabling technologies specific to kinetic weapon munitions (warheads, propulsion, advanced lethality mechanisms, state of the art fuzing technologies, and pioneering targeting technologies) from a Joint Service, multi-domain perspective, thus maximizing efficiencies and ensuring the development of technologies with the broadest applicability to ensure good stewardship of taxpayer dollars.

In order to maintain superior power protection capabilities against near peer adversaries, there is an urgent need to provide U.S. warfighters with augmented or new capabilities to ensure technical superiority. The program follows a threat/opportunity analysis to develop kinetic capabilities that enable scenario-based effects from a Joint Fight perspective by exploring technological advances that are beyond Service investment risk acceptance and target asymmetric advantage. The goal is to enable military dominance to ensure effective deterrence of adversary aggression.

The program will invest in technologies that will enable U.S. warfighters to maintain or regain operational and battlefield advantages that technologies can provide through increased performance, range, and lethality to improve the Joint Force military advantages and build a more lethal force across air, land and sea contested domains. This program's investment portfolio has been aligned to complement and utilize the Department's priority technology areas.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 2: *Applied Research*	**R-1 Program Element (Number/Name)** PE 0602000D8Z / *Joint Munitions Technology*

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	20.529	18.961	19.493	-	19.493
Current President's Budget	20.309	22.961	19.157	-	19.157
Total Adjustments	-0.220	4.000	-0.336	-	-0.336
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	4.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.217	-			
• Program Adjustments	-0.003	-	-0.336	-	-0.336

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2022	FY 2023
Project: 076: *Enhanced Munitions*		
Congressional Add: *Next Generation Explosives and Propellants*	1.000	2.000
Congressional Add: *Energetics Manufacturing Technology*	-	2.000
Congressional Add Subtotals for Project: 076	1.000	4.000
Congressional Add Totals for all Projects	1.000	4.000

Change Summary Explanation

The FY 2024 reduction of $0.336 million is comprised of a realignment of $0.424 million to support the Historically Black Colleges Universities/Minority Serving Institutions program, which is a priority of the Under Secretary of Defense for Research and Engineering (USD(R&E)), $0.020 million to support departmental priorities and an increase of $0.108 million for economic assumptions.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 2	R-1 Program Element (Number/Name) PE 0602000D8Z / *Joint Munitions Technology*	Project (Number/Name) 076 / *Enhanced Munitions*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
076: *Enhanced Munitions*	-	20.309	22.961	19.157	-	19.157	19.530	19.955	20.373	20.816	Continuing	Continuing

A. Mission Description and Budget Item Justification

The enhanced munitions effort investigates and develops advanced energetics concepts and explosive and propellant materials to improve the performance, range, speed, and lethality of weapons. Technologies and concepts developed will have the potential to impact multiple munitions types with wide applicability to improve the performance, lethality, speed, range, and survivability of weapons to ensure the U.S. is not outgunned and outranged on the battlefield of the future.

The Joint Enhanced Munition Technology Program (JEMTP) exploits technology developments, such as hypersonics, machine learning, artificial intelligence, quantum computing, and to accelerate their application to enable next generation kinetic weapons capabilities in the areas of energetic materials, advanced propulsion, warhead effects, enabling fuze technologies, and pioneering targeting technologies with a specific focus on enhancing kinetic weapons lethality, range and resultant effects. The program informs technology investments with broad applicability across the Department. Investments will be informed by a threat-opportunity based analysis that focuses on developing weapons systems that exploit technology dominance to ensure military objectives in Joint Force campaign and operational scenarios. New technology roadmaps for the Joint munition technical areas will guide investments consistent with the National Defense Strategy and inform Service technology investments.

In FY 2022, the Joint Fuze Technology Program (JFTP) and JEMTP merged and the program scope expanded to exploit technology developments, such as hypersonics, machine learning, artificial intelligence, quantum computing, and to accelerate their application to enable next generation kinetic weapons capabilities in the areas of energetic materials , advanced propulsion, warhead effects, enabling fuze technologies, and pioneering targeting technologies with a specific focus on enhancing kinetic weapons lethality, range and resultant effects. The program will retain tri-Service leadership to inform technology investments accelerating development across the Department. Investments will be informed by a threat-opportunity based analysis that focuses on developing weapons systems that exploit technology dominance to ensure military objectives in Joint Force campaign scenarios. New technology roadmaps for munition technical areas will guide investments consistent with the National Defense Strategy and inform Service technology investments.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Enhanced Munitions	19.309	18.961	19.157
Description: Enhanced Munitions enabling technologies focus on the following key areas: - Munitions Versatility: Combined and Collaborative Kinetic Effects - Munitions Readiness: Modularity, Advanced Manufacturing and Materials - Munitions Efficiency: Weapon Survivability - Munitions Effectiveness - Munitions Kinetic and Tailorable Lethality Effects • Propulsion Systems			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 2	**R-1 Program Element (Number/Name)** PE 0602000D8Z / *Joint Munitions Technology*	**Project (Number/Name)** 076 / *Enhanced Munitions*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
• Target Detection and Burst Point Control ***FY 2023 Plans:*** - Complete novel propellant testing and validate data to modelling and simulation results. - Finalize prototype novel missile low erosion nozzle design and conduct testing in realistic temperature regimes. - Complete characterization of novel new explosive material and formulate with novel metal fuels, to start down-selection process of formulations to enable fabrication of mid-scale samples for testing. - Complete End-to-End machine learning radar with significant improvement in Electronic Countermeasure Resistance by completing laboratory prototyping with a software defined radio and RF simulator. - Initiate machine learning based target detection design based on algorithm and database option exploration for high speed weapon fuzing. - Demonstrate target detection research with evaluation of implemented solution to determine effectiveness of enhanced technology for survivability and precise trigger timing to enhance lethality. ***FY 2024 Plans:*** - Complete rotating detonation engine enabling technology research though static firing test and transition this long range propulsion technology into advanced development. - Develop advanced propulsion solid fuels, thrust control technologies, variable nozzle technologies that will enhance U.S. missile range, speed and maneuverability. - Continue development of machine learning based target detection technologies to enhance lethality with focus on maritime targets. - Investigate advanced munitions energetics and non-energetics materials using novel and agile processing technologies for enhanced performance and survivability future weapons. - Improve energetic materials production and processing technologies to bolster supply chain and diversify energetic systems industrial base. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The increase between FY 2023 and FY 2024 of $0.196 reflects changes for economic assumptions.			
Accomplishments/Planned Programs Subtotals	19.309	18.961	19.157

	FY 2022	FY 2023
Congressional Add: Next Generation Explosives and Propellants	1.000	2.000
FY 2022 Accomplishments: Explosives and propellants are crucial to address U.S. Forces capability needs for enhancing weapon lethality, range and speed against advanced adversary threats. Program increase was used		

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 2	**R-1 Program Element (Number/Name)** PE 0602000D8Z / *Joint Munitions Technology*	**Project (Number/Name)** 076 / *Enhanced Munitions*

	FY 2022	FY 2023
to accelerate Joint Enhanced Munitions Technology Program efforts for advanced explosives and propellants to enhance Joint Force munitions effectiveness and readiness and support future warfighting needs across all domains. ***FY 2023 Plans:*** The Next Generation Explosives and Propellants project increase develops advanced energetic ingredients and consolidation methods at Virginia Polytechnic Institute & State University (Virginia Tech).		
Congressional Add: Energetics Manufacturing Technology ***FY 2023 Plans:*** The energetics manufacturing technology program increase will focus on maturing advanced manufacturing concepts that enable improvements in energetics manufacturing quality and capacity to bolster supply chain and diversify energetic systems industrial base and ultimately develop munitions with increase range and performance.	-	2.000
Congressional Adds Subtotals	1.000	4.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 2: *Applied Research*	**R-1 Program Element (Number/Name)** PE 0602128D8Z / *Promotion and Protection Strategies*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	-	0.000	3.275	3.219	-	3.219	3.217	3.219	3.221	3.292	Continuing	Continuing
231: *Promotion and Protection Strategies*	-	0.000	3.275	3.219	-	3.219	3.217	3.219	3.221	3.292	Continuing	Continuing

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

The Promotion and Protection Strategies program executes activities providing visibility, fostering partnerships, incentivizing industry transition partners, and supporting developmental ecosystem as a nucleus of defense industrial base for biotechnology.

For the Manufacturing Enabled by Modular Bioindustrial and Reusable (MEMBR) assets initiative, the program will bring together the Acquisition (e.g., Program Executive Officers, Program Managers, technology warrant officers, etc.), Policy, and Research and Engineering communities to establish a Biotechnology Acquisition and Investment Coordination Effort (BAICE). The BAICE will ensure integration of innovative biomanufactured products into DoD's systems and platforms through

The BAICE will create the Department's first coordinating body at DoD to centralize acquisition efforts for biotechnology. By providing visibility, fostering partnerships across DoD, and incentivizing industry transition partners, the BAICE will support a developmental ecosystem in which new technologies are not only pushed to higher budget activities from lower ones, but where personnel and industry partners at higher budget activities pull on technologies being developed at lower ones. This will serve as the nucleus of a defense industrial base for biotechnology that delivers innovative biomanufactured products into DoD's systems and platforms.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	0.000	3.275	3.275	-	3.275
Current President's Budget	0.000	3.275	3.219	-	3.219
Total Adjustments	0.000	0.000	-0.056	-	-0.056
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	-	-	-0.056	-	-0.056

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 2: *Applied Research*	**R-1 Program Element (Number/Name)** PE 0602128D8Z / *Promotion and Protection Strategies*

Change Summary Explanation

The FY 2024 reduction of $0.056 million is comprised of a realignment of $0.071 million to support the Historically Black Colleges and Universities/Minority Serving Institutions program, which is a priority of the Under Secretary of Defense for Research and Engineering (USD(R&E)), $0.003 million to support departmental priorities and an increase of $0.018 million for economic assumptions.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 2	R-1 Program Element (Number/Name) PE 0602128D8Z / *Promotion and Protection Strategies*	Project (Number/Name) 231 / *Promotion and Protection Strategies*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
231: *Promotion and Protection Strategies*	-	0.000	3.275	3.219	-	3.219	3.217	3.219	3.221	3.292	Continuing	Continuing

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

The Promotion and Protection Strategies program executes activities providing visibility, fostering partnerships, incentivizing industry transition partners, and supporting developmental ecosystem as a nucleus of defense industrial base for biotechnology.

For the Manufacturing Enabled by Modular Bioindustrial and Reusable (MEMBR) assets initiative, the program will bring together the Acquisition (e.g., Program Executive Officers, Program Managers, technology warrant officers, etc.), Policy, and Research and Engineering communities to establish a Biotechnology Acquisition and Investment Coordination Effort (BAICE). The BAICE will ensure integration of innovative biomanufactured products into DoD's systems and platforms through holistic acquisition and investment strategies.

The BAICE will create the Department's first coordinating body to centralize acquisition efforts for biotechnology. By providing visibility, fostering partnerships across DoD, and incentivizing industry transition partners, the BAICE will support a developmental ecosystem in which new technologies are not only pushed to higher budget activities from lower ones, but where personnel and industry partners at higher budget activities pull on technologies being developed at lower ones. This will serve as the nucleus of a defense industrial base for biotechnology that delivers innovative biomanufactured products into DoD's systems and platforms.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Biotechnology Acquisition and Investment Coordination Effort (BAICE)	-	3.275	3.219
Description: Ensure integration of biomanufactured products into DoD's systems and platforms through acquisition and investment. ***FY 2023 Plans:*** • Establish strategies to build new pilot/industrial scale manufacturing facilities with an innovation center incorporated to facilitate partnership with DoD and exploit collaboration opportunities with our allies. • Integrate stakeholders and align the Service and USG requirements with the development and manufacturing of bioproducts; identify capability gaps and opportunities for bioproducts to meet military requirements. • Evaluate current acquisition pathways, including integration of new technology through primes/integrators and/or DoD acquisition programs; and propose policy guidelines to better enable acquisition and sustainment.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 2	**R-1 Program Element (Number/Name)** PE 0602128D8Z / *Promotion and Protection Strategies*	**Project (Number/Name)** 231 / *Promotion and Protection Strategies*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
• Develop and execute pilot programs (e.g. demo days, etc.) to test identified acquisition pathways and incentivize industry to integrate bioproducts into the supply chain. ***FY 2024 Plans:*** • Test identified acquisition pathways to incentivize industry and prime defense contractors to integrate bioproducts into the DoD supply chain. • Continue to identify capability gaps and opportunities for bioproducts to meet military requirements. • Partner with BioMADE to implement the strategy of building new pilot/industrial scale manufacturing facilities with an innovation center incorporated to facilitate partnership with the Department. • Establish and maintain metrics to measure success of implemented strategies based on quantitative results. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The decrease of $0.056 million between FY 2023 and FY 2024 reflects minor changes for economic assumptions and a realignment for higher departmental priorities.			
Accomplishments/Planned Programs Subtotals	-	3.275	3.219

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 2: *Applied Research*	**R-1 Program Element (Number/Name)** PE 0602230D8Z / *Defense Technology Innovation (Beyond 5G)*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	-	17.075	19.067	55.160	-	55.160	72.186	47.451	37.710	37.987	Continuing	Continuing
230: *Defense Technology Innovation (Beyond 5G)*	-	17.075	19.067	55.160	-	55.160	72.186	47.451	37.710	37.987	Continuing	Continuing

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

This program supports the Department's initiatives to Build a Sustainable and Long-Term Advantage, and Build a resilient Joint Force and Defense Ecosystem.

This effort builds upon the technology foundation that underpins fifth-generation cellular network (5G) systems as a basis to create the next generation of wireless cellular network and security technologies for military applications. Working in concert with other U.S. Government science and technology agencies, we will enable the U.S. to regain leadership in upcoming wireless technology standards including sixth generation (6G) and beyond by investing in research and workforce development in critical technologies. The execution of a defined engagement plan with other Departments, agencies, industry, and universities in collaboration with the Sec Def 5G Cross Functional Team will ensure continued U.S. influence in both the international commercial marketplace as well as Government sectors.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	17.428	20.634	10.339	-	10.339
Current President's Budget	17.075	19.067	55.160	-	55.160
Total Adjustments	-0.353	-1.567	44.821	-	44.821
• Congressional General Reductions	-	-1.567			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.350	-			
• Program Adjustments	-0.003	-	-0.179	-	-0.179
• FutureG	-	-	45.000	-	45.000

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 2: *Applied Research*	**R-1 Program Element (Number/Name)** PE 0602230D8Z *I Defense Technology Innovation (Beyond 5G)*

Change Summary Explanation

FY 2024 funding increase is comprised of a $45 million for FutureG, and realignment of $0.179 million to support the Historically Black Colleges and Universities/ Minority Serving Institutions program, which is a priority of the Under Secretary of Defense for Research and Engineering (USD(R&E)), as well as, other departmental priorities.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 2	R-1 Program Element (Number/Name) PE 0602230D8Z / *Defense Technology Innovation (Beyond 5G)*	Project (Number/Name) 230 / *Defense Technology Innovation (Beyond 5G)*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
230: *Defense Technology Innovation (Beyond 5G)*	-	17.075	19.067	55.160	-	55.160	72.186	47.451	37.710	37.987	Continuing	Continuing

A. Mission Description and Budget Item Justification

This effort builds upon the technology foundation that underpins fifth-generation cellular network (5G) systems as a basis to create the next generation of wireless cellular network and security technologies for military applications. Working in concert with other U.S. Government science and technology agencies, we will enable the U.S. to regain leadership in upcoming wireless technology standards including sixth generation (6G) and beyond by investing in research and workforce development in critical technologies. The execution of a defined engagement plan with other Departments, agencies, industry, and universities in collaboration with the Sec Def 5G Cross Functional Team will ensure continued U.S. influence in both the international commercial marketplace as well as Government sectors.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Beyond 5G	17.075	19.067	55.160

Description: This effort builds upon the technology foundation that underpins fifth-generation cellular network (5G) systems as a basis to create the next generation of wireless cellular network and security technologies for military applications. Working in concert with other U.S. Government science and technology agencies, we will enable the U.S. to regain leadership in upcoming wireless technology standards including sixth generation (6G) and beyond by investing in research and workforce development in critical technologies. The execution of a defined engagement plan with other Departments, agencies, industry, and universities in collaboration with the Sec Def 5G Cross Functional Team will ensure continued U.S. influence in both the international commercial marketplace as well as Government sectors.

FY 2023 Plans:
Continued investment in technology testbeds, novel hardware and software components, and fellowship/training programs with new and existing partners; Continued initiatives from FY 2022, specifically Radio Frequency (RF) and massive MIMO technology, spectrum reuse/network resource utilization based on novel machine learning concepts, and highly dynamic spectrum sharing using multiple degrees of freedom in contested/congested scenarios; Furthered work in robust, reconfigurable, and secure software defined networking, as well as edge computing for ultra-reliable, low latency applications; Continued to adapt R&D investment strategy/award mix based on the companion Prototyping and Experimentation testbed deployments.

This plan was supported by FY 2023 research projects in the following areas:
1. Dynamic spectrum management/engineering to improve the efficiency, reliability, resiliency, and dual-use coexistence of DoD operation of limited electromagnetic spectrum within frequency bands licensed for 5G and FutureG mobile telecom applications;
2. The use of mobile distributed multi-input multi-output schema and architectures to enable high-value operational mission CONOPS relying on mobile wireless ad-hoc tactical networks within operationally relevant DoD domains within which adversary

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 2	**R-1 Program Element (Number/Name)** PE 0602230D8Z / *Defense Technology Innovation (Beyond 5G)*	**Project (Number/Name)** 230 / *Defense Technology Innovation (Beyond 5G)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
interception and jamming can be pervasive (e.g., intra-/inter-squad and squad-to-command post networking, long range networking, terrestrial/airborne networking, etc.); 3. Exploitation of emerging 5G features such as open radio access networks, integrated access and backhaul, and non-terrestrial networks to enable a next generation of DoD tactical networks that integrate a commercial terrestrial 5G network with an airborne network segment in order to leverage the ubiquity and cost advantage of commercially available network infrastructure and user equipment for DoD mission benefit by servicing critical objectives such as autonomous, reliable, secure, and resilient low-latency operations.			
FY 2024 Plans: Through ongoing projects and planned FY 2023 solicitations, DoD will respond to DoD 5G strategy doctrine by continuing to invest in applied research in next generation wireless cellular network and security technologies for military applications and by executing fellowship/training programs to grow national workforce capability in this critical technology domain. Additionally, DoD will continue ongoing contracts to invest in analytically oriented research efforts to support participation in the 3rd Generation Partnership Program (3GPP) standards process to evolve FutureG standards in dual-use directions that will benefit DoD missions and strategies. Continue executing projects awarded in FY 2023 in the following topic areas: 1. Dynamic spectrum management/engineering to improve the efficiency, reliability, resiliency, and dual-use coexistence of DoD operation of limited electromagnetic spectrum within frequency bands licensed for 5G and FutureG mobile telecom applications; 2. The use of mobile distributed multi-input multi-output schema and architectures to enable high-value operational mission CONOPS relying on mobile wireless ad-hoc tactical networks within operationally relevant DoD domains within which adversary interception and jamming can be pervasive (e.g., intra-/inter-squad and squad-to-command post networking, long range networking, terrestrial/airborne networking, etc.); 3. Exploitation of emerging 5G features such as open radio access networks, integrated access and backhaul, and non-terrestrial networks to enable a next generation of DoD tactical networks that integrate a commercial terrestrial 5G network with an airborne network segment in order to leverage the ubiquity and cost advantage of commercially available network infrastructure and user equipment for DoD mission benefit by servicing critical objectives such as autonomous, reliable, secure, and resilient low-latency operations. These areas of applied research link directly to DoD 5G strategy doctrine and have been instantiated in a portfolio of multi-phase programs being executed across a diverse set of industry, FFRDC, and academic performers. In FY 2024, this portfolio will be augmented with additional programs in the thrust areas above via new solicitations and contract actions, and current active programs will be funded for follow-on phase options where warranted by early phase execution excellence and the establishment of a strong value proposition requiring additional work and funding.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 2	**R-1 Program Element (Number/Name)** PE 0602230D8Z / *Defense Technology Innovation (Beyond 5G)*	**Project (Number/Name)** 230 / *Defense Technology Innovation (Beyond 5G)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
In FY 2024, the Beyond 5G portfolio will also pursue applied research in next generation cellular network systems in three additional strategic technology development focus areas deemed to provide the potential for revolutionary improvements in next generation cellular network systems: 1. The development of Unlimited Software defined Radio (SDR) technologies which remove hardware and prior generation architectural and implementation constraints by enabling full programmability of wireless signal generation and control for spectrum dominance; 2. The development of Hyper-Dimensional Software Defined Networks (SDN) to enable autonomous management of wireless network operations in environments that will be required to accommodate far more heterogeneity in technologies than current constructs, mixing in numerous different wireless modalities across numerous disparate networks; 3. The development of Mobile Internet Protocol advances such as time and location-aware protocols, named data networking, and next generation encryption schema which overcome limitations of current static internet protocols to support the dynamics and mobility required for low-power discriminating future DoD capabilities while improving operational security and resiliency. Through these developments, Beyond 5G will build a foundation for the technologies required to support US leadership in the global information infrastructure with embedded US principles and make the DoD more effective, more survivable, and improve readiness in the following ways: Unlimited SDR: - Benefit to the US: Tailored access to more wireless resources for new commercial markets - Benefit to the DoD: Improved spectrum management capabilities at all levels of DoD activities Hyper-Dimensional SDN: -Benefit to the US: Improved deployment models for public and private networks -Benefit to the DoD: Distributed and easy to maintain networks Mobile IP: -Benefit to the US: Lower power, improved performance; trusted, secure, and privacy-enhancing networks -Benefit to the DoD: Improved cyberspace capabilities; EMS and network signature management Building upon a well-established paradigm of program execution processes and controls, multi-phase programs added to the Beyond 5G portfolio in these applied research areas via FY 2023 solicitations will be managed to maximize the probability of beneficial outcomes. Collectively, the applied research focus areas described above represent a body of technology development that promises the evolutionary and revolutionary transformation of wireless cellular network systems which can enable enormous DoD mission benefit while also servicing DoD 5G Strategy dual-use objectives. In developing the applied research portfolio as			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 2	**R-1 Program Element (Number/Name)** PE 0602230D8Z / *Defense Technology Innovation (Beyond 5G)*	**Project (Number/Name)** 230 / *Defense Technology Innovation (Beyond 5G)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
described, Beyond 5G will continue to adapt the investment strategy and program mix based on the companion Prototyping and Experimentation testbed deployments, driving towards an integrated overall technology maturation process that maximizes the probability of successful technology transition into operations. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The funding increase from FY 2023 to FY 2024 reflects the Department's commitment to ensuring that DoD maintains the ability to drive next generation wireless communication technology development. Additional funding will be directed to support ideation, design, prototyping, and integration of novel FutureG & 5G network concepts and components, leading to demonstration of new capabilities that will allow US DOD operations to dominate the future networked battlespace and create an asymmetric advantage over our adversaries. The additional funds will enable the following efforts: 1. Transition of ongoing analytical and lab-based technology developments through efforts that will verify, validate, and codify developmental technologies into demonstrations and deliverables. These demonstrations and deliverables enable technology maturation through mission level prototyping and experimentation, and eventually into operational transition and are supported by tasks including detailed demonstration planning, hardware procurements and integration/verification activities, test site support personnel and facility operations, test and demo operations, and detailed documentation creation, review, and release. 2. The solicitation and execution of additional projects that provide critical revolutionary FutureG capabilities through development of Unlimited SDR, Hyperdimensional SDN, and Mobile Internet Protocol technologies. The efforts described above will collectively accomplish the breadth of evolutionary and revolutionary technology developments required to fully support future US strategic interests in this domain.			
Accomplishments/Planned Programs Subtotals	17.075	19.067	55.160

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 2: *Applied Research*	**R-1 Program Element (Number/Name)** PE 0602234D8Z / *Lincoln Laboratory*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	-	53.522	45.844	46.858	-	46.858	47.911	48.978	50.004	51.092	Continuing	Continuing
534: *Lincoln Laboratory*	-	50.022	42.219	43.204	-	43.204	44.253	45.239	46.187	47.195	Continuing	Continuing
815: *Cyber Security, Science and Engineering*	-	3.500	3.625	3.654	-	3.654	3.658	3.739	3.817	3.897	Continuing	Continuing

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

This program supports the Department's initiative to Build Sustainable and Long-Term Advantage.

The MIT Lincoln Laboratory (MIT LL) research project, 534, is an advanced technology research and development effort conducted through a cost reimbursable contract with the Massachusetts Institute of Technology (MIT). The MIT LL project supports innovative, multi-disciplined research that addresses critical national security problems. The project funds innovations that directly lead to the development of new system concepts, technologies, components, and materials in support of Department of Defense (DoD) missions.

As of FY 2022, the project funds eight technology areas. Of the eight areas, four are core-technology areas, three are emerging-technology initiatives and one Integrated Systems technology area. The four core-technology areas are Advanced Devices; Optical Systems and Technology; Information, Computation and Exploitation Sciences, and Radio-Frequency (RF) Systems and Technologies. The three emerging-technology areas are Advanced Materials and Processes; Quantum System Sciences; and Autonomous Systems. The one Integrated Systems technology area focuses on combining novel component-level technologies to create system-level technology solutions for important DoD problems. These technology areas provide critical capabilities that support all DoD mission areas pursued at the Laboratory. The categories are selected in consultation with the Office of the Under Secretary of Defense for Research and Engineering (OUSD(R&E)) aligned with the DoD Communities of Interest (CoIs), and with guidance from other DoD agencies to address technology as well as system needs. The research in these categories adapts to solve emerging DoD problems as well as long-standing problems to which new technology advances can be applied. The individual efforts in each area are selected with the goal of enhancing DoD capabilities significantly, rather than incrementally. Supporting these and other priority technology and capability areas are work efforts titled Cyber Security, Science and Engineering under project code 815, which began in FY 2019. The Cyber Security, Science and Engineering research project, 815, supports innovative research that addresses critical national security problems in cyber. The project funds innovations that directly lead to the development of new system concepts, technologies, and algorithms in support of DoD missions. Funding supports high-risk, high-payoff research, which provides unique and specialized capabilities for the current and emerging needs of the Department.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 2: *Applied Research*	**R-1 Program Element (Number/Name)** PE 0602234D8Z / *Lincoln Laboratory*

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	55.516	46.159	47.682	-	47.682
Current President's Budget	53.522	45.844	46.858	-	46.858
Total Adjustments	-1.994	-0.315	-0.824	-	-0.824
• Congressional General Reductions	-	-0.315			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.985	-			
• Program Adjustments	-0.009	-	-0.824	-	-0.824

Change Summary Explanation

The FY 2024 reduction of $0.824 is comprised of a realignment of $1.038 million to support Historically Black Colleges and Universities/Minority Serving Institutions program, which is a priority of the Under Secretary of Defense for Research and Engineering (USD(R&E)), $0.050 million to support departmental priorities and an economic assumption increase of $0.264.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense											Date: March 2023	
Appropriation/Budget Activity 0400 / 2					R-1 Program Element (Number/Name) PE 0602234D8Z / *Lincoln Laboratory*				Project (Number/Name) 534 / *Lincoln Laboratory*			
COST ($ in Millions)	**Prior Years**	**FY 2022**	**FY 2023**	**FY 2024 Base**	**FY 2024 OCO**	**FY 2024 Total**	**FY 2025**	**FY 2026**	**FY 2027**	**FY 2028**	**Cost To Complete**	**Total Cost**
534: *Lincoln Laboratory*	-	50.022	42.219	43.204	-	43.204	44.253	45.239	46.187	47.195	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Lincoln Laboratory (LL) research areas that comprise the overall research and development portfolio are described below.

Core-technology areas:

• Advanced Devices emphasizes the development of devices and subsystems utilizing microelectronic, photonic, biological, and chemical technologies to enable new approaches to DoD systems.

Efforts include technologies for high power Radio Frequency (RF) devices; multi-function, highly integrated lasers; fast and sensitive imagers; and mechanical microsystems for autonomous systems.

• Optical Systems and Technology focuses on developing optical technologies for visible, infrared, and wide band spectroscopic sensing as well as communications systems.

The efforts include high energy lasers; scalable focal plane imaging technology; photonic integrated circuits; optical system prototypes; and associated phenomenology measurements.

• Information, Computation and Exploitation Sciences develops novel architectures, tools, and techniques for the processing, fusion, interpretation, computation, and exploitation of multi-sensor, multi-intelligence data.

Efforts include innovative hardware and software technologies for graph processors and cloud computing; artificial intelligence (AI) and graph algorithms for analytics, including deep learning algorithms; multi-intelligence analytics, including open-source data processing techniques; and human-machine interfacing and automation technologies to enhance warfighter effectiveness and ability to work with advanced computing systems.

• Radio Frequency (RF) Systems and Technology focuses on RF technologies to enhance warfighting capabilities in radars, electronic warfare (EW), and communications.

Efforts include development of next generation phased arrays; ultra-wideband RF systems; compact RF systems; small satellite RF payload; and advanced algorithms for jammer mitigation and EW.

Emerging-technology areas:

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• Advanced Materials and Processes emphasizes research in new materials for additive manufacturing and emerging nanoscale materials.

Efforts include research in understanding and controlling diamond chemical vapor deposition to support emerging and future applications; novel growth and transfer strategies for low-defect III-V devices; microwave circuits built with 3D printing; programmable shape change materials; and microsystems using metamaterials.

• Quantum System Sciences focuses on the development of quantum-based technologies that support sensing, communication, computation, and algorithms using quantum information.

Efforts include the demonstration of scalable computation platforms, magnetic field sensing using highly-compact, atomic-like defects in diamond, prototyping revolutionary quantum networking systems and technology, and research into advanced quantum algorithms and their applications.

• Autonomous Systems has the objective of developing mobile, autonomous, robotic platforms, as well as sensors and algorithms that support key capabilities needed for a wide range of DoD applications.

Efforts span advanced AI and processing; sensors and communications for unmanned platforms; platform designs and energy systems; human-machine interactions; and verification and validation of autonomous systems.

Systems technology area:

• Integrated Systems technology efforts use multiple new technologies to solve important national problems.

Efforts selected for funding have an applied research component focused on integrated technology capability or technologies that facilitate greater levels of integrated capability. Projects target key DoD warfare domains, including space, air, land, sea surface, and undersea.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Advanced Devices	5.100	4.487	5.585
Description: This project area targets the research and development of unique and innovative components, subsystems, and sensing concepts or methodologies that will enable new solutions to important DoD problems. Activities under this technology area include revolutionary imaging technologies, specialized silicon and compound semiconductor-based devices for radio frequency (RF), analog, mixed-signal, and digital electronics; photonics, optoelectronics and laser technologies; microsystems; components and subsystems enabling advanced computing; and novel devices and concepts for chemical, biological, and radiation sensing.			
FY 2023 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
The Advanced Devices program will continue ongoing efforts with the goal of advancing this applied research to a stage where it can be transitioned to other programs. In particular, it is expected that nearer-term transition opportunities will be developed for Multi-GHz Lasers for Quantum Networks, Midwave Infrared Integrated Photonics, and Enabling Technologies for Free-Space Optical Communications. ***FY 2024 Plans:*** The Advanced Devices program will continue ongoing efforts with the goal of advancing this applied research to a stage where it can be transitioned to other programs. In particular, it will further nearer-term opportunities to be developed for Multi-GHz Lasers for Quantum Networks, Midwave Infrared Integrated Photonics, and Enabling Technologies for Free-Space Optical Communications. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The increase of $1.098 between FY 2023 and FY 2024 will enhance the nearer-term transition opportunities.			
Title: Optical Systems and Technologies ***Description:*** The project area conducts research through the development, analysis, and demonstration of novel concepts, technology, and systems for the next-generation of optical systems for the DoD. This area invests in optical systems technologies that fill the critical technology gaps in emerging DoD threat areas, such as anti-access/area denial (A2/AD), counter–weapons of mass destruction (C-WMD), and asymmetric warfare, as well as to develop revolutionary technologies in the traditional DoD mission areas, such as intelligence, surveillance, and reconnaissance (ISR), space control, communications, and ballistic missile defense. ***FY 2023 Plans:*** The Optical Systems Technology program will continue to solicit advanced technologies in lasers, receivers, imaging systems as well as in novel optical systems and architectures for next-generation capabilities for national security challenges. ***FY 2024 Plans:*** The Optical Systems Technology program will continue progress in next generation passive imaging components, new laser technology, and advanced optical communications. Continue proof of concept testing for long range X ray sensing concept. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The increase of $0.791 between FY 2023 and FY 2024 will enhance technologies in lasers, receivers, imaging systems, novel optical systems and architectures for next-generation capabilities.	5.090	4.364	5.155
Title: Radio Frequency (RF) Systems and Technologies	4.200	4.420	5.155

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 2	**R-1 Program Element (Number/Name)** PE 0602234D8Z / *Lincoln Laboratory*	**Project (Number/Name)** 534 / *Lincoln Laboratory*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Description: This project area focuses on research, development, and evaluation of innovative RF technologies and concepts in anticipation of DoD and intelligence community requirements for radar, signals intelligence (SIGINT), communications, and electronic-warfare (EW) applications. Key RF challenges include a rapidly expanding threat spectrum, platforms with severely constrained payloads, operations in strong clutter and interference environments, detection of difficult targets, and robustness against sophisticated electronic attack. RF technologies of interest include antennas, filters, transmit/receive modules (high-power amplifier, low-noise amplifier, phase shifter, time domain up-sampling), beamformers (analog, digital, photonic), receivers/exciters (local oscillator, mixers, filters, analog-to-digital converter, digital-to-analog converter), and novel RF packaging concepts. RF systems concepts that address novel analog/digital/photonic architectures and signal processing techniques for improved RF performance are also of interest. ***FY 2023 Plans:*** The RF Systems program will continue to focus research on advanced RF technologies in support of emerging needs for next generation phased arrays, compact RF systems, and wideband RF systems. ***FY 2024 Plans:*** The RF Systems program will continue progress in advanced RF signal processing, indoor RF networking, and novel front end component technologies. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The increase of $0.735 between FY 2023 and FY 2024 will provide additional investment on research of innovative RF technologies.			
Title: Information, Computation, and Exploitation Sciences ***Description:*** This project area achieves significant technical gains in data processing, computation, and exploitation. The volume, velocity, and variety of information production and consumption in the DoD/Intelligence Community (IC) are growing at exponential rates, requiring the development of innovative ways to deal with this data deluge. Emerging artificial intelligence (AI)/machine learning (ML)-based technologies have the potential to significantly improve military capabilities in traditional domains such as Intelligence, Surveillance, and Reconnaissance (ISR), Command and Control (C2), and Electronic Warfare (EW) in addition to new areas such as grey zone operations.	5.396	6.152	6.880

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 2	**R-1 Program Element (Number/Name)** PE 0602234D8Z / *Lincoln Laboratory*	**Project (Number/Name)** 534 / *Lincoln Laboratory*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
The project area is structured around a canonical AI-based decision support architecture that addresses the end-to-end processing chain, which includes data conditioning, algorithms, and human-machine teaming to determine courses of action, as well as the advanced heterogeneous computing required to convert raw data into insight. Furthermore, the program addresses specific DoD/IC challenges, such as limited training data and decision process explainability. ***FY 2023 Plans:*** The Information, Computation, and Exploitation Sciences program will continue applied research and development along several key technical thrusts, including predictive and prescriptive analytics, automated Processing, Exploitation and Dissemination (PED), advanced computing technologies, and human-machine teaming, all within the context of the AI oriented decision support architecture. ***FY 2024 Plans:*** The Information, Computation, and Exploitation Sciences program will continue applied research and development along several key technical thrusts, including predictive and prescriptive analytics, automated Processing, Exploitation and Dissemination (PED), advanced computing technologies, and human-machine teaming, all within the context of the AI oriented decision support architecture. Continue progress in AI and exploitation algorithms for DoD missions. Continue to develop computational architectures for AI and big data applications. Apply advanced AI algorithms within select mission applications areas (material discovery, cyber, etc.). ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The increase of $0.728 between FY 2023 and FY 2024 will provide additional investment towards research on the key technical thrust areas.			
Title: Autonomous Systems	4.055	4.280	4.400
Description: This project area performs applied research in autonomous robotics to address current and anticipated national security needs. One project area goal is to enable unmanned systems to perform useful tasks in uncertain environments as trusted, capable agents without continuous human operator control. Project elements include the development of autonomy algorithms and technologies, and of infrastructure to quickly develop autonomous systems.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 2	**R-1 Program Element (Number/Name)** PE 0602234D8Z / *Lincoln Laboratory*	**Project (Number/Name)** 534 / *Lincoln Laboratory*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Lincoln Laboratory also collaborates with research universities to transfer promising autonomy concepts from academia into prototype systems. Technology areas include perception and world modeling, planning, human-robot interaction, manipulation, learning and adaptation, and robotic platforms. Efforts range in scope from simulation-based seedlings to prototype efforts demonstrating autonomous system capabilities in relevant environments. ***FY 2023 Plans:*** The focus of decision-making and teaming in complex environments will continue; research will continue related to AI for autonomy, multi-agent systems, and trust and resilience. ***FY 2024 Plans:*** Continue progress in AI for robotics, platform technology, multi agent systems, and trusted and resilient autonomy. Continue to develop multi agent autonomous space technology for mission planning and satellite coordination. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The increase of $0.120 between FY 2023 and FY 2024 is an adjustment for economic assumptions.			
Title: Quantum System Sciences	5.079	4.834	5.486
Description: This project area develops methods for sensing, communicating, and processing information using quantum mechanical manipulation not possible with classical computing techniques. Collaborating with major universities, quantum system science efforts are establishing a robust scientific foundation. On this foundation, application-oriented developments important for national security are being fostered. ***FY 2023 Plans:*** The Quantum System Sciences program will focus on other applied research topics in quantum sensing, quantum communications, and quantum computing. ***FY 2024 Plans:*** Future work in the program will focus on the underlying scientific and engineering issues of quantum system science. ***FY 2023 to FY 2024 Increase/Decrease Statement:***			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 2	**R-1 Program Element (Number/Name)** PE 0602234D8Z / *Lincoln Laboratory*	**Project (Number/Name)** 534 / *Lincoln Laboratory*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
They increase of $0.652 million between FY 2023 and FY 2024 will provide additional investment on research of other applied research topics in quantum sensing, quantum.			
Title: Advanced Materials and Processes ***Description:*** This project area develops materials and processes that make a transformative impact on enduring national challenges. Areas of strategic focus are material property customization and material enablers for highly-integrated, miniature platform. ***FY 2023 Plans:*** The Advanced Materials and Process program will continue to conduct research on all forms of data-enhanced, computationally accelerated materials development, alongside a focus on advanced materials technologies that underpin small platforms. Focus on the following areas: beyond CMOS electronics, materials for advanced sensors, integrated microstructures, and other advanced structures. ***FY 2024 Plans:*** The Advanced Materials and Process program will continue to conduct research on all forms of data-enhanced, computationally accelerated materials development, alongside a focus on advanced materials technologies that underpin small platforms. Continue focus on the following areas: beyond CMOS electronics, materials for advanced sensors, integrated microstructures, and other advanced structures. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The increase of $1.181 million between FY 2023 and FY 2024 will reflect enhanced focus on the following areas: beyond CMOS electronics, materials for advanced sensors, integrated microstructures, and other advanced structures.	3.216	3.119	4.300
Title: Integrated Systems ***Description:*** This project area combines multiple new technologies to solve important national needs. Projects selected for funding have an applied research component focused on integrated technology capability or technologies that facilitate greater levels of integrated capability. Projects target key DoD warfare domains, including space, air, land, sea surface, and undersea. The intent is to support early work on systems that cut across the conventional categories.	5.236	6.571	6.243

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 2	**R-1 Program Element (Number/Name)** PE 0602234D8Z / *Lincoln Laboratory*	**Project (Number/Name)** 534 / *Lincoln Laboratory*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
FY 2023 Plans: The Integrated Systems program will continue to support projects that innovate at the system level through architecture, design, and/or introduction of new technologies from other line research areas. The projects will be those of strategic interest to the DoD and aligned with Lincoln Laboratory mission areas. ***FY 2024 Plans:*** The Integrated Systems program will continue to support projects that will be those of strategic interest to the DoD and aligned with Lincoln Laboratory mission areas. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The decrease of $0.328 between FY 2023 and FY 2024 reflects minor deviations in budget priorities.			
Title: Emerging Artificial Intelligence Capabilities ***Description:*** This project area funds the emerging Artificial Intelligence (AI) needs of the DoD in addressing critical operational and research areas. The AI approach addresses both the immediate operational issues as well as the long-term research requirements of the Department. However, significant gaps exist both in the ability to understand and apply AI at the tactical edge, democratized AI development across the Department, and use new AI approaches to improve the innovation ecosystem. ***FY 2023 Plans:*** This project will continue to explore engineering and training requirements for deploying and retraining machine learning tools at the tactical edge and demonstrating such capabilities in operationally relevant environments, as well as continuing to fund projects from FY 2022. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The decrease of $3.992 between FY 2023 and FY 2024 is the result of the Emerging Artificial Intelligence Capabilities project being completed in FY 2023.	12.650	3.992	-
Accomplishments/Planned Programs Subtotals	50.022	42.219	43.204

C. Other Program Funding Summary ($ in Millions)

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 2	**R-1 Program Element (Number/Name)** PE 0602234D8Z / *Lincoln Laboratory*	**Project (Number/Name)** 534 / *Lincoln Laboratory*

C. Other Program Funding Summary ($ in Millions)

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 2	R-1 Program Element (Number/Name) PE 0602234D8Z / *Lincoln Laboratory*	Project (Number/Name) 815 / *Cyber Security, Science and Engineering*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
815: *Cyber Security, Science and Engineering*	-	3.500	3.625	3.654	-	3.654	3.658	3.739	3.817	3.897	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Cyber Security, Science and Engineering research project focuses on the development of technologies and new techniques for the protection of systems against cyber- attack and exploitation.

Efforts include research into technologies for cyber situational awareness, command and control; technology to improve resilience of systems to cyber-attack; and technologies for system exploitation research.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Cyber Security, Science and Engineering	3.500	3.625	3.654

Description: This project conducts research and development, including design, analysis, evaluation, and deployment, of prototype systems to improve the security of computer hardware, software, and networks.

Its goal is to assure the resilience of Department of Defense (DoD) missions against cyber-attack and cyber-exploitation, with particular emphasis on the overlap between traditional Laboratory mission areas and the cyber domain.

Ongoing efforts and areas of concentration include: foundational approaches for integrating traditional and cyber domains, tools and methods to compute threat-based cyber metrics, artificial intelligence (AI) and machine learning-based capabilities supporting cyber analysis and decision making, building trustworthy and resilient mission systems even with untrustworthy components, new cryptographic systems and prototypes, side-channel prevention and exploitation techniques in cyber and cyber-physical systems, and techniques for exploit repurposing.

Integral to these efforts are demonstrations of the impact of cyber effects on traditional kinetic systems, the quantitative and repeatable evaluation of prototypes, and deployment of prototype technology to national-level exercises.

The cyber security mission area uses line funding to research new cyber security techniques in anticipation of DoD and Intelligence Community (IC) needs and requirements.

FY 2023 Plans:
The Cyber Security, Science and Engineering program will continue to develop far-reaching cyber improvements that will significantly improve our interactions with the cyber world.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 2	**R-1 Program Element (Number/Name)** PE 0602234D8Z / *Lincoln Laboratory*	**Project (Number/Name)** 815 / *Cyber Security, Science and Engineering*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
The program will continue to extend cyber applied research along the following strategic areas: cyber physical systems, cyber operations, resilient systems, and system exploitation. ***FY 2024 Plans:*** The Cyber Security, Science and Engineering program will continue to develop far-reaching cyber improvements that will significantly improve our interactions with the cyber world. The program will continue to extend cyber applied research along the following strategic areas: cyber physical systems, cyber operations, resilient systems, and system exploitation. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The increase of $0.029 between FY 2023 and FY 2024 is the result of economic assumptions.			
Accomplishments/Planned Programs Subtotals	3.500	3.625	3.654

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 2: *Applied Research*	**R-1 Program Element (Number/Name)** PE 0602251D8Z / *Applied Research for the Advancement of S&T Priorities*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	-	57.251	62.904	66.866	-	66.866	66.948	68.423	69.854	71.375	Continuing	Continuing
227: *Applied Research for the Advancement of S&T Priorities*	-	57.251	62.904	66.866	-	66.866	66.948	68.423	69.854	71.375	Continuing	Continuing

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

This program supports the Department's initiatives to Build a Sustainable Technical Advantage, build a Resilient Joint Force and Defense Ecosystem, and Taking Care of People.

The Applied Research for the Advancement of Science and Technology (S&T) Priorities (ARAP) program builds a strong Department of Defense (DoD) future technical workforce and laboratory capabilities in critical emerging technology areas within the Under Secretary of Defense for Research and Engineering (USD(R&E)) Technology Vision for an Era of Competition to enable future leap-ahead capabilities that outpace our competitors. This program funds tri-Service applied researchers to work with university and industry partners, accelerating DoD learning and technology development for new capabilities. Programs continually have follow-on activities funded by the individual Services and Agencies, which reflects the foundational research capabilities and overall value of the investment.

Specific projects support the design, development, and improvement of immature, DoD needed, technologies and new concepts to achieve general mission requirements and to translate promising research into solutions for military needs. In addition, the program enables concept exploration efforts and enables studies of alternative concepts.

The research projects are aligned with the DoD S&T priorities and designated focus areas that include non-system specific technology efforts and feasibility assessments and are formulated and managed by teams of subject matter experts drawn from the Office of the Secretary of Defense, the Military Services, and the Defense Agencies.

The program also provides support to the S&T Communities of Interest (CoIs) to ensure multi-agency collaboration and coordination. The S&T CoIs produce Joint S&T Roadmaps to contribute to the USD(R&E) Modernization Priority Roadmaps.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 2: *Applied Research*	**R-1 Program Element (Number/Name)** PE 0602251D8Z *I Applied Research for the Advancement of S&T Priorities*

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	58.982	67.666	68.042	-	68.042
Current President's Budget	57.251	62.904	66.866	-	66.866
Total Adjustments	-1.731	-4.762	-1.176	-	-1.176
• Congressional General Reductions	-	-0.278			
• Congressional Directed Reductions	-	-4.484			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.722	-			
• Program Adjustments	-0.009	-	-1.176	-	-1.176

Change Summary Explanation

The FY 2024 reduction of $1.176 million is comprised of a realignment of $1.481 million to support Historically Black Colleges and Universities/Minority Serving Institutions program, which is a priority of the Under Secretary of Defense for Research and Engineering (USD(R&E)), $0.071 million to support departmental priorities and an economic assumption increase of $0.376 million.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 2	R-1 Program Element (Number/Name) PE 0602251D8Z / *Applied Research for the Advancement of S&T Priorities*	Project (Number/Name) 227 / *Applied Research for the Advancement of S&T Priorities*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
227: *Applied Research for the Advancement of S&T Priorities*	-	57.251	62.904	66.866	-	66.866	66.948	68.423	69.854	71.375	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Applied Research for the Advancement of Science and Technology (S&T) Priorities program was established to implement Department-wide technology development portfolios and foster tri-Service research areas of common interest within cross-cutting S&T efforts. The program has three investment areas: (1) large, three-year applied research programs selected by the S&T Executives; (2) smaller, two-year technology 'seedling' programs nominated by the S&T Communities of Interest (CoIs) to address technology gaps or opportunities; and (3) technology assessment and study support to the CoIs. The execution of the program by the Office of the Secretary of Defense and the support it provides to the CoIs inspires and ensures joint strategic S&T oversight and multi-Service, multi-agency collaboration and coordination.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Applied Research for the Advancement of S&T Priorities (ARAP)	51.451	52.904	56.866

Description: The program focuses on cross-cutting S&T efforts that foster tri-service research areas of common interest that give the joint warfighter a technological advantage.
It focuses on emerging areas of science, building expertise within the DoD laboratories, including investment in laboratory infrastructure and people, and on research areas that are a foundation for further investments by the Services following the completion of the projects.

Cross-cutting efforts are aligned with S&T Priorities, such as Electronic Warfare, Human Systems, Autonomy, Space, Kinetic Weapons, Directed Energy and Non-Lethal Weapons, Cyber, Sensors and Processing, Command, Control, Communications, Computers and Intelligence, Air Platforms, and Ground and Sea Platforms, as well other focus areas, such as Materials and Manufacturing Processes, Advanced Electronics, Energy and Power Technologies, Biotechnology, and Armed Services Biomedical Research Evaluation and Management.

FY 2023 Plans:
Complete A Combined Development Pipeline for Novel Neuromorphic Hardware (NeuroPipe) (Year 3 of 3): Demonstrate on-chip dynamic learning software (i.e. learning after training) with a low-power radiation-hard neuromorphic processor. Transition viable materials to commercial on-shore fabrication prototypes.

Continue Surface Morphing and Adaptive Structures for Hypersonics (SMASH) (Year 2 of 3): Conduct wind tunnel testing that demonstrates initial concepts to significantly extend the speed, range, and maneuverability of hypersonics.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 2	**R-1 Program Element (Number/Name)** PE 0602251D8Z / *Applied Research for the Advancement of S&T Priorities*	**Project (Number/Name)** 227 / *Applied Research for the Advancement of S&T Priorities*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Initiate new ARAP project, Advanced Power Electronics and eXtreme-RF (APEX), to be selected in third quarter FY 2022. APEX will address the erosion of U.S. Gallium Nitride (GaN) RF capability offset with respect to China by building upon recent break throughs in emerging ultrawide bandgap semiconductors (UWBGS), integrated thermal solutions, and heterogeneous integration techniques and culminate in the demonstration of increased capabilities in S-Band and X-Band RF transmitters Initiate new ARAP project to be selected in third quarter FY 2022. ***FY 2024 Plans:*** Complete Surface Morphing and Adaptive Structures for Hypersonics (SMASH) (Year 3 of 3) Conduct wind tunnel testing that demonstrates initial concepts to significantly extend the speed, range, and maneuverability of hypersonics. Continue Advanced Power Electronics and Extreme-RF (APEX) (Year 2 of 3) Development of robust, solid-state, high-power RF device technology required to meet the future needs of the warfighter and counter emerging threats from our adversaries. Investigation of higher power RF transmitter chip sets improved thermal management and establish US capabilities in ultra-wide bandgap materials. Initiate new ARAP project to be selected in third quarter FY 2023. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The increase from FY 2023 to FY 2024 represents costs of research equipment and infrastructure improvements in anticipation of the next ARAP project to be selected in 3rd quarter of FY 2023 and awarded in FY 2024.			
Title: S&T Communities of Interest (CoIs)	4.800	5.000	5.000
Description: The S&T CoIs facilitate coordination and collaboration across Components to reduce duplication and optimize the development of critical S&T efforts across the DoD enterprise. Their efforts include the development of joint S&T roadmaps and the planning of technology integration. The CoIs assess and address capability gaps and their multi-domain operational impact. The COIs include Advanced Electronics; Air Platforms; Autonomy; Armed Services Biomedical Research Evaluation and Management. Biotechnology; Command, Control, Communications, Computers, and Intelligence (C4I); Cyber; Directed Energy - Non-Lethal Weapons; Electronic Warfare; Energy and Power; Ground and Sea Platforms; Human Systems; Kinetic Weapons; Materials and Manufacturing Processes; Sensors and Processing; and Space. ***FY 2023 Plans:*** FY 2023 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 2	**R-1 Program Element (Number/Name)** PE 0602251D8Z / *Applied Research for the Advancement of S&T Priorities*	**Project (Number/Name)** *227 / Applied Research for the Advancement of S&T Priorities*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Continue to provide support to the CoIs , i.e., Advanced Electronics; Air Platforms; Autonomy; Armed Services Biomedical Research Evaluation and Management. Biotechnology; Command, Control, Communications, Computers, and Intelligence (C4I); Cyber; Directed Energy - Non-Lethal Weapons; Electronic Warfare; Energy and Power; Ground and Sea Platforms; Human Systems; Kinetic Weapons; Materials and Manufacturing Processes; Sensors and Processing; and Space. Support includes assistance in developing integrated technology roadmaps, technology trade studies, technology gap analysis, and coordinating and building relationships with OSD Critical Technology Area leads. ***FY 2024 Plans:*** Continue to provide support to the CoIs , in developing integrated technology roadmaps, conducting technology trade studies and technology gap analysis, and coordinating and building relationships with OSD Critical Technology Area leads. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** There are no significant budget changes from previous year.			
Title: ARAP Seedlings ***Description:*** The program focuses on identifying a single technology gap or problem and establishing multi-service laboratory teams to solve the problem in 12–24-months. Solutions have the potential to laying the foundation for future Applied Research for Advancement of S&T Priority (ARAP) proposals. ***FY 2023 Plans:*** Identify and select Seedling research proposals in second quarter of FY 2023. ***FY 2024 Plans:*** Support Seedlings initiated in FY 2023. Identify and select new Seedling projects in FY 2024.	1.000	5.000	5.000
Accomplishments/Planned Programs Subtotals	57.251	62.904	66.866

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 2: *Applied Research*	**R-1 Program Element (Number/Name)** PE 0602668D8Z / *Cyber Security Research*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	24.328	24.587	42.139	17.437	-	17.437	17.794	18.194	18.574	18.980	Continuing	Continuing
003: *Cyber Applied Research*	24.328	24.587	42.139	17.437	-	17.437	17.794	18.194	18.574	18.980	Continuing	Continuing

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

This program supports the Department's National Defense Strategy priorities to Defend the Homeland, Deter Strategic Attacks against the United States, Deterring Aggression, and Building a resilient Joint Force and defense ecosystem.

The Cyber Security Applied Research program element promotes innovative higher risk cyber research to meet joint force challenges in full spectrum cyber operations. The program addresses joint Service science and technology (S&T) gaps that influence DoD cyber research priorities and shapes the direction of the wider cyber community. The program integrates both defensive and offensive cyber research to develop interchangeable, defense-wide technology options to meet Combatant Command (CCMD) needs and requirements. To better align itself to the National Defense Strategy (NDS), Department of Defense (DoD) Cyber Strategy, and Office of Under Secretary of Defense for Research and Engineering (OUSD(R&E)) strategic cyber capability goals, the program recalibrated research thrust areas to emphasize the role of electromagnetic spectrum operations (EMSO) and artificial intelligence as key enablers for cyber power projection of scale, speed, and dominance. The established research thrusts areas are: Augmented Cognition for Cyber Operations, Precision Cyber Operations, Applied Mathematics for Cyber, and Dependable Systems and Networks.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	25.331	17.264	17.744	-	17.744
Current President's Budget	24.587	42.139	17.437	-	17.437
Total Adjustments	-0.744	24.875	-0.307	-	-0.307
• Congressional General Reductions	-	-0.125			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	25.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	-0.744	-	-0.307	-	-0.307

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 2: *Applied Research*	**R-1 Program Element (Number/Name)** PE 0602668D8Z *I Cyber Security Research*

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2022	FY 2023
Project: 003: *Cyber Applied Research*		
Congressional Add: *Cyber Institutes at Institutions of Higher Learning (VICEROY)*	10.000	10.000
Congressional Add: *University Consortium for Cybersecurity (UC2)*	-	10.000
Congressional Add: *Pacific Intelligence and Innovation Initiatives (PI3)*	-	5.000
Congressional Add Subtotals for Project: 003	10.000	25.000
Congressional Add Totals for all Projects	10.000	25.000

Change Summary Explanation

The FY 2022 decrease of $0.744 million was attributed to a realignment of funds to support high priority Under Secretary of Defense for Research and Engineering (USD(R&E)) initiatives.

The FY 2023 increase was an addition of $25.000 million to fund three research efforts under the Cyber Research Program. $10.000 million was added as a continuation of the R&E VICEROY program that provides sustainment funds for existing Institutes, an additional $10M allotment was added for research seedlings to incentivize university participation and transfer of innovations through the University Consortium for Cybersecurity (UC2), and the final addition was for a $5M program increase to support a Pacific Intelligence and Innovation Initiative.

The FY 2024 decrease of $0.307 million is attributed to the realignment of $0.368 million to support the Historically Black Colleges and Universities/Minority Serving Institutions program, $0.019 million to support departmental priorities and an economic assumption increase of $0.098 million.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense											Date: March 2023	
Appropriation/Budget Activity 0400 / 2					R-1 Program Element (Number/Name) PE 0602668D8Z / *Cyber Security Research*				Project (Number/Name) 003 / *Cyber Applied Research*			
COST ($ in Millions)	**Prior Years**	**FY 2022**	**FY 2023**	**FY 2024 Base**	**FY 2024 OCO**	**FY 2024 Total**	**FY 2025**	**FY 2026**	**FY 2027**	**FY 2028**	**Cost To Complete**	**Total Cost**
003: *Cyber Applied Research*	24.328	24.587	42.139	17.437	-	17.437	17.794	18.194	18.574	18.980	Continuing	Continuing

A. Mission Description and Budget Item Justification

Cyberspace, as an operational domain, creates both significant security and resilience challenges for the Joint Force, as well as potential leap-ahead capabilities for military operations. Cyber is often used both to designate that domain and as shorthand for the set of technologies that enable operations in and through cyberspace, such as command-and-control, Cyberspace, as an operational domain, creates both significant security and resilience challenges for the Joint Force, as well as potential leap-ahead capabilities for military operations. Cyber is often used both to designate that domain and as shorthand for the set of technologies that enable operations in and through cyberspace, such as command-and-control, situational awareness, software analysis and hardening, and autonomy/AI applications. The U.S. must maintain technological advantage in cyberspace despite a rapidly evolving globally-driven commercial landscape and supply chain, and a set of determined and highly capable adversaries, in order to maintain mission readiness and deter conflict. The 2018 DoD Cyber2022 National Defense Strategy highlights recognizes the "growing kinetic and non-kinetic threat to the United States' homeland from our strategic competitors, "requiring the Department to "withstand, fight through, and recover quickly from disruption." embracing technology, resiliency, and innovation to act at scale and speed" as key components for all cyber efforts. The DoD will accelerate the development of those cyber capabilities that benefit our warfighters and also those cyber capabilities intended to counter malicious cyber actors. It will also seize opportunities to fully integrate spectrum and sensing technologies into future cyber capabilities, to maximize situation awareness, enable persistent operations, and agile power projection options. The DoD will focus on fielding capabilities that are scalable, adaptable, and diverse to provide maximum flexibility to Joint Force Commanders, so the Joint Force retains the freedom and capability to employ cyberspace operations throughout the spectrum of conflict in order to advance U.S. interests

This program element focuses on higher risk research ideas with major potential impact for addressing NDS and Modernization mission focus areas of cybersecurity. The program works to advance the state of cybersecurity by reducing risk, broadening applicability, and accelerating research in the areas of Augmented Cognition for Cyber Operations, Precision Cyber Operations, Applied Mathematics for Cyber, and Dependable Systems and Networks. Advances in these cyber S&T thrusts will promote strong foundations, while disruptive innovations will create surprise, shape the fight, and ensure a decisive advantage. The thrusts are critical to the development of innovative and sustainable research that takes cybersecurity beyond the incremental escalation of attack and defense. The thrusts provide an opportunity to identify and advance foundational technologies to support all Services and Agencies.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: OUSD(R&E) Cyber Technologies	14.587	17.139	17.437
Description: Integrating both defensive and offensive innovative cyber research within the DoD cyber science and technology (S&T) enterprise to develop interoperable, defense-wide technology options that address joint force challenges in full spectrum cyber operations. Augmented Cognition for Cyber Operations: Improve a cyber operator's ability to make evidence-based decisions and act in a cyber domain characterized by ever increasing size, speed, and complexity. Augmented cognition is focused on adapting, improving, and increasing the cognitive capacity and capabilities of cyber operators through artificial enhancements. These			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 2	**R-1 Program Element (Number/Name)** PE 0602668D8Z / *Cyber Security Research*	**Project (Number/Name)** 003 / *Cyber Applied Research*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
enhancements may be external, such as through computational means (e.g., intelligent agents), or internal, such as through behavioral (e.g., training and education) or physical (e.g., intercranial stimulation) means. Precision Cyber Operations: Improvement of cyber offensive and defensive capabilities by increasing the likelihood of the cyber operator achieving the desired effect while minimizing collateral damage. Integrates sensing and electromagnetic spectrum technologies to increase operational agility, speed, and accuracy. Effects from a proposed courses of action should be quantified and supported by subjective evidence. Applied Mathematics for Cyber: Advancements in cyberspace-relevant mathematics such as machine learning and artificial intelligence cut across all three thrust areas producing new provable methods to design, secure, assess, and reason about complex cyber systems. There is a need for an array of formal and informal modeling techniques, backed by various rigorous mathematical theories, to capture and support the richness of the cyber domain. These collective capabilities are fundamentally crucial for DoD to achieve dominance in cyber situation awareness, decision-making, automating implementation of courses of action, and delivering cyber capabilities at the speed of need. Dependable Systems and Networks: Increase the availability, reliability, survivability and integrity of cyber systems and networks providing critical military capabilities from design faults, natural component failures, and effects stemming from adversarial cyber attacks. ***FY 2023 Plans:*** - Revector Cyber PE investments consistent with the updated 2022 National Defense Strategy and anticipated DoD Cyber Strategy. Consider revision of four main thrust areas, Behavioral Cyber Applied Research, Self-Securing Systems, Precise Cyber-EMSO Effects, and Applied Mathematics for Cyber, if needed. - Emphasize the early and deep integration and acceleration of Cyber and Electromagnetic Spectrum Operations (EMSO) S&T capabilities within the Services and Components. Complete Cyber-EMSO integration opportunity roadmap. Complete Cyber-EMSO S&T Landscape Analysis and Roadmap. - Fund and accelerate select Cyber-EMSO integrated concepts that project power through the Information, Cyber, and Spectrum domains in tight coordination, leveraging Internet of Things opportunities. - Transition automated Fifth Generation (5G) core vulnerability analysis capabilities to 16th Air Force and other DoD organizations. - Continue completion of FY 2022 projects in the areas of Applied Mathematics for Cyber and Behavioral Cyber Applied Research thrust areas. - Initiate Interagency Task Force for Ground Vehicle Cybersecurity for DoD and Federal Gov't to engage ground vehicle Original Equipment Manufacturers for transition of DoD automated resilience technologies. - Launch new S&T exploring security concerns within cellular Sixth Generation (6G) standards.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 2	**R-1 Program Element (Number/Name)** PE 0602668D8Z / *Cyber Security Research*	**Project (Number/Name)** 003 / *Cyber Applied Research*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
- Transition automated Fifth Generation (5G) core vulnerability analysis capabilities to 16th Air Force and other DoD organizations. - Continue completion of FY 2022 projects in the areas of Applied Mathematics for Cyber and Behavioral Cyber Applied Research thrust areas. - Deliver engagement strategy and roadmap for DoD to engage ground vehicle Original Equipment Manufacturers for transition of DoD automated resilience technologies. - Launch new S&T exploring security concerns within cellular Sixth Generation (6G) standards. ***FY 2024 Plans:*** The FY 2023 Cyber PE investment strategy was revectored consistent with the updated 2022 National Defense Strategy and anticipated DoD Cyber Strategy. As a result, the four main thrust areas highlighted in Sections A and B were revised to Augmented Cognition for Cyber Operations, Precision Cyber Operations, Applied Mathematics for Cyber, and Dependable Systems and Networks. FY24 plans will be completed based on the revised description of each thrust: - Augmented Cognition for Cyber Operations: Improve a cyber operator's ability to make evidence-based decisions and act in a cyber domain characterized by ever increasing size, speed, and complexity. Augmented cognition is focused on adapting, improving, and increasing the cognitive capacity and capabilities of cyber operators through artificial enhancements. These enhancements may be external, such as through computational means (e.g., intelligent agents), or internal, such as through behavioral (e.g., training and education) or physical (e.g., intercranial stimulation) means. - Precision Cyber Operations: Improvement of cyber offensive and defensive capabilities by increasing the likelihood of the cyber operator achieving the desired effect while minimizing collateral damage. Integrates sensing and electromagnetic spectrum technologies to increase operational agility, speed, and accuracy. Effects from a proposed courses of action should be quantified and supported by subjective evidence. - Applied Mathematics for Cyber: Advancements in cyberspace-relevant mathematics such as machine learning and artificial intelligence cut across all three thrust areas producing new provable methods to design, secure, assess, and reason about complex cyber systems. There is a need for an array of formal and informal modeling techniques, backed by various rigorous mathematical theories, to capture and support the richness of the cyber domain. These collective capabilities are fundamentally crucial for DoD to achieve dominance in cyber situation awareness, decision-making, automating implementation of courses of action, and delivering cyber capabilities at the speed of need. - Dependable Systems and Networks: Increase the availability, reliability, survivability and integrity of cyber systems and networks providing critical military capabilities from design faults, natural component failures, and effects stemming from adversarial cyber-attacks. FY 2024 Plans: - Emphasize the early and deep integration and acceleration of Cyber, Sensing, and Electromagnetic Spectrum Operations (EMSO) S&T capabilities within the Services and Components.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 2	**R-1 Program Element (Number/Name)** PE 0602668D8Z / *Cyber Security Research*	**Project (Number/Name)** 003 / *Cyber Applied Research*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
- Explore concepts of information advantage across the non-kinetic effects domains of cyber, EMSO, and cognitive/information. The primary focus will be on IoT targets within several of the RDER focused scenarios. - Deliver Cyber-EMSO S&T engagement strategy to support Operations in the Information Environment. - Continue completion of FY 2023 projects in the areas of Augmented Cognition for Cyber Operations, Precision Cyber Operations, Applied Mathematics for Cyber and Dependable Systems and Networks. - Deliver engagement strategy and roadmap for DoD to engage ground vehicle Original Equipment Manufacturers for transition of DoD automated resilience technologies. - Work with interagency partners to draft an Interagency Task Force / Program Management Office terms of reference, that will formalize cooperation and coordination of ground vehicle security initiatives. Provide proposed input to FY2024 NDAA - Deliver technical and analytical cyber support in researching, authoring, producing reports and analyses of existing and future full spectrum cyber operations. Assessing R&D programs and their impact on DoD information systems architectures. - Transition automated Fifth Generation (5G) core vulnerability analysis capabilities to 16th Air Force and other DoD organizations ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The increase of $0.298 million between FY 2023 and FY 2024 will be used to strategically target new investments areas aligned with the National Defense Strategy and DoD Cyber Strategy.			
Accomplishments/Planned Programs Subtotals	14.587	17.139	17.437

	FY 2022	FY 2023
Congressional Add: Cyber Institutes at Institutions of Higher Learning (VICEROY)	10.000	10.000
FY 2022 Accomplishments: - VICEROY Virtual Institutes represent 7 of 9 National Centers of Academic Excellence in Cybersecurity Regions - VICEROY has been tailored to help bridge the workforce gap of qualified cybersecurity professionals, enrolling over 398 college students into universities to educate and prepare candidates for a career in cybersecurity supporting DoD. - VICEROY has expanded consortium to 6 regional centers composed of 22 academic institutions - The universities that are members of the VICEROY consortia, support 61 students from HBCU/MSI institutes and 139 women. - Conducted its first summer experiential internship at Air Force Research Lab ***FY 2023 Plans:*** VICEROY is projected to grow from the Air and Space Force and expand into Army and Navy.		
Congressional Add: University Consortium for Cybersecurity (UC2)	-	10.000

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 2	**R-1 Program Element (Number/Name)** PE 0602668D8Z / *Cyber Security Research*	**Project (Number/Name)** 003 / *Cyber Applied Research*

	FY 2022	FY 2023
FY 2023 Plans: Funding for UC2 will incentivize and fund more than 360 institutions of higher learning to respond to Requests for Information from the Secretary of Defense, through the National Defense University.		
Congressional Add: Pacific Intelligence and Innovation Initiatives (PI3) ***FY 2023 Plans:*** - Pacific Intelligence and Innovation Initiatives (PI3) will establish summer internship opportunities - PI3 will refine and promote curriculum programs with increased certificate offerings	-	5.000
Congressional Adds Subtotals	10.000	25.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 2: *Applied Research*	**R-1 Program Element (Number/Name)** PE 0602675D8Z / *Social Science Research for Climate and Environmental Change*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	-	0.000	4.000	4.718	-	4.718	5.500	6.095	6.395	6.534	Continuing	Continuing
046: *Providing Research and End-user Products to Accelerate Readiness and Environmental Security (PREPARES)*	-	0.000	4.000	4.718	-	4.718	5.500	6.095	6.395	6.534	Continuing	Continuing

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

This program supports the Department's initiative to Build Sustainable and Long-Term Advantage.

This program funds Department of Defense (DoD) physical climate and social science applied research. Climate and environmental change will impact the full range of U.S. military operating environments. DoD capabilities, until recently, have been aligned toward the historical environmental and geopolitical record; failure to anticipate and plan for the security effects of climate and environmental change holds significant potential to not only degrade DoD readiness and effectiveness but also compound the frequency and scope of novel geostrategic risks and surprises. Efforts under this program will focus on interdisciplinary science and technology that spans physical climate modeling and forecasting and social sciences capable of yielding tangible decision support tools that empower operational planners to prepare for and adapt to the complicated, interconnected security and stability challenges of climate and environmental change. Insights derived from this program will enable Combatant Commands to better engage key partners and allies in efforts to plan for and mitigate risks and promote global peace and stability.

The program is in Budget Activity 2, Applied Research as it includes studies, investigations, and non-system specific technology efforts directed toward general military needs with a view toward developing and evaluating the feasibility and practicality of proposed solutions and determining their parameters.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 2: *Applied Research*	**R-1 Program Element (Number/Name)** PE 0602675D8Z *I Social Science Research for Climate and Environmental Change*

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	0.000	4.000	4.800	-	4.800
Current President's Budget	0.000	4.000	4.718	-	4.718
Total Adjustments	0.000	0.000	-0.082	-	-0.082
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	-	-	-0.082	-	-0.082

Change Summary Explanation

The FY 2024 reduction of $0.082 million is comprised of a realignment of $0.104 million to support the Historically Black Colleges and Universities/Minority Serving Institutions program, which is a priority of the Under Secretary of Defense for Research and Engineering (USD(R&E)), $0.005 million to support departmental priorities and an economic assumption increase of $0.027 million.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 2	R-1 Program Element (Number/Name) PE 0602675D8Z / *Social Science Research for Climate and Environmental Change*	Project (Number/Name) 046 / *Providing Research and End-user Products to Accelerate Readiness and Environmental Security (PREPARES)*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
046: *Providing Research and End-user Products to Accelerate Readiness and Environmental Security (PREPARES)*	-	0.000	4.000	4.718	-	4.718	5.500	6.095	6.395	6.534	Continuing	Continuing

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

This program will leverage and integrate expertise from operational end users, physical climate scientists and models, tools, and datasets, and social scientists with deep understanding of designated regional and local communities to anticipate and respond more quickly and precisely to climate and environmental change risks and opportunities. The program aims to explore how specific environmental and social indicators might inform strategic reviews to adapt warfighter training and planning in anticipation of climate global trends. The research program will build upon the products of the 6.1 Minerva Research Initiative (program element 0601110D8Z) with a focus on end-user defined mission, geographic, and timescale priorities to forecast local and regional climate and environmental change effects, assess and predict likely societal impacts and responses, and ultimately provide operations planners technically-relevant and operationally precise scenarios to incorporate into CONPLANs and OPLANs and ISR requirements related to climate change.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Providing Research and End-user Products to Accelerate Readiness and Environmental Security (PREPARES)	-	4.000	4.718
Description: PREPARES will leverage and build upon Minerva products by incorporating their findings into operationally-relevant planning scenarios that accelerate the Department's understanding of the social, cultural, behavioral, and political dynamics most likely to be affected by climate and environmental change in strategically important areas of the world. By aligning research objectives with the priorities of operational end users who can apply the tools and knowledge products to their areas of responsibility, the proposed enhancement would translate and integrate results from 6.1 strategic and global-centric analyses to provide operational and tactical assessments to inform CONPLANs and OPLANS, focusing on specific regions and detailed scenarios for the warfighter. PREPARES uniquely applies research to integrate physical climate and social sciences and accelerate "research to operations", directly impacting military operational planning and preparations to mitigate the security risks from climate and environmental change. This effort also will rapidly produce the tools and products the end-users need to sustain data-informed planning and analysis for operations and engagements with partners and allies.			
FY 2023 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 2	**R-1 Program Element (Number/Name)** PE 0602675D8Z / *Social Science Research for Climate and Environmental Change*	**Project (Number/Name)** 046 / *Providing Research and End-user Products to Accelerate Readiness and Environmental Security (PREPARES)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Activities for this first year will include those items necessary for establishing the program, including: creation of an advisory team, governing body and project guidance and execution documentation; identification of priority scenarios for exploration; and selection of performers and initiation of modeling and social science research efforts. To demonstrate technical feasibility and relevance to operational end-users, PREPARES initially will focus on several issues related to climate and environmental change security challenges that are of importance to and identified by the SOCOM Enterprise, affected commands, and operational elements, including Civil Affairs operational planners. For FY 2023, the program will initiate focused research into including – but not limited to – one or more of the following areas identified by the Combatant Command end users: • Development of data-driven, spatially explicit forecasts of where climate and environmental change risks and opportunities exist now and will occur in the near future, their types, and the dynamics within each; • Understanding the sociocultural tensions in a given theater as a result of perceptions of disproportionate climate and environmental change impacts, including shifts in opportunities and challenges; • How socioeconomic interdependence and burden sharing to manage climate and environmental change challenges may affect the roles and relationships of DoD alliances and those of our competitors; • Assessments of the ability of state and non-state groups to organize, mobilize, strategize, govern, and gain advantage in the face of climate and environmental change and the locations of where this may occur due to pre-existing instabilities and/or other existing risk factors; • How climate and environmental change may be leveraged by specific actors in power competition and the emergence of critical threats in contested regions; • How climate and environmental change may impact, influence, and interact with other compounding risk factors, including social, political, and economic dynamics; • The development of integrated tools and data products (e.g., data-driven scenarios, social-ecological systems models, remote and in-situ observations, statistical guidance) to forecast the emergence of physical phenomenon at relevant time and spatial scales in the context of their sociocultural settings; and • Using the aforementioned research topics to rapidly establish an end-user product for decision support and potential early warnings of threats (through precise indicators) so as to guide planning and/or response before such threat impacts defense effectiveness.			
FY 2024 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 2	**R-1 Program Element (Number/Name)** PE 0602675D8Z / *Social Science Research for Climate and Environmental Change*	**Project (Number/Name)** 046 / *Providing Research and End-user Products to Accelerate Readiness and Environmental Security (PREPARES)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Second year activities will focus on continued research in the pilot priority scenario studies selected during FY 2023. The development of a data product concept, the development of a data product prototype, and opportunities for working meetings will ensure synchronization and coordination among the end users, social scientists, and physical scientists. As the initial technical feasibility research phase wraps, the activity will coordinate with end users, including the SOCOM Enterprise, affected Commands, and Civil Affairs operational planners, social scientists, and physical scientists. Coordination will provide insights and lead to the selection for development of one or more specific data products to support data-informed planning. Initial analysis for operations and engagements with partners and allies will focus on risks related to climate and environmental change. A data product concept and development process will be drafted in FY 2024, with the following general themes: • End users provide needs/insights for product and subsequent analysis; • Physical scientists evaluate recent climate modeling at the regional level and select appropriate data inputs for use in social science modeling in areas of geopolitical importance; • Physical scientists/forecasters use knowledge and skills to provide insights for weather-climate predictability over a 12 to 18-month period; • Physical scientists/forecasters create software or products by which the hazard forecast is communicated and provided to social scientists, including a range of probabilities; • Social scientists determine what types of weather-climate hazards over a 12 to 18-month period serve as proxy for instability/conflict in areas of interest; • Social scientists use the physical science environmental output and indicator information to weigh the risks of compounding threats that are likely to emerge or have already emerged within a year to several years; • Social scientists apply weights and/or determine severity of instability/conflict due to multiplicative compound threats within a year to several years; • Social scientists provide analysis of possible scenarios on timescale and in areas of interest to end users with relative probabilities and degrees of severity to help inform which areas require immediate planning actions, which need heightened surveillance, and which do not need further action at the current time; and • End users receive a data product(s) that aids in decision making by the results of this cycle. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The increase of $0.718 million between FY 2023 and FY 2024 supports continued research, analysis, and development of a data product concept and prototype.			
Accomplishments/Planned Programs Subtotals	-	4.000	4.718

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 2	**R-1 Program Element (Number/Name)** PE 0602675D8Z / *Social Science Research for Climate and Environmental Change*	**Project (Number/Name)** 046 / *Providing Research and End-user Products to Accelerate Readiness and Environmental Security (PREPARES)*

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

NA

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 2: *Applied Research*	**R-1 Program Element (Number/Name)** PE 0602751D8Z / *Software Engineering Institute (SEI) Applied Research*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	-	9.245	10.153	11.168	-	11.168	11.401	11.665	11.909	12.168	Continuing	Continuing
278: *Software Engineering Institute (SEI) Applied Research*	-	0.535	10.097	10.215	-	10.215	10.452	10.694	10.917	11.155	Continuing	Continuing
817: *Cyber Security, Applied Research*	-	8.710	0.056	0.953	-	0.953	0.949	0.971	0.992	1.013	Continuing	Continuing

Note

New Start (Y/N): No

The Software Engineering Institute (SEI) Applied Research Program Element (PE) develops and evaluates the feasibility and practicality of software and computer science concepts at the applied research level, with the potential to improve future Department of Defense (DoD) systems through research, development, and application in the SEI Advanced Technology Development PE 0603781D8Z. Promising projects proceed into advanced technology development through this PE.

A. Mission Description and Budget Item Justification

This program supports the Department's initiative to Build Sustainable and Long-Term Advantage.

The Software Engineering Institute (SEI) Federally Funded Research and Development Center (FFRDC) was established in 1984 as an integral part of the Department of Defense's (DoD) initiative to identify, evaluate, and transition software engineering technologies and practices. The mission of the SEI is to provide the DoD with technical leadership and innovation through research and development to advance the practice of software engineering and technology. The SEI works across government, industry, and academia to improve the state of software engineering from the technical, acquisition, and management perspectives. The SEI engages in research and development of critical software technologies and tools and collaborates with the larger software engineering research community. It facilitates the rapid transition of software engineering technologies into practice and evaluates emerging software engineering technologies to determine their potential for improving software-intensive DoD systems. Since its inception, the SEI has helped to transform the fields of software engineering and acquisition, network security, real-time systems, software architectures, and software-engineering process management.

Software is critical to meeting the DoD increasing demand for national defense systems that are high quality, affordable, and deployed in a timely way. With growing global parity in software engineering, the DoD must maintain leadership in all aspects of software-based system development, operation, defense, and evolution to avoid strategic surprise. To assist the DoD in retaining a long-term differential advantage over potential adversaries, the Software Engineering Institute (SEI) Applied Research program element (PE) develops and evaluates the feasibility and practicality of software and computer science concepts, with the potential to improve future DoD systems. The research conducted by this PE directly benefits the technical domains Autonomous Systems and Artificial Intelligence (AI), Cyber, and Engineered Resilient Systems.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 2: *Applied Research*	**R-1 Program Element (Number/Name)** PE 0602751D8Z *I Software Engineering Institute (SEI) Applied Research*

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	9.571	11.030	11.365	-	11.365
Current President's Budget	9.245	10.153	11.168	-	11.168
Total Adjustments	-0.326	-0.877	-0.197	-	-0.197
• Congressional General Reductions	-	-0.877			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.325	-			
• Program Adjustments	-0.001	-	-0.197	-	-0.197

Change Summary Explanation

FY 2024 reduction of $0.197 million is comprised of a realignment of $0.247 million to support the Historically Black Colleges and Universities/Minority Serving Institutions program, which is a priority of the Under Secretary of Defense for Research and Engineering (USD(R&E)), $0.012 million to support departmental priorities and an economic assumption increase of $0.062 million.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 2	R-1 Program Element (Number/Name) PE 0602751D8Z / *Software Engineering Institute (SEI) Applied Research*	Project (Number/Name) 278 / *Software Engineering Institute (SEI) Applied Research*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
278: *Software Engineering Institute (SEI) Applied Research*	-	0.535	10.097	10.215	-	10.215	10.452	10.694	10.917	11.155	Continuing	Continuing

A. Mission Description and Budget Item Justification

Work conducted under this Program Element (PE) will enable resilient mission assurance in heterogeneous and contested environments through the verification and validation of system performance and architecture. The program will also assist the Department of Defense (DoD) in retaining a long-term advantage in the areas of software-intensive systems and cyber security by enhancing assurance, exploiting automation and Artificial Intelligence (AI), and understanding human-computer interaction.

The Software Engineering Institute (SEI) Applied Research PE has two main research thrusts with known military applications: (1) Software Engineering, Systems Verification and Validation, and Mission Assurance (formerly Mission Assurance); and (2) Information Assurance. This area is increasingly being applied to AI and autonomous systems.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: SEI Applied Research in the Area of Software Engineering, Systems Verification and Validation, and Mission Assurance (formerly Mission Assurance)	0.535	7.492	7.567
Description: Increasingly complex and AI-enabled systems will require a commensurate increase in sophistication of verification and validation mechanisms. This thrust seeks to develop verification techniques for requirements identification, systems of systems architectures, and virtual integration of components. Additionally, research in this area will enable requirements verification for software assurance, analysis and control of unverified code, and automated repair of damaged code. Software production and code analysis methods developed through this program will also improve the accuracy of behavior prediction of complex software, including AI-enabled systems, in untested environments.			
FY 2023 Plans: Develop new techniques to allow feedback between deployed software, software modeled through model based systems engineering, and deployed systems. This approach can be automated using machine learning methods that enable comparison of online information systems performance with modeled systems performance in a variety of mission and application contexts.			
FY 2024 Plans: Integrate techniques in system measurement, software development and operations, and model-based systems engineering for an automated assessment, modeling, and software deployment process. Focus on strategies for resilience and mission			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 2	**R-1 Program Element (Number/Name)** PE 0602751D8Z / *Software Engineering Institute (SEI) Applied Research*	**Project (Number/Name)** 278 / *Software Engineering Institute (SEI) Applied Research*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
assurance in large complex infrastructures and determine methods to manage and de-conflict resource requirements between applications from the physical to the application layer. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** There is no significant change between FY 2023 and FY 2024.			
Title: SEI Applied Research in the areas of Information Assurance (IA) ***Description:*** To gain full advantage from data and information generated by software for use in missions, DoD needs to assure its software is free of vulnerabilities. In its complex systems, DoD may use software developed from an unknown supply chain that may include intentionally or unintentionally introduced vulnerabilities. This thrust seeks to develop scalable automated methods to locate, understand, and mitigate the effects of these vulnerabilities. Automated solutions developed through this thrust will be used to discover vulnerabilities in system software source code and to generate proofs of correctness or fault. Additionally, these solutions will be used to model and simulate operational environments to support software and cyber tactics, techniques, and procedures testing. ***FY 2023 Plans:*** Enable verification and validation of systems at the embedded level through graph based models of embedded systems performance and integration of large collections of such embedded systems on complex command and control applications. ***FY 2024 Plans:*** Enable combined risk analysis between software, machine learning, and cyber security to enable assessment and management of automated systems. These risk metrics will be used to govern system configuration and management, particularly in the case of applications and embedded systems in contested environments. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** There is no significant change between FY 2023 and FY 2024.	-	2.605	2.648
Accomplishments/Planned Programs Subtotals	0.535	10.097	10.215

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
• RDT&E, BA 3, PE 0603781D8Z: *Software Engineering Institute*	14.127	12.306	16.699	-	16.699	17.119	17.525	17.890	18.281	Continuing	Continuing

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 2	**R-1 Program Element (Number/Name)** PE 0602751D8Z / *Software Engineering Institute (SEI) Applied Research*	**Project (Number/Name)** 278 / *Software Engineering Institute (SEI) Applied Research*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost

Remarks

The SEI Applied Research PE represents a pivot toward more fundamental research that enables the DoD to address longer-term challenges in software technology and engineering. The SEI Applied Research PE bolsters the organic research at the SEI Federally Funded Research and Development Center (FFRDC), enables stronger collaborations between the SEI FFRDC and academia, attracts top researchers to the SEI, and gives the DoD access to top experts in information science, which generally enhances the DoD's ability to benefit from the military applications of research in software and computer science.

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 2	R-1 Program Element (Number/Name) PE 0602751D8Z / *Software Engineering Institute (SEI) Applied Research*	Project (Number/Name) 817 / *Cyber Security, Applied Research*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
817: *Cyber Security, Applied Research*	-	8.710	0.056	0.953	-	0.953	0.949	0.971	0.992	1.013	Continuing	Continuing

A. Mission Description and Budget Item Justification

Work conducted under this project will enable resilient mission assurance in heterogeneous and contested environments through the verification and validation of system performance and architecture. The program will also assist the DoD in retaining a long-term advantage in the area of cybersecurity by enhancing assurance, exploiting automation, and understanding human-computer interaction.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Cyber Security	8.710	0.056	0.953
Description: Warfighting in the cyber domain often operates at sub-second timescales and across multiple domains of authority. Methods used to accomplish many tasks (e.g., malware analysis, coordinating multiple agents) demand large amounts of time, attention, and special skills and are not scalable. This thrust seeks to develop and increase the use of automation to simplify the completion of these tasks. Example activities include automation of moving target defenses, code artifact reverse engineering, analysis of network flows at enterprise scale, assessing the operating boundaries for Artificial Intelligence (AI) and Machine Learning (ML) algorithms, and development and assessment of workforce skills. ***FY 2023 Plans:*** Improve emulation and virtualization techniques to advance understanding of – and defense capabilities against – adversary attacks. ***FY 2024 Plans:*** Expand the notion of automated cyber defense to include second and third order effects of data compromise and effects in the context of machine learning and artificial intelligence software systems. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The increase of $0.897 million will allow for expansion of automated cyber defense.			
Accomplishments/Planned Programs Subtotals	8.710	0.056	0.953

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 2	**R-1 Program Element (Number/Name)** PE 0602751D8Z / *Software Engineering Institute (SEI) Applied Research*	**Project (Number/Name)** 817 / *Cyber Security, Applied Research*

D. Acquisition Strategy

N/A

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 2: *Applied Research*	**R-1 Program Element (Number/Name)** PE 0602890D8Z / *High Energy Laser Development*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	0.000	44.212	48.587	48.804	-	48.804	49.775	50.828	51.890	53.020	Continuing	Continuing
890: *High Energy Laser Development*	0.000	44.212	48.587	48.804	-	48.804	49.775	50.828	51.890	53.020	Continuing	Continuing

Note

New Start (Y/N): No

This Program will focus on Applied Research for Directed Energy (DE) technologies divided into the following areas: (1) DE Sources; (2) Beam Control; (3) Lethality and Vulnerability; and (4) Power and Thermal Management to reflect the OSD S&T priorities for Directed Energy.

Funding was realigned to this program from 0603924D8Z High Energy Laser Advanced Development starting in FY 24 for Directed Energy Applied Research that is focused on technology in support of a strategic mission capability for counter hypersonic missile defense. Lethality Applied Research focused on the counter hypersonic missile defense is increased in FY 24 to gain a better understanding on the vulnerabilities of threats of interest.

A. Mission Description and Budget Item Justification

This program supports the Department's initiatives to Defend the Homeland, Deter Aggression and Prevail in Conflict, and Build Sustainable and Long-Term Advantage.

This program funds Department of Defense Directed Energy applied research through the Joint Directed Energy Transition Office. This program is part of an overall Department of Defense Directed Energy Science and Technology program. DE weapons systems have many potential advantages, including speed-of-light time-to-target, high precision, low incremental cost per kill, and a magazine that is recharged through on-board, fuel-based power and thermal management systems that reduce logistics requirements in contrast to stocks of munitions or warheads. Directed Energy weapon systems have the potential to perform a wide variety of military missions, including high value asset and base protection, precision strike and platform self-protection versus a wide variety of missile, rocket, artillery, mortar and air platforms. Efforts under this program are generally chosen for their potential to have an impact on multiple Directed Energy weapon systems and multiple Service missions while complementing Service efforts that are directed for specific service needs. A broad range of technologies are addressed in key areas, such as laser sources, microwave sources, laser beam control, antennas, waveguides, modeling and simulation, and lethality mechanisms. This program provides the enabling technology necessary to demonstrate advanced concepts for high power microwave (HPM) sources, antennas and waveguides for mission areas not considered to date. The high power microwave lethality, hardware and software improvements and modeling and simulation advances provided by this program are essential to expand and build upon current architectures. Efforts in this program have been coordinated through the Department of Defense Science and Technology Executive Committee process to harmonize efforts and eliminate duplication.

This program is in Budget Activity 2, Applied Research, because this budget activity includes studies, investigations, component and subsystem design and development to further the knowledge base of Directed Energy technologies and enable future defense capabilities to be realized by the Services.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 2: *Applied Research*	**R-1 Program Element (Number/Name)** PE 0602890D8Z / *High Energy Laser Development*

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	45.852	48.587	49.663	-	49.663
Current President's Budget	44.212	48.587	48.804	-	48.804
Total Adjustments	-1.640	0.000	-0.859	-	-0.859
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	-1.640	-	-0.859	-	-0.859

Change Summary Explanation

FY 2024 decrease to support higher DoD priorities.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 2	R-1 Program Element (Number/Name) PE 0602890D8Z / *High Energy Laser Development*	Project (Number/Name) 890 / *High Energy Laser Development*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
890: *High Energy Laser Development*	0.000	44.212	48.587	48.804	-	48.804	49.775	50.828	51.890	53.020	Continuing	Continuing

Note

This Program will focus on Applied Research for Directed Energy (DE) technologies divided into the following areas: (1) DE Sources; (2) Beam Control; (3) Lethality and Vulnerability; and (4) Power and Thermal Management to reflect the OSD S&T priorities for Directed Energy.

Funding was realigned to this program from 0603924D8Z High Energy Laser Advanced Development starting in FY2 4 for Directed Energy Applied Research that is focused on technology in support of a strategic mission capability for counter hypersonic missile defense. Lethality Applied Research focused on the counter cruise- and hypersonic-missile defense is increased in FY 24 to gain a better understanding on the vulnerabilities of threats of interest.

A. Mission Description and Budget Item Justification

This program funds Department of Defense Directed Energy applied research through the Joint Directed Energy Transition Office. This program is part of an overall Department of Defense Directed Energy Science and Technology program. DE weapons systems have many potential advantages, including speed-of-light time-to-target, high precision, low incremental cost per kill, and a magazine that is recharged through on-board, fuel-based power and thermal management systems that reduce logistics requirements in contrast to stocks of munitions or warheads. Directed Energy weapon systems have the potential to perform a wide variety of military missions, including high value asset and base protection, precision strike and platform self-protection versus a wide variety of missile, rocket, artillery, mortar and air platforms. Efforts under this program are generally chosen for their potential to have an impact on multiple Directed Energy weapon systems and multiple Service missions while complementing Service efforts that are directed for specific service needs. A broad range of technologies are addressed in key areas, such as laser sources, microwave sources, laser beam control, antennas, waveguides, modeling and simulation, and lethality mechanisms. This program provides the enabling technology necessary to demonstrate advanced concepts for high power microwave (HPM) sources, antennas and waveguides for mission areas not considered to date. The high power microwave lethality, hardware and software improvements and modeling and simulation advances provided by this program are essential to expand and build upon current architectures. Efforts in this program have been coordinated through the Department of Defense Science and Technology Executive Committee process to harmonize efforts and eliminate duplication.

This program is in Budget Activity 2, Applied Research, because this budget activity includes studies, investigations, and component and subsystem design and development to further the knowledge base of Directed Energy technologies and enable future defense capabilities to be realized by the Services.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Directed Energy Applied Research	44.212	48.587	48.804
Description: Mature technologies that will provide system level performance commensurate with fieldable directed energy devices. Develop technologies that support improving beam control and beam propagation for DE weapon systems. Conduct			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 2	**R-1 Program Element (Number/Name)** PE 0602890D8Z / *High Energy Laser Development*	**Project (Number/Name)** 890 / *High Energy Laser Development*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
directed energy vulnerability experiments on materials, components, and targets. Develop a lethality database, and integrate into a systems-level architecture plan and lethality models. ***FY 2023 Plans:*** Develop high-reliability, lower-cost, efficient diode pump sources. Scale alternate laser wavelengths to additional militarily relevant uses and power levels. Investigate next generation high power fiber technologies. Collaborate with the national and international directed energy community on progress in the development and application of high energy laser technologies for military missions. Reduce technical risk in solid state lasers for inclusion in future laser weapon systems. Conduct trade space analyses to understand performance, fielding, robustness and integration issues of the various architecture types for military platforms. Advance investments in illuminator laser sources and laser gain media and explore nontraditional fiber designs and materials for revolutionary increases in fiber performance. - Investigate, analyze trade space, and reduce technical risk for high power microwave devices. Conduct analyses and trades studies to determine the most effective microwave source parameters. Collaborate with the national and international directed energy community on progress in the development and application of high power microwave technologies for military missions. - Develop beam control technologies for high energy laser weapon use across all domains of the Department. Develop technologies to improve the beam director throughput efficiency, optimize size and weight, and improve/automate tracking and compensation through the atmosphere. Invest in atmospheric sensor innovation, field test evaluations, and next-generation models. - Characterize and understand the physics of high energy laser atmospheric propagation in adverse environmental conditions such as fog, rain, smoke and dust. Improve cameras and track illuminators to enable target engagement at longer ranges and enable improvements to shorten engagement timelines. Develop AI based tracking systems that show promise for automation of target recognition, aimpoint selection and maintenance as well as tracking in clutter. Explore Digital Holography to enable wavefront compensation with improved deformable mirrors for HEL propagation through severe turbulence and reducing SWaP - Provide maintenance, verification, validation, and accreditation for updated system level atmospheric propagation and high energy laser system models. Collaborate with Service-sponsored field-test planning to correlate model predictions with measured data for surface, maritime and aerospace environments. Incorporate atmospheric data into theater models to support performance characterization tables. Continue the development of a predictive avoidance fire control system for use on multiple platforms.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 2	**R-1 Program Element (Number/Name)** PE 0602890D8Z / *High Energy Laser Development*	**Project (Number/Name)** 890 / *High Energy Laser Development*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
- Develop theoretical physical models describing the propagation of a high power microwave (HPM) pulse through the atmosphere to understand the reflection characteristics of the HPM propagation. Study and understand the dynamic behavior of the propagation of high-power microwave pulses and the effects on the intensity, frequency, and width of the pulse and the physical processes occurring during the interaction of the pulse with the air. Develop hardware and technologies to improve throughput efficiency of the antenna, decrease component weight, and improve tracking and compensation through the atmosphere. - Integrate lethality and target imagery data into campaign-level high energy laser system models. Conduct high energy laser vulnerability experiments on materials, components, and targets. Conduct laser lethality effects testing and modeling specifically focused on subsonic / supersonic threats, assessment of threat aim-points, development of sophisticated techniques to rapidly determine threat vulnerability and techniques to accurately predict time-to-kill. Develop a suite of high energy laser weapon tools to be used in a database from which the warfighter can assess target vulnerabilities and mission utility for given high energy laser weapon platform and engagement. Develop warfighter tools employing Service and Agencies metrics and criteria such as the Joint Munitions Effectiveness Standards. - Develop new predictive modeling software tools to assess the effectiveness of high power microwave (HPM) weapons on electronic systems of interest for blue-on-red or red-on-blue engagements. - Collaborate with Service and Agency sponsored High Power microwave survivability / lethality community's interest in, and use of, high power microwave (HPM) engagement models. ***FY 2024 Plans:*** Conduct analyses and trades studies to determine the most effective microwave source parameters. Collaborate with the national and international directed energy community on progress in the development and application of high power microwave technologies for military missions. - Explore advanced concepts for technologies that will improve efficiency and decrease size and weight for future Directed Energy (DE) weapon sources. Evaluate materials for high energy laser and high power microwave weapons applications. Improve understanding of laser technologies to include material interaction and propagation. Scale electrically driven lasers to higher kilowatt-class power levels. - Develop beam control technologies for high energy laser weapon use across all domains of the Department. Develop technologies to improve the beam director throughput efficiency, optimize size and weight, and improve/automate tracking and compensation through the atmosphere. Invest in atmospheric sensor innovation, field test evaluations, and next-generation models.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 2	**R-1 Program Element (Number/Name)** PE 0602890D8Z / *High Energy Laser Development*	**Project (Number/Name)** 890 / *High Energy Laser Development*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
- Characterize and understand the physics of high energy laser atmospheric propagation in adverse environmental conditions such as fog, rain, smoke and dust. Improve cameras and track illuminators to enable target engagement at longer ranges and enable improvements to shorten engagement timelines. Evaluate effectiveness of Digital Holography for wavefront compensation with improved deformable mirrors for HEL propagation through severe turbulence and reducing SWaP - Collaborate with the national and international directed energy community on progress in the development and application of high energy laser technologies for military missions. Validate predictive models through analysis of atmospheric propagation data and measurements. - Provide maintenance, verification, validation, and accreditation for updated system level atmospheric propagation and high energy laser system models. Collaborate with Service-sponsored field-test planning to correlate model predictions with measured data for surface, maritime and aerospace environments. Incorporate atmospheric data into theater models to support performance characterization tables. Continue the development of a predictive avoidance fire control system for use on multiple platforms. - Develop theoretical physical models describing the propagation of a high power microwave (HPM) pulse through the atmosphere to understand the reflection characteristics of the HPM propagation. Study and understand the dynamic behavior of the propagation of high-power microwave pulses and the effects on the intensity, frequency, and width of the pulse and the physical processes occurring during the interaction of the pulse with the air. Develop hardware and technologies to improve throughput efficiency of the antenna, decrease component weight, and improve tracking and compensation through the atmosphere. - Characterize and understand the physics of high power microwave propagation in adverse environmental conditions. Collaborate with the national and international directed energy community on progress in the development and application of high power directed energy weapon (DEW) technologies for military missions. - Integrate lethality and target imagery data into campaign-level high energy laser system models. Conduct FY 2022 Accomplishments: Achieved fiber laser pump power necessary for 6 kW fiber amplifiers supporting higher power fiber combined HEL concepts. Completed SWIR camera focal plane array testing and validation for active fine track and wavefront compensation. ***FY 2023 to FY 2024 Increase/Decrease Statement:***			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 2	**R-1 Program Element (Number/Name)** PE 0602890D8Z / *High Energy Laser Deve lopment*	**Project (Number/Name)** 890 / *High Energy Laser Development*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
FY 24 increase funding of $0.217 million is for programmatic adjustments and budget fluctuations.			
Accomplishments/Planned Programs Subtotals	44.212	48.587	48.804

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

N/A

D. Acquisition Strategy

N/A

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 2: *Applied Research*	**R-1 Program Element (Number/Name)** PE 0602891D8Z / *FSRM Modeling*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	2.000	-	2.000	2.000	2.000	2.000	2.000	Continuing	Continuing
360: *FSRM*	-	0.000	0.000	2.000	-	2.000	2.000	2.000	2.000	2.000	Continuing	Continuing

Note

New Start (Y/N): Yes

A. Mission Description and Budget Item Justification

Supports development of a facility optimization data model utilizing component real property data and investment plans that optimizes the allocation of funding to maximize facility condition and is capable of determining the level of facility investment required to meet minimum facility condition thresholds.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	0.000	0.000	0.000	-	0.000
Current President's Budget	0.000	0.000	2.000	-	2.000
Total Adjustments	0.000	0.000	2.000	-	2.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• New Start	-	-	2.000	-	2.000

Change Summary Explanation

FY 2024 New Start

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 2	R-1 Program Element (Number/Name) PE 0602891D8Z / *FSRM Modeling*	Project (Number/Name) 360 / *FSRM*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
360: *FSRM*	-	0.000	0.000	2.000	-	2.000	2.000	2.000	2.000	2.000	Continuing	Continuing

Note

New Start (Y/N): Yes

A. Mission Description and Budget Item Justification

The Facilities Sustainment, Restoration, and Modernization (FSRM) requirement is inclusive of the development of a computer system, development of software, development of standards for the FSRM prioritization. All will aid in the establishment metrics for adjudicating FSRM funding sufficiency for use in future Program and Budget Reviews.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: FSRM Modeling	0.000	-	2.000
Description: N/A ***FY 2024 Plans:*** Hire contract support to begin work on the development of a computer system and software. Will also work on the development of standards for the FSRM prioritization. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2024 new start.			
Accomplishments/Planned Programs Subtotals	0.000	-	2.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

N/A

D. Acquisition Strategy

N/A

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603000D8Z / *Joint Munitions Advanced Technology*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	-	29.706	34.065	37.706	-	37.706	35.224	30.816	24.434	24.983	Continuing	Continuing
077: *Enhanced Munitions Advanced Technology*	-	29.706	34.065	37.706	-	37.706	35.224	30.816	24.434	24.983	Continuing	Continuing

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

This program supports the Department's initiatives to Deter Aggression, and Defend the Homeland.

This program advances, demonstrates and transitions joint, pervasive munitions enhancing technologies (warheads, propulsion systems, advanced lethality mechanisms, fuzes and fuze components, and targeting). The goal is to demonstrate joint advanced technologies that increase and improve the performance, lethality, range, reliability, safety, and survivability for existing and inform development of future weapons systems. The program strategically develops and demonstrates advanced munitions technologies that ensure warfighter technical superiority and enable outcomes in the Joint fight. The program technology objectives include: high-speed weapon delivery, longer-range precision effects, networked and collaborative systems of systems, agility at the engagement level, increased capacity/affordable munitions, survivability during deployment and target engagement, and open systems architecture. This program's Joint Munitions Advanced Technologies are vital to guide, coordinate and maximize DoD and Service S&T munitions investments into follow-on system demonstration and integration activities.

The program prioritizes investments from a Joint Service perspective and demonstrates technologies that inform capabilities, thus maximizing efficiencies and ensuring the development of technologies with the broadest applicability to ensure good stewardship of taxpayer dollars. This munitions Science and Technology (S&T) program focuses on enhancements in weapon speed, range, and lethality.

In order to maintain superiority against near peer adversaries, there is an urgent need to provide U.S. warfighters with augmented or new capabilities to ensure technical superiority. The program follows a threat/opportunity analysis to develop kinetic capabilities that enable scenario-based effects from a Joint Fight perspective by exploring technological advances that are beyond Service investment risk acceptance and target asymmetric advantage. The goal is to enable military dominance to ensure effective deterrence of adversary aggression.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603000D8Z *I Joint Munitions Advanced Technology*

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	30.140	34.065	38.823	-	38.823
Current President's Budget	29.706	34.065	37.706	-	37.706
Total Adjustments	-0.434	0.000	-1.117	-	-1.117
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.429	-			
• Program Adjustments	-0.005	-	-1.117	-	-1.117

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2022	FY 2023
Project: 077: *Enhanced Munitions Advanced Technology*		
Congressional Add: *Energetics Revitalization*	6.927	-
Congressional Add Subtotals for Project: 077	6.927	-
Congressional Add Totals for all Projects	6.927	-

Change Summary Explanation

FY 2024 reduction of $1.117 is comprised of a realignment of $1.268 million to support the Historically Black Colleges and Universities/Minority Serving Institutions program, which is a priority of the Under Secretary of Defense for Research and Engineering (USD(R&E)), $0.061 million to support departmental priorities and an economic assumption of $0.212.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603000D8Z / *Joint Munitions Advanced Technology*	Project (Number/Name) 077 / *Enhanced Munitions Advanced Technology*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
077: *Enhanced Munitions Advanced Technology*	-	29.706	34.065	37.706	-	37.706	35.224	30.816	24.434	24.983	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Enhanced Munitions Advanced Technology effort will demonstrate advanced technologies and perform associated research that will improve the performance, range, and lethality of existing and future weapons systems. This effort will take promising technologies demonstrated at the laboratory scale and transition them into demonstration programs utilizing broadly applicable munitions in the concept and development stages. Matured and demonstrated Enhanced Munitions technology can be transitioned, thereby decreasing the Program Executive Office's (PEO) program costs and schedule risk, facilitating spin-offs to other munitions within their portfolios. Technologies demonstrated seek to improve the performance, lethality, and range of weapons to ensure the U.S. is not outgunned and outranged on the battlefield of the future.

This program exploits developments in machine learning, artificial intelligence, quantum computing, and advanced material technologies and applies them to enable next generation kinetic weapons capabilities in the areas of advanced propulsion, warhead effects, enabling fuze technologies, and pioneering targeting technologies with a specific focus on enhancing kinetic weapons lethality, range and resultant effects. The program informs technology investments with broad applicability across across the Department. Investments are informed by threat-opportunity based analyses that focus on developing weapons systems for technological dominance to enable military objectives in Joint Force campaign scenarios. Technology roadmaps for munition technical areas will guide investments consistent with the DoD National Defense Strategy and inform Service technology investments. The program will establish a Department-wide/Industry/Academia Public-Private-Partnership (PPP) collaboration that mitigates stakeholder identified deficiencies to coordinate and accelerate munitions technology development, demonstration, and transition.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Enhanced Munitions Advanced Technology	22.779	23.065	22.706
Description: Enhanced Munitions Advanced Technology focuses on the following key areas: - Munitions Versatility: Combined and Collaborative Kinetic Effects - Munitions Readiness: Modularity, Advanced Manufacturing and Materials - Munitions Efficiency: Weapon Survivability - Munitions Effectiveness: • Munitions Kinetic and Tailorable Lethality Effects • Propulsion Systems • Target Detection and Burst Point Control			
FY 2023 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603000D8Z / *Joint Munitions Advanced Technology*	**Project (Number/Name)** 077 / *Enhanced Munitions Advanced Technology*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
- Complete advanced technology design of Solid Fuel Ramjet missile motor and case assemblies to support an extended range air to ground missile system, and fabricate for a maximum range test. - Complete design and fabrication of hardware and scale up selected propellant for a full-size test of an improved missile boost motor demonstrator for extended range in cruise missiles. - Complete fabrication and deployment of inlet design and down-selection testing of nozzle design for a modular propulsion system for air to ground system with improved range and speed. - Initiate high resolution height of burst radar work leveraging Multiple Input Multiple Output (MIMO) technology currently used in communication and automotive industries by upscaling to handle closing velocities up to Mach 5. - Continue future miniature precision munitions work by completing space claims for fuzing, seeker/sensor, guidance and warhead and initiating integration efforts. - Complete the characterization of Exploding Foil Initiator designs incorporating a Direct Header Deposition (DHD) design to demonstrate superior extreme environment survivability over the current state of the art. - Develop and demonstrate feasibility of cooperative munitions technology incorporating communication and networking impacting guidance, target detection to enhance multiple weapons effectiveness. ***FY 2024 Plans:*** - Begin executing technology development through Public-Private Partnership (PPP) involving Department-wide/Industry/ Academia collaboration that accelerates the transition and application of emergent advanced munitions materials and capabilities. - Develop high energy fuel formulations and variable nozzle technologies for ramjet propulsion to increase future missile range and speed. - Continue developing munitions precision placement and fuzing technologies to enhance lethal effects in same or smaller munitions form factor. - Complete development of high resolution height of burst radar using Multiple Input Multiple Output (MIMO) technology. - Develop advanced miniature fuzing and modular thermal battery systems for improved performance, reduced SWaP, and improved producibility - Develop advanced energetics - alternate production methods, virtual testing and qualification, and for application in higher performance (range, speed lethality) munitions. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The decrease of $0.359 between FY2023 and FY 2024 reflects minor deviations in budget priorities.			
Title: High Reliability Cluster Munition ***Description:*** Execute enhanced area effects munitions technology development with transition into weapon demonstrators. ***FY 2023 Plans:***	-	11.000	15.000

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603000D8Z / *Joint Munitions Advanced Technology*	**Project (Number/Name)** 077 / *Enhanced Munitions Advanced Technology*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
- Conduct system level weapon area effects analyses. - Develop robust and efficient communications and power distribution between the munition's main fuze and individual submunitions. - Model and design optimized distributed munition expulsion, dispersion, and stabilization. - Develop precision submunition target detection and optimized warhead output. - Execute plans and projects through Joint Service and Industry team. Identify and coordinate Service demonstration and transition paths for High Reliability Cluster Munition. ***FY 2024 Plans:*** - With a focus on modular architecture for maximum applicability across the Joint Service, continue to develop missile technology using submunitions and sensor fused weapons that deliver distributed area effects against widely-dispersed, moving, and/or poorly located targets. - Begin evaluating technologies to optimize distributed munitions expulsion and dispersion against operationally relevant target scenarios. - Continue development and testing of precision target detection and advanced energetics/warhead technologies to enhance lethality. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The increase of $4.000 between FY 2023 and FY 2024 will allow High Reliability Cluster Munition Kinetic effects and payload dispense technologies development to optimize defeat of future pacing targets set as identified in operationally relevant Joint Campaign scenarios.			
Accomplishments/Planned Programs Subtotals	22.779	34.065	37.706

	FY 2022	FY 2023
Congressional Add: Energetics Revitalization	6.927	-
FY 2022 Accomplishments: Program increase will be used to accelerate modernization of energetic materials research, development and manufacturing. Energetic materials are Defense unique ingredients critical to all kinetic weapons systems. This effort will develop and demonstrate new energetics manufacturing capabilities focused on enhancing production efficiency, speed, and reducing single source risk to meet future warfighter and national security needs.		
Congressional Adds Subtotals	6.927	-

C. Other Program Funding Summary ($ in Millions)

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603000D8Z / *Joint Munitions Advanced Technology*	**Project (Number/Name)** 077 / *Enhanced Munitions Advanced Technology*

C. Other Program Funding Summary ($ in Millions)

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603021D8Z / *National Security Innovation Capital*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	0.000	0.000	0.000	15.085	-	15.085	15.104	15.123	15.137	15.153	Continuing	Continuing
834: *National Security Innovation Capital (NSIC)*	-	0.000	0.000	15.085	-	15.085	15.104	15.123	15.137	15.153	Continuing	Continuing

Note

New Start (Y/N): No.

This is not a new start Program Element (PE). Funding is being transferred from existing Defense Innovation Unit Prototyping PE 0604341D8Z beginning in FY 2024.

A. Mission Description and Budget Item Justification

This program supports the Department's initiatives to Build Sustainable and Long-Term Advantage, and Build a Resilient Joint Force Defense Ecosystem.

The mission of NSIC is to accelerate the development of dual-use hardware technologies critical to our national security and economic competitiveness. It is an initiative that enables dual-use hardware startups to advance key milestones in their product development by addressing the shortfall of private investment from trusted sources. NSIC's support enables companies to develop their technologies and products more rapidly. The resulting reductions in technical risk, along with the signaling of DoD interest in such dual-use companies, attracts trusted private investment that might otherwise sit on the sidelines. The overall result is more rapid and robust development of hardware in the U.S., the expansion of the defense industrial base and reduction of technology flow to adversaries.

Initial broad areas of focus are autonomy, communications, power, sensors and space.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	0.000	0.000	0.000	-	0.000
Current President's Budget	0.000	0.000	15.085	-	15.085
Total Adjustments	0.000	0.000	15.085	-	15.085
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Re-alignment from PE 0604341D8Z - DIU Prototyping	-	-	15.085	-	15.085

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603021D8Z *I National Security Innovation Capital*

Change Summary Explanation

The FY 2024 increase of $15.085 million is comprised of an internal realignment of $15.000 million from PE 0604341D8Z and an economic assumption increase of $0.085 million.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603021D8Z / *National Security Innovation Capital*	Project (Number/Name) 834 / *National Security Innovation Capital (NSIC)*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
834: *National Security Innovation Capital (NSIC)*	-	0.000	0.000	15.085	-	15.085	15.104	15.123	15.137	15.153	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This is not a new start Program Element (PE). Funding is being transferred from existing Defense Innovation Unit Prototyping PE 0604341D8Z beginning in FY 2024.

A. Mission Description and Budget Item Justification

The mission of NSIC is to accelerate the development of dual-use hardware technologies critical to our national security and economic competitiveness. It is an initiative that enables dual-use hardware startups to advance key milestones in their product development by addressing the shortfall of private investment from trusted sources. NSIC's support enables companies to develop their technologies and products more rapidly. The resulting reductions in technical risk, along with the signaling of DoD interest in such dual-use companies, attracts trusted private investment that might otherwise sit on the sidelines. The overall result is more rapid and robust development of hardware in the U.S., the expansion of the defense industrial base and reduction of technology flow to adversaries.

Initial broad areas of focus are autonomy, communications, power, sensors and space.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: National Security Innovation Capital	-	-	15.085
FY 2024 Plans: NSIC will continue efforts that were previously funded under PE 0604341D8Z for dual-use hardware startups developing products in autonomy, communications, power, sensors and space. Depending on the scope of the individual projects, NSIC will support up to ten companies with the $15,000,000 budgeted.			
FY 2023 to FY 2024 Increase/Decrease Statement: The increase of $15.085 million between FY 2023 and FY 2024 is the result of an internal realignment of $15.000 million from PE 0604341D8Z to capture National Security Innovation Capital requirements and a small economic assumption increase of $0.085 million.			
Accomplishments/Planned Programs Subtotals	-	-	15.085

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603021D8Z / *National Security Innovation Capital*	**Project (Number/Name)** 834 / *National Security Innovation Capital (NSIC)*

D. Acquisition Strategy

N/A

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603121D8Z / *SO/LIC Advanced Development*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	9.751	4.665	4.919	30.102	-	30.102	5.218	5.245	5.355	5.468	-	-
121: *SO/LIC Advanced Development*	9.751	4.665	4.919	30.102	-	30.102	5.218	5.245	5.355	5.468	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

This program supports the Department's initiatives to Deter Aggression, Defend the Homeland, and Build Sustainable and Long-Term Advantage.

The SUNet enterprise system is an unclassified, secure information platform that allows the user to communicate, analyze, and share information between defense, interagency, and foreign partners. Rested on SUNet are mission specific enclaves used to detect, monitor, understand, and act in the information environment. The SUNet system provides defense and interagency partners with an accredited platform that enables secure unclassified information sharing, joint analysis, and advanced RDT&E in support of critical operational missions on a global scale. The platform currently supports more than a dozen sponsoring agencies with a range of missions, including but not limited to research and analysis of publicly available information, Phase 0 shaping, informing and influencing; building partner capacity; and enables rapid, iterative development and fielding of artificial intelligence and machine learning. The SUNet platform enables Irregular Warfare Support Directorate (IWTSD) to identify and develop capabilities to combat terrorism and irregular adversaries, and deliver these capabilities to DoD components and interagency partners with a provision of support to US military operations.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	4.665	4.919	5.072	-	5.072
Current President's Budget	4.665	4.919	30.102	-	30.102
Total Adjustments	0.000	0.000	25.030	-	25.030
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustment	-	-	25.030	-	25.030

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603121D8Z / *SO/LIC Advanced Development*

Change Summary Explanation

FY 2024 program increase provides the Defense Department, international mission partners, and other Federal organizations with an accredited information technology platform that enables rapid innovation, combined operational missions, information sharing between partners, and advanced research and development, to include testing and development of artificial intelligence and machine learning (AI/ML). SUNet provides unprecedented access to world-class AI developers and offers a unique development environment that enables algorithm development and testing with Controlled Unclassified Information, accelerating the deployment of AI/ML to warfighter systems. SUNet also hosts Sky Blue, which enables USEUCOM to collaborate with multinational partners and coordinate the transfer of critical security assistance to Ukraine. CDAO recently notified IWTSD of an emerging requirement from USD(P), OUSD(I&S), SOCOM, and JS to establish a similar collaboration and command and control capability on SUNet for INDOPACOM.

C. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Secure, Unclassified Network (SUNet)	4.665	4.919	30.102

Description: The SUNet enterprise system is an unclassified, secure information platform that allows the user to communicate, analyze, and share information between defense, interagency, and foreign partners. The organizational leads for the enclaves nested within SUNet provide the funding to not only conduct their mission work, but to sustain the SUNet enterprise platform, including maintenance, refresh, and cyber security activities. The SUNet system provides defense, interagency, and international partners with an accredited platform that enables secure unclassified information sharing, joint analysis, and advanced RDT&E in support of critical operational missions on a global scale. The platform currently supports more than a dozen sponsoring agencies with a range of missions, including but not limited to tracking donor equipment to support Ukraine, research and analysis of publicly available information, Phase 0 shaping, informing and influencing; building partner capacity; and enables rapid, iterative development and fielding of artificial intelligence and machine learning.

FY 2023 Plans:

In FY 2023, IWTSD plans to continue building an internal team that will focus on providing technical advice and overwatch of the Defense Contracting Organization and its prime vendor as they manage and maintain the SUNet enterprise system. IWTSD will continue to emphasize the importance of enhanced information assurance, cybersecurity monitoring, and program governance. IWTSD overwatch is to ensure the Department can efficiently and effectively support a growing number of users and enable their respective missions. Lines of effort include, but are not limited to:

- Maintain the accreditation and validate compliance with NIST 800-53 requirements
- Increase USG oversight to improve transparency and accountability
- Enhance IWTSD security overwatch as the prime vendor performs its role to detect and defend the network from cyber risks
- Respond to emerging mission requirements and enable rapid onboarding of new capabilities with security implemented upfront

FY 2024 Plans:

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603121D8Z *I SO/LIC Advanced Development*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
In FY 2024, IWTSD plans to continue its overwatch efforts to ensure enhanced information assurance, cybersecurity monitoring, and program governance to efficiently and effectively support a growing number of users and enable their respective missions. Lines of effort include, but are not limited to: • Maintain the accreditation and actively manage cyber risk • Refresh end-of-life hardware and software • Ensure availability of critical system functions ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The FY 2024 increase supports dedicated programmatic funding to counter SUNet cybersecurity risk because the former cost recovery model did not adequately cover system-wide enterprise requirements or costs. With prioritized cybersecurity requirements and dedicated program funding, SUNet operations and cybersecurity risk will be actively managed.			
Accomplishments/Planned Programs Subtotals	4.665	4.919	30.102

D. Other Program Funding Summary ($ in Millions)

N/A

Remarks

E. Acquisition Strategy

N/A

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603122D8Z / *Combating Terrorism Technology Support*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	1,192.199	137.971	153.114	75.593	-	75.593	77.258	78.900	80.555	82.247	-	-
484: *Combating Terrorism Technology Support (CTTS)*	1,192.199	137.971	153.114	75.593	-	75.593	77.258	78.900	80.555	82.247	-	-

Note

New Start (Y/N): No

Fiscal Year (FY) 2024 Overseas Operations Costs funding accounted for in the Base budget total $27.070 million.

A. Mission Description and Budget Item Justification

The Irregular Warfare Technical Support Directorate (IWTSD) supports the National Defense Strategy (NDS), the Irregular Warfare Annex, and will increase the priority of addressing capability gaps between U.S. military forces and peer and near-peer threats. This program recognizes that many of the existing requirements already support many of the high interest areas, to include increasing lethal capability of U.S. forces at the squad and small unit level; developing lethal drones; countering Small Unmanned Aerial Systems (drones); operating in deeply buried and hardened facilities; novel body and vehicle armor; detecting, protecting against, and mitigating novel and wartime CBRNE threats; telematics; covert communications; and of special interest, the use of machine learning and artificial intelligence to enhance the capability of systems used by the military and lessen the workload on the individual users.

IWTSD will continue to focus its R&D activities rapidly to fill the immediate, emerging and critical capability gaps of special operations forces, other military operators, intelligence analysts, and first responders that are at the leading edge of the fight or response.

The number of projects has been reduced due to the increased cost of incorporating artificial intelligence, machine learning, cyber hardening, and meeting safety testing requirements for an increasing number of systems. The focus on increased lethality has also driven up costs in to meet Defense safety and testing requirements.

Post COVID-19, IWTSD has resumed near normal, in-person collaboration and coordination with users, industry, and international partners. However, contracts with vendors are still being extended due to the impacts of the supply chain, lack of personnel, and the availability of laboratories for testing.

From a broader perspective, projects remain distributed among 10 mission categories:

- Advanced Analytics
- Chemical, Biological, Radiological, Nuclear, and Explosives
- Explosive Ordnance Disposal and Explosive Operations
- Expeditionary Force Protection
- Forensic Exploitation and Identity Operations
- Human Performance and Training
- Indirect Influence and Competition
- Protection, Survivability, and Recovery
- Surveillance, Collection, and Operations Support
- Tactical Offensive Support

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603122D8Z / *Combating Terrorism Technology Support*

Each of these programs have long held strong R&D partnerships with the components of USSOCOM, the Services, and many Defense Agencies.
While supporting the NDS by filling capability gaps for great power competition, the IWTSD program will also continue to identify capabilities to combat terrorism and irregular adversaries and quickly deliver these capabilities to U.S. Defense and interagency users, as well as international partners through rapid research and development, advanced studies, and technical innovation. The IWTSD continues to expand its partnerships with other Defense and the Interagency components, as well as with our foreign partners' rapid development and acquisition organizations to leverage their expertise and reduce unnecessary duplication as it tries to expedite and transition new and innovative capabilities. IWTSD is unique in its approach, annually obtaining joint requirements directly from military operators, intelligence analyst, and first responders and discussing those requirements with industry even before the requirements are released in a Broad Agency Announcement (BAA).
The IWTSD program continues to be a diverse, advanced technology development effort that capitalizes on interagency and international participation to demonstrate the utility and effectiveness of technology when applied to combating peer or near-peer forces, emerging threats, and combating terrorism requirements. This includes rapid technology development, safety testing, proof-of-concept demonstrations, operational test and evaluations of prototypes in the field, and coordinating the transition from development to production and operational use.
Beginning with the FY 2021 plan, the time from requirements to contracts was shortened to ensure the IWTSD was addressing the most near-term, identified needs. As such, the FY 2024 Program Requirements Meetings with users will take place in January, 2023 and contract awards will begin in October or November 2023 (the start of FY 2024). The IWTSD normally manages approximately 220 individual projects and international task plans; while also reviewing proposals and negotiating contracts for another 70 requirements for the next fiscal year.
The IWTSD program justified in the R-2 exhibit identifies the projects fully or partially funded by Congressional appropriations for the IWTSD program. However, IWTSD also develops technology and provides support using external funds provided by other DoD and federal departments and international partnerships. The funds for these projects and support activities are not reflected in this justification R-2; but the number of activities does reflect positively on the trust and competence that IWTSD has earned throughout the Department of Defense and interagency to rapidly conduct critical RDT&E and provide innovative products to fill their capability gaps.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	141.876	72.614	75.169	-	75.169
Current President's Budget	137.971	153.114	75.593	-	75.593
Total Adjustments	-3.905	80.500	0.424	-	0.424
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	80.500			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-3.905	-			
• Program Adjustment	-	-	0.424	-	0.424

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2022	FY 2023
Project: 484: *Combating Terrorism Technology Support (CTTS)*		

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603122D8Z *I Combating Terrorism Technology Support*

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2022	FY 2023
Congressional Add: *Combating Terrorism Technology Support (CTTS)*	-	80.500
Congressional Add Subtotals for Project: 484	-	80.500
Congressional Add Totals for all Projects	-	80.500

Change Summary Explanation

FY 2024 minimal program increase to address capability gaps between U.S. military forces and peer and near-peer threats.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603122D8Z / *Combating Terrorism Technology Support*	Project (Number/Name) 484 / *Combating Terrorism Technology Support (CTTS)*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
484: *Combating Terrorism Technology Support (CTTS)*	1,192.199	137.971	153.114	75.593	-	75.593	77.258	78.900	80.555	82.247	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

The Irregular Warfare Technical Support Directorate (IWTSD) supports the National Defense Strategy (NDS), the Irregular Warfare Annex, and will increase the priority of addressing capability gaps between U.S. military forces and peer and near-peer threats. This program recognizes that many of the existing requirements already support many of the high interest areas, to include increasing lethal capability of U.S. forces at the squad and small unit level; developing lethal drones; countering Small Unmanned Aerial Systems (drones); operating in deeply buried and hardened facilities; novel body and vehicle armor; detecting, protecting against, and mitigating novel and wartime CBRNE threats; telematics; covert communications; and of special interest, the use of machine learning and artificial intelligence to enhance the capability of systems used by the military and lessen the workload on the individual users.

During FY 2023, IWTSD will continue to focus its R&D activities rapidly to fill the immediate, emerging and critical capability gaps of special operations forces, other military operators, intelligence analysts, and first responders that are at the leading edge of the fight or response.

In FY 2022 or until funds are expended, the IWTSD will continue to address countering small unmanned aerial vehicles and enhance detection of, and operations in tunnels through implementation of the FY 2022 Congressionally directed and funded cooperative 50-50 cost sharing RDT&E projects with Israel.

Post COVID-19, IWTSD has resumed near normal, in-person collaboration and coordination with users, industry, and international partners. However, contracts with vendors are still extended due to the impacts of the supply chain, lack of personnel, and the availability of laboratories for testing.

Additionally, the number of projects has been reduced due to the increased cost of incorporating artificial intelligence and machine learning and cyber hardening of many systems. The focus on increased lethality has also driven up costs in to meet Defense safety and testing requirements.

From a broader perspective, projects remain distributed among 10 mission categories:

- Advanced Analytics
- Chemical, Biological, Radiological, Nuclear, and Explosives
- Explosive Ordnance Disposal and Explosive Operations
- Expeditionary Force Protection
- Forensic Exploitation and Identity Operations
- Human Performance and Training
- Indirect Influence and Competition
- Protection, Survivability, and Recovery
- Surveillance, Collection, and Operations Support
- Tactical Offensive Support

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Each of these programs have long held strong R&D partnerships with the components of USSOCOM, the Services; and many Defense Agencies. During FY 2022, IWTSD has been able to work with USSOCOM and the Services to transition or commit to transition over 30 products to a Program of Record. While IWTSD has seen a small rise in contributing funds from the commands, IWTSD no longer charges any fees against the contributary organizations.

While supporting the NDS by filling capability gaps for great power competition, the IWTSD program will also continue to identify capabilities to combat terrorism and irregular adversaries and quickly deliver these capabilities to U.S. Defense and interagency users, as well as international partners through rapid research and development, advanced studies, and technical innovation. The IWTSD continues to expand its partnerships with other Defense and the Interagency components, as well as with our foreign partners' rapid development and acquisition organizations to leverage their expertise and reduce unnecessary duplication as it tries to expedite and transition new and innovative capabilities. IWTSD is unique in its approach, annually obtaining joint requirements directly from military operators, intelligence analyst, and first responders and discussing those requirements with industry even before the requirements are released in a Broad Agency Announcement (BAA).

The IWTSD program continues to be a diverse, advanced technology development effort that capitalizes on interagency and international participation to demonstrate the utility and effectiveness of technology when applied to combating peer or near-peer forces, emerging threats, and combating terrorism requirements. This includes rapid technology development, safety testing, proof-of-concept demonstrations, operational test and evaluations of prototypes in the field, and coordinating the transition from development to production and operational use.

Beginning with the FY 2021 plan, the time from requirements to contracts was shortened to ensure the IWTSD was addressing the most near-term, identified needs. As such, the FY 2023 Program Requirements Meetings with users occurred in January, 2022 and contract awards will begin in October or November 2022 (the start of FY 2023). The IWTSD normally manages approximately 220 individual projects and international task plans; while also reviewing proposals and negotiating contracts for another 70 requirements for the next fiscal year.

The IWTSD program justified in the R-2 exhibit identifies the projects fully or partially funded by Congressional appropriations for the IWTSD program. However, IWTSD also develops technology and provides support using external funds provided by other DoD and federal departments and international partnerships. The funds for these projects and support activities are not reflected in this justification R-2; but the number of activities does reflect positively on the trust and competence that IWTSD has earned throughout the Department of Defense and interagency to rapidly conduct critical RDT&E and provide innovative products.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Advanced Analytic Capabilities (AAC)	4.907	6.308	7.886
Description: The Advanced Analytics (AA) Subgroup's objective is to develop and deploy integrated analytic capabilities; enabling Commanders, Warfighters, and Mission Partners to share information and make better/faster decisions at the Strategic, Operational, and Tactical levels. AA projects improve sense-making, decision-making, and data management across a range of mission areas.			
FY 2023 Plans: In FY 2023, the AA Subgroup plans to initiate or continue funding 5 projects in areas focused on novel capabilities for Irregular Warfare, supporting integrated deterrence and building enduring advantages, survivability, prioritizing China as a pacing challenge, and supporting Gray Zone campaigning. Examples include:			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
• An edge analytics application and Tactical Assault Kit (TAK) plugin to support generating objective 3D maps from actively or passively collected small unmanned aerial systems (sUAS)-based full motion video, infrared (IR), and associated metadata Phase 1. • A cloud-based software that automates search, extraction, organization, visualization, and mapping functions that extracts key insights into real-world social networks from Publicly Available Information (PAI) and open-source data. • The spiral development of the Enhanced Electronic Warfare Support System that enhances signal-processing performance and develops a supplemental signals reference library improving system machine learning capabilities. • A scalable AI model that uses innovative Random Domain Intercept Technology (RDIT) to understand and analyze the information battlespace in real time and support forecasting and decision-making at the operational and strategic levels. • An open source information prototype that uses current anticipatory analytic approaches to enable forecasting over three to five years to better forecast and project geopolitical turmoil that will drive future Title 10 requirements. In FY 2023, the AA Subgroup also plans to complete one project in areas focused on novel capabilities for Irregular Warfare and survivability. Examples include: • A Tactical Assault Kit (TAK)-plugin software that supports manual and automated data entry in the field for weather forecasting to guide the operator's workflow during pre-mission planning and preparation, mission execution, and post-mission assessments, and to identify all initial and recurring data requirements to generate reports on the operational environment of interest to combat leaders. ***FY 2024 Plans:*** In FY 2024, the AA Subgroup plans to continue or complete 5 projects in areas focused on novel capabilities for Irregular Warfare, supporting integrated deterrence and build enduring advantages, prioritizing China as the pacing challenge, supporting Gray Zone campaigning, and survivability. Examples include: • An edge analytics application and Tactical Assault Kit (TAK) plugin to support generating objective 3D maps from actively or passively collected small unmanned aerial systems (sUAS)-based full motion video, infrared (IR), and associated metadata. • A cloud-based software that automates search, extraction, organization, visualization, and mapping functions to extract key insights into real-world social networks from Publicly Available Information (PAI) and open-source data. • The spiral development of the Enhanced Electronic Warfare Support System that enhances signal-processing performance and develops a supplemental signals reference library improving system machine learning capabilities. • A scalable AI model that uses innovative Random Domain Intercept Technology (RDIT) to understand and analyze the information battlespace in real time and supports forecasting and decision-making at the operational and strategic levels. • An open source information prototype that uses current anticipatory analytic approaches to enable forecasting over three to five years to better forecast and project geopolitical turmoil that will drive future Title 10 requirements. In FY 2024, the AA Subgroup also plans to complete a unique project focused on novel capabilities for Irregular Warfare and survivability. Example includes:			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
• A software tool package that can inform crisis response and assess the potential for social manipulation via bot networks during a crisis situation, develop intervention strategies for reducing the potential for social hysteria and violence, and improve coalition partnerships and social trust among Nations supporting Humanitarian Assistance and Disaster Relief (HA/DR) operations. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Increase is reflective of Departmental priorities in artificial intelligence, big data analytics, and decision-making at the strategic and tactical levels			
Title: CHEMICAL, BIOLOGICAL, RADIOLOGICAL, NUCLEAR, AND EXPLOSIVES (CBRNE)	7.647	8.030	7.962
Description: The CBRNE Subgroup's objective is to improve defense capabilities to meet tomorrow's CBRNE threats. The subgroup focuses on threat characterization; materials attribution; personal protective equipment; detection of CBRNE materials at trace and bulk levels at point, proximity and stand-off distances; development of information resources and decision support tools to assist response elements with risk-based decision making; and consequence management for post-event activities. ***FY 2023 Plans:*** For FY 2023, the CBRNE Subgroup is currently evaluating requirements and proposals and plans to initiate funding 14 new requirements focused on novel capabilities for irregular warfare and survivability. Examples include, but are not limited to: • Development of a standoff chemical agent detector capable of detecting and identifying trace amounts of solid and liquid chemical threats on varying surfaces. • Development of a system that monitors changes in canine behavior, task engagement, and physical distress and provides easy-to-interpret feedback to the dog handler via a wearable signal reader. • Development of a test bed for short-term, quick-reaction studies, large scale field experiments, and full mission profile rehearsals to support the assessment and characterization of evolving CBRN threats as well as relevant mitigation and response measures. • Evaluation of decontamination mechanisms for their effectiveness in removing radiological contaminants on sensitive electronics. In FY 2023, the CBRNE Subgroup plans to continue funding 19 projects in areas focused on novel capabilities for irregular warfare and survivability. Examples include, but are not limited to: • Development of a ruggedized, handheld system for rapid detection and identification of biological agents without requiring sample preparation or buffer solutions from users. • Identification of successful operational guidance for decontaminating fentanyl and its analogs. • A multi-year test and evaluation program for the identification and rapid laboratory and field evaluation of emerging commercial and near-commercial explosive detection technologies to facilitate the acceleration, improvement, and fielding of promising capabilities.			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
• Alignment of methods for the collection, storage and transport of explosive vapor samples between international partners to support the development and assessment of explosive vapor detectors. In FY 2023, the CBRNE Subgroup also plans to complete 26 projects in areas focused on novel capabilities for irregular warfare and survivability. Examples include, but are not limited to: • Development of a low-cost detect-to-identify wearable sensing technology to inform chemical-specialist first responders and warfighters of the presence of a broad range of toxic industrial chemicals (TICs) and chemical warfare agents (CWAs) vapors. • Development of machine learning based detection algorithms for fielded ion mobility spectrometry (IMS) systems to achieve improved sensitivity, higher selectivity, detection of new threats, and reduced false alarm rate for explosive detection. • Development of an explosive trace detection training tool that provides feedback to users as they practice hands-on trace collection. • Development of improved footwear solutions to provide the operator protection from physical and CBR hazards while enabling the freedom of movement necessary to perform missions unencumbered. • Development of an unmanned aerial system payload to automatically detect, identify, and map chemical plumes for situational awareness. ***FY 2024 Plans:*** For FY 2024, the CBRNE Subgroup plans to continue 18 projects in areas focused on novel capabilities for irregular warfare. Examples include, but are not limited to: • Identification of common research and development gaps and initiate projects that improve the capabilities of military and civilian first responders in handling chemical, biological and radiological events. • Enhancing mitigation techniques to reduce the impact of threat releases in transportation platforms and confined spaces. • Evaluation and further development of the Ring IR Chemical Detector for the detection and identification of chemical warfare agents and toxic industrial chemicals in the air. • Testing and evaluation of next generation sensors for use in trace, bulk, proximity, and stand-off detection of explosives-based threats. • Development of a risk-based decision support model for skin decontamination in the case of dermal exposures to CWAs. • Development of Raman/FTIR libraries of biological threat agents. For FY 2024, the CBRNE Subgroup plans to complete 15 projects in areas focused on novel capabilities for irregular warfare. Examples include, but are not limited to:			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
• Development of a portable, ruggedized Raman microscopy system capable of detecting trace explosives and other residues with minimal logistical burden for operators. • Development of a low-cost universal chemical agent detection (UCAD) paper for rapidly indicating the presence of A, G, H, L and V-series chemical warfare agents. • Development of a Combined Unit Respirator for Subterranean Operational Environments (CRUSOE) to provide a respiratory life support system specifically designed for prolonged underground use. • Development of new computational and experimental tools and methods to improve and augment existing detection capabilities, provide early alerts to the presence of engineered organisms and help expedite appropriate responses ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Decrease is reflective of Departmental priorities.			
Title: Explosive Ordnance Disposal/Explosive Operations (EOD/EXO)	5.711	6.123	6.537
Description: The EOD/EXO Subgroup's objective is to deliver capabilities to defeat or neutralize the continuum of improvised weapons and explosive devices. EOD/EXO improves the operational capabilities of the bomb disposal and explosive operations community, consisting of military EOD, combat engineers, special operations force by developing and delivering advanced tools technologies, and decision support tools to defeat improvised devices. The EOD/EXO Subgroup identifies and prioritizes multi-agency end-user requirements in collaboration with military units. EOD/EXO actively works with vendors and end-users to deliver advanced prototype systems that provide greater efficiency and increased safety for Bomb Technicians who investigate, access, evaluate, and if needed, render safe or dispose of suspect devices. ***FY 2023 Plans:*** In FY 2023, the EOD/EXO Subgroup plans to initiate funding for 2 projects in the area focused on Enhance Survivability for Close Combat Formations, and 2) Integrate with the U.S. Interagency: • Development of a collection of 2-D images and 3-D scans of inert or inerted military ordnance, improvised explosive devices (IED) and IED-related components. These scans will help train artificial intelligence (AI) and machine learning (ML) algorithms to identify ordnance items in different orientations, as well as providing trainers a collection of accurate, well documented graphics for training EOD and Unexploded Ordnance (UXO) personnel. • Development of a comprehensive and shareable dataset that will include multi-angle photographs and x-ray images of microcontrollers and microsensors to augment future development of artificial intelligence-based IED threat recognition software. In FY 2023, the EOD/EXO Subgroup plans to continue funding 3 projects in areas focused on 1) Enhance Survivability for Close Combat Formations, and 2) Strengthen Alliances:			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
• Bilateral information exchange between U.S.-based bomb technicians and members of the Israel National Police Bomb Disposal Division. • Development of a training set of RFID chips that will mimic buried ordnance items, IEDs, and IED components to enhance handheld detector training, allow operators to reduce training time, and facilitate additional ad hoc mine detector training. • Development of machine learning (ML) algorithms that identify IEDs and ordnance using cameras and mobile computing technologies to enhance the safety and reduce the cognitive burden of CIED operators in high threat environments. In FY 2023, the EOD/EXO Subgroup plans to complete funding 9 projects in areas focused on 1) Enhance Survivability for Close Combat Formations, and 2) Integrate with the U.S. Interagency. Examples include, but are not limited to: • Hardware and software development and EOD/combat environment-specific ruggedization of a humanoid robotic platform for IED Defeat operations in urban environments. • Development of a full-color digital night-vision system to aid in IED component identification and diagnostics. • Development of a luminous and infrared marking spray and dispenser for tactical marking during urban and subterranean combat operations. • Development of a smart-device application that will allow bomb technicians to relay IED and IED incident information to fellow bomb technicians in real-time. • Development of a large, labeled, robust, and realistic IED and IED component dataset for training future machine learning and artificial intelligence-based C-IED projects. ***FY 2024 Plans:*** In FY 2024, the EOD/EXO Subgroup plans to continue funding 1 project in the area focused on 1) Strengthen Alliances: • Bilateral information exchange between U.S.-based bomb technicians and members of the Israel National Police Bomb Disposal Division.			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
In FY 2024, the EOD/EXO Subgroup plans to complete funding 4 projects in areas focused on 1) Enhance Survivability for Close Combat Formations, and 2) Integrate with the U.S. Interagency. • Development of a training set of RFID chips that will mimic buried ordnance items, IEDs, and IED components to enhance handheld detector training, allow operators to reduce training time, and facilitate additional ad hoc mine detector training. • Development of machine learning (ML) algorithms that identify IEDs and ordnance using cameras and mobile computing technologies to enhance the safety and reduce the cognitive burden of CIED operators in high threat environments. • Development of a collection of 2-D images and 3-D scans of inert or inerted military ordnance, improvised explosive devices (IED) and IED-related components. These scans will help train artificial intelligence (AI) and machine learning (ML) algorithms to identify ordnance items in different orientations, as well as providing trainers a collection of accurate, well documented graphics for training EOD and Unexploded Ordnance (UXO) personnel. • Development of a comprehensive and shareable dataset that will include multi-angle photographs and x-ray images of microcontrollers and microsensors to augment future development of artificial intelligence-based IED threat recognition software. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Increase is due to inflation.			
Title: FORENSIC Exploitation and Identity Operations (FEIO) ***Description:*** The FEIO subgroup's objective is to advance irregular warfare capabilities in investigative and forensic science. FEIO supports Defense Department organizations who apply investigative and forensic science methods, means, or practices to forensic intelligence or investigations. To meet this objective, the subgroup focuses on rapid research, development, test and evaluation of new and advanced technology, equipment, forensic techniques, and investigative tools, as well as development of information resources and support tools for risk-based decision-making and rapid exploitation of evidence. Projects emphasize rapid and field deoxyribonucleic acid (DNA) analysis, identification of insider threat within agencies, pre- blast and post-blast forensic examination, electronic evidence data acquisition and analysis, sensitive site exploitation, credibility assessment, forensic intelligence, and criminalistics. ***FY 2023 Plans:*** In FY 2023, the FEIO Subgroup plans to initiate funding 3 projects in areas focused on Novel Capabilities for Irregular Warfare, Support Integrated Deterrence and Build Enduring Advantages, and Enhance Survivability:	6.053	6.373	5.581

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
• Development of a software tool for sensitive site exploitation and other information collection that can be used on commonly available Android mobile devices. • Development of a facial recognition tool that fuses analytic algorithms with human examination to enhance skill and accuracy. • Development of a reference DNA swab instrument that automates the preparation and cutting of buccal swabs during the DNA processing and analysis. In FY 2023, the FEIO Subgroup plans to continue funding 2 projects in areas focused on Novel Capabilities for Irregular Warfare, Support Integrated Deterrence and Build Enduring Advantages, and Enhance Survivability: • Development of comprehensive non-coercive, rapport-based interviewing procedures from existing models for intelligence and law enforcement to elicit greater amounts of credible information during interrogations. • Development of an advanced multispectral surveillance and technical device that uses ultraviolet, infrared, and visible light for covert forensic detection and identification. In FY 2023, the FEIO Subgroup plans to complete funding 9 projects in areas focused on Novel Capabilities for Irregular Warfare, Support Integrated Deterrence and Build Enduring Advantages, and Enhance Survivability. Examples include, but are not limited to: • Development and fielding of a set of techniques for evidence disclosure during investigative interviews that optimize the acquisition of credible information from the interviewee. • Development and fielding of a web-based search engine and archive service that monitors social media and the dark web, collects audio data on subjects using speaker recognition and speech-to-text transcription, and identifies speakers by matching voice samples to watchlists. • Development and fielding of a software development kit that is compatible with all known federal government biometric file types and supports multiple programing languages for biometric records to ensure interoperability and data sharing across federal agencies. • Development and fielding of a digital tool that provides accessibility via secured internet from any worldwide location to high-resolution images of US travel and identification documents for verification by the DoD and other federal agencies. • Development and fielding of a gait recognition software capable of matching and identifying human gait/walking signatures in video files regardless of camera angles. ***FY 2024 Plans:*** In FY 2024, the FEIO Subgroup plans to initiate funding 2 projects in areas focused on Novel Capabilities for Irregular Warfare, Support Integrated Deterrence and Build Enduring Advantages, and Enhance Survivability:			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
• Initiate development of rapid DNA profiling of samples for sensitive sites and crimes to produce immediate results for field agents. • Initiate development of automated methods to locate and collect user specified images from social media and the dark web. In FY 2024, the FEIO Subgroup plans to complete funding 5 projects in areas focused on Novel Capabilities for Irregular Warfare, Support Integrated Deterrence and Build Enduring Advantages, and Enhance Survivability. Examples include, but are not limited to: • Development of an advanced multispectral surveillance and technical device that uses ultraviolet, infrared, and visible light for covert forensic detection and identification. • Development and fielding of a software tool for sensitive site exploitation and other information collection that can be used on commonly available Android mobile devices. • Development and fielding of a facial recognition tool that fuses analytic algorithms with human examination to enhance skill and accuracy. • Development and fielding of a reference DNA swab instrument that automates the preparation and cutting of buccal swabs during the DNA processing and analysis. • Development and fielding of comprehensive non-coercive, rapport-based interviewing procedures from existing models for intelligence and law enforcement to elicit greater amounts of credible information during interrogations. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Decrease is reflective of departmental priorities.			
Title: Indirect Influence and Competition (I2C) ***Description:*** The Indirect Influence and Competition (I2C) Subgroup's objective is to develop new concepts and capabilities for warfighters and interagency partners. In accordance with the National Defense Strategy, projects emphasize preparation to defeat adversaries, including great powers' proxies and irregular surrogates, and succeed in a wide range of contingencies in both physical and informational domains. In order to establish and reinforce IW as a core competency, I2C will engage in operational assessment, concept development, and independent validation of unique prototype capabilities to identify, confront, and defeat evolving threats across the range of military operations as well as those below the threshold of conventional war. ***FY 2023 Plans:*** In FY 2023, the I2C Subgroup plans to continue or initiate funding three (3) projects in areas focused on novel capabilities for irregular warfare, and supporting integrated deterrence and building enduring advantages. Examples include, but are not limited to:	5.915	6.121	7.294

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
• An IA-accessible UI of Chinese foreign financial flows, economic coercion, and soft power influence operations that enables IA users to track, visualize, analyze, and act on Chinese strategic competition efforts. Diplomatic, development, defense, and intelligence organizations are able upload, share, and interact together in the UI to maximize whole-of–government analysis and operations to counter China. • An Information Warfare Enabler Kit, Detachment (IWEK-D) to ensure interoperability of the proposed COTS solutions. The components enable PSYDETs the flexibility to operate across different operational environments while updating equipment to the modern industry standard. • A unique technical solution that overcomes difficulties addressing mis- and dis-information at scale on TikTok and Telegram. • A repeatable, standardized assessment and early warning (EW) process for operations in the information environment (OIE) that can be used manually or can be automated through machine learning and deep learning models. • Develop a low-cost multi-role platform to enable influence, surveillance and kinetic strike in grey zone and denied area operations. In FY 2023, the I2C Subgroup plans to complete funding five (5) projects in areas focused on supporting integrated deterrence and building enduring advantages, and developing novel capabilities for irregular warfare. Examples include: • A toolkit to provide SOF an enterprise-level ability to provide "last mile" cyber-enabled activities in order to bridge the gap between tactical and higher echelons of cyber capability. • Two (2) programs of instruction (POIs) and supporting materials for a Civil Affairs in Irregular Warfare and Governance Support course. Module topics include: Resiliency and Human Security; Irregular Warfare; Resistance Activities; Civil Network Development and Engagement; Civil Reconnaissance; Advising Governance Formation; Integrating Capabilities and Resources; and Advising Commanders on Governance Efforts. • Small containers, or “Air Delivery Vehicles” (ADVs) that can be safely air dropped individually or in clusters from offset locations to deliver any electronic, medical, or other device that is able to fit within its payload parameters. • Complete a final report with the United Kingdom which will be used to modernize and improve Full Motion Video processing, exploitation, and dissemination workflows. • An application for the Android Tactical Assault Kit (ATAK) that allows users to share and visualize civil information across the Interagency (IA) necessary to drive whole-of-government influence operations. ***FY 2024 Plans:*** In FY 2024, the I2C subgroups plans to continue or complete funding six (6) projects in areas focusing on novel capabilities for irregular warfare, supporting integrated deterrence and building enduring challenges, and prioritizing China as the pacing challenge. Examples include, but are not limited to:			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
• An Information Warfare Enabler Kit, Detachment (IWEK-D) to ensure interoperability of the proposed COTS solutions. The components enable PSYDETs the flexibility to operate across different operational environments while updating equipment to the modern industry standard. • Continue development and initiate operational testing of a low-cost multi-role platform to enable tactical level influence, surveillance and kinetic strike in grey zone and denied area operations. • An IA-accessible UI of Chinese foreign financial flows, economic coercion, and soft power influence operations that enables IA users to track, visualize, analyze, and act on Chinese strategic competition efforts. Diplomatic, development, defense, and intelligence organizations are able upload, share, and interact together in the UI to maximize whole-of–government analysis and operations to counter China. • A unique technical solution that overcomes difficulties addressing mis- and dis-information at scale on TikTok and Telegram. • A repeatable, standardized assessment and early warning (EW) process for operations in the information environment (OIE) that can be used manually or can be automated through machine learning and deep learning models. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Increase reflective of Departmental priorities in the focus areas on novel capabilities for irregular warfare, and supporting integrated deterrence and building enduring advantages.			
Title: Protection, Survivability, and Recovery (PSR)	32.615	6.444	6.455
Description: The Protection, Survivability, and Recovery Subgroup's objective is to develop new equipment, reference tools, and standards to improve the protection of personnel. Projects focus on putting innovative tools such as automated information management systems, communication devices, tagging, tracking and locating devices, mobile surveillance systems, as well as personal and vehicle protection equipment in the hands of personnel. ***FY 2023 Plans:*** For FY 2023, the PSR Subgroup is currently evaluating requirements and proposals in C-UAS detection, identification, tracking, and mitigation to increase capability in urban areas and against DoD Group 1 to Group 3 UAS and plans to initiate funding new requirements in collaboration with Israel. Also, in FY 2023, the PSR Subgroup plans to initiate funding 2 projects in areas focused on Survivability. These projects are: • Development of a small arms overpressure measurement system and database to collect data relevant to mild traumatic brain injury (mTBI) research. • Development of eyewear that protects users against high velocity fragmentation and 9mm. In FY 2023, the PSR Subgroup plans to continue funding 13 projects in areas focused on Survivability. Examples include, but are not limited to:			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
• Development of a standardized transparent armor for non-tactical vehicles with a ~30% reduction in weight and thickness while achieving a threshold ballistic protection rating of VPAM VR9. • Development of a ground-based drone interception system. • Development of a system that will baseline and track multiple elements of patient information, and wirelessly provide continuous updates and trends for triage decisions. In FY 2023, the PSR Subgroup plans to complete funding 8 projects in areas focused on Survivability. Examples include, but are not limited to: • Development of an eye protection system in the form of a face shield or glasses that provides the operator protection from frequencies of laser light while allowing enough visible light for the operator to see. • Development of a tracking device that will work in disadvantaged/denied GPS environments with no additional equipment. • Test and evaluation of two C-UAS radar systems and of a capture/carry UAS. ***FY 2024 Plans:*** In FY 2024, the PSR Subgroup plans to continue funding 12 projects in areas focused on Survivability. Examples include, but are not limited to: • Development of air-based optical detection of drones. • Development of advanced ground-based detection systems to detect small UAS. In FY 2024, the PSR Subgroup plans to complete funding 5 projects in areas focused on Survivability. Examples include, but are not limited to: • Development of a system that will baseline and track multiple elements of patient information, and wirelessly provide continuous updates and trends for triage decisions. • Development of a small arms overpressure measurement system and database to collect data relevant to mTBI research. • Development of eyewear that protects users against high velocity fragmentation and 9mm. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** No significant change.			
Title: Expeditionary Force Protection (EFP)	52.773	6.435	5.501

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Description: Rapidly develop and transition expeditionary force protection capabilities and technologies to support forward deployed and domestic military, international partners, interagency and first responders for Blast Effects and Mitigation; Maritime Security; Screening, Observation, Detection, and Protection; and Subterranean Environments. Focus these technology development efforts for expeditionary advance based operations, forward operating bases, and maritime port and littoral environments. ***FY 2023 Plans:*** In FY 2023, the EFP Subgroup plans to initiate funding for 17 projects in areas focused on 1) Develop novel capabilities for irregular warfare 2) Support for grey zone campaigning 3) Support integrated deterrence and build enduring advantages 4) Support for grey zone campaigning 5) Enhance Survivability 6) Increase lethality 7) Enhance human performance and training 8) Work Jointly with Allies and Partners, and 9) Work with Domestic Partners for Mutual Benefits with added interest in the maritime environment. In addition, the EFP Subgroup is currently evaluating requirements and proposals in counter tunnel and plans to initiate funding new requirements in collaboration with Israel. Examples include, but are not limited to: • A man-dive form-fit-function testing of industry prototype diver thermal systems in support of long endurance, cold water, and combat diving operations. • Development of common and interoperable measurement techniques for the assessment of high frequency Target Echo Strength of a variety of underwater targets; produce a standardized method; based on the technical performance enabling direct comparisons with foreign partners. • Test and evaluation of an Unmanned Underwater Vehicle and next generation sonar for waterside security (e.g., ports, harbors, and expeditionary advanced base operations). • Development of a testing and training fixture that will closely replicate subterranean and hard and deeply buried targets in threat countries to allow for Units of Action to research and develop technological solutions. In FY 2023, the EFP Subgroup plans to continue funding for 23 projects in areas focused on 1) Develop novel capabilities for irregular warfare 2) Support for grey zone campaigning 3) Support integrated deterrence and build enduring advantages 4) Support for grey zone campaigning 5) Enhance Survivability 6) Increase lethality 7) Enhance human performance and training 8) Work Jointly with Allies and Partners, and 9) Work with Domestic Partners for Mutual Benefits. Examples include, but are not limited to: • Hosting bi-annual data exchange with foreign partners to exchange research/info on physical protection of facilities, to include but not limited to: entry control points, vehicle barriers, blast/forced entry mitigation, and sensitive material destruction. • Leveraging assets and capabilities in Homemade Explosives (HME) materials characterization to support research efforts.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603122D8Z / *Combating Terrorism Technology Support*	**Project (Number/Name)** 484 / *Combating Terrorism Technology Support (CTTS)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
• Development and evaluation of a novel ship-to-shore fuel transport prototype to address mobility and compatibility requirements. • Development of an advanced exothermic capability, providing a Liquid Oxygen conversion to pure oxygen for exothermic entry into specific subterranean/hard target defeat targets. • Development of an existing rebreather solution (MK1) that provides a respiratory life support system designed specifically for underground operations, prolongs time on target (4 hours) beyond existing respirator capabilities, and integrates an air-purifying respirator component with the rebreather. • A subterranean operations pilot course that provides the Department of Defense and Interagency a holistic overview of the operational level considerations for planning and executing missions. For FY 2023, the EFP Subgroup plans to complete funding for 39 projects in areas focused on 1) Develop novel capabilities for irregular warfare 2) Support for grey zone campaigning 3) Support integrated deterrence and build enduring advantages 4) Support for grey zone campaigning 5) Enhance Survivability 6) Increase lethality 7) Enhance human performance and training 8) Work Jointly with Allies and Partners, and 9) Work with Domestic Partners for Mutual Benefits. Examples include, but are not limited to: • Test and evaluation of Ethylene-vinyl Acetate (EVA) laminated glass that will determine its blast protection performance as compared to Polyvinyl Butyral (PVB) laminated glass. • Development and testing of an algorithm that will automatically detect metallic and non-metallic weapons in baggage (e.g., guns and knives) and integrate the algorithm into an existing carry-on baggage x-ray system. • Test and evaluation of an enhanced waterside security system for port and harbor defense by integrating a next generation sonar, with algorithm enhancements, into the U.S. Waterside Security ARGUS System. • Biometric assessment methods to understand the stresses associated with conflict operations in dense urban & subterranean environments. • Development of an analytic tool that will predict specific subterranean activities. ***FY 2024 Plans:*** In FY 2024, the EFP Subgroup plans to continue funding 16 projects in areas focused on 1) Develop novel capabilities for irregular warfare 2) Support for grey zone campaigning 3) Support integrated deterrence and build enduring advantages 4) Support for grey zone campaigning 5) Enhance Survivability 6) Increase lethality 7) Enhance human performance and training 8) Work Jointly with Allies and Partners, and 9) Work with Domestic Partners for Mutual Benefits. Examples include, but are not limited to: • Hosting bi-annual data exchange with foreign partners to exchange research/info on physical protection of facilities, to include but not limited to: entry control points, vehicle barriers, blast/forced entry mitigation, and sensitive material destruction. • Leveraging assets and capabilities in Homemade Explosives (HME) materials characterization to support research efforts.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603122D8Z / *Combating Terrorism Technology Support*	**Project (Number/Name)** 484 / *Combating Terrorism Technology Support (CTTS)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
• Development of a testing and training fixture that will closely replicate subterranean and hard and deeply buried targets in threat countries to allow for Units of Action to research and develop technological solutions. • A subterranean operations pilot course that provides the Department of Defense and Interagency a holistic overview of the operational level considerations for planning and executing missions. In FY 2024, the EFP Subgroup plans to complete funding 24 projects in areas focused on 1) Develop novel capabilities for irregular warfare 2) Support for grey zone campaigning 3) Support integrated deterrence and build enduring advantages 4) Support for grey zone campaigning 5) Enhance Survivability 6) Increase lethality 7) Enhance human performance and training 8) Work Jointly with Allies and Partners, and 9) Work with Domestic Partners for Mutual Benefits. Examples include, but are not limited to: • A man-dive-form-fit-function testing of industry prototype diver thermal systems in support of long endurance, cold water, combat diving operations. • Development of common and interoperable measurement techniques for the assessment of high frequency Target Echo Strength of a variety of underwater targets; produce a standardized method; based on the technical performance enabling direct comparisons with foreign partners. • Development and evaluation of a novel ship-to-shore fuel transport prototype to address mobility and compatibility requirements. • Development and testing of a relocatable tower system with additional mast height, updated surveillance and communications technologies capable of transmitting real time imagery and geolocations between Command and Control sites and field operators. • Development of an advanced exothermic capability, providing a Liquid Oxygen conversion to pure oxygen for exothermic entry into specific subterranean/hard target defeat targets. • Development of an existing rebreather solution (MK1) that provides a respiratory life support system designed specifically for underground operations, prolongs time on target (4 hours) beyond existing respirator capabilities, and integrates an air-purifying respirator component with the rebreather. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Decrease is reflective of Departmental priorities.			
Title: SURVEILLANCE, COLLECTION AND OPERATIONS SUPPORT	8.388	9.758	10.464
Description: The Surveillance, Collection, and Operations Support (SCOS) Subgroup's objective is to identify high-priority user requirements and special technology initiatives. SCOS projects enhance U.S. intelligence capabilities to conduct retaliatory or preemptive operations and reduce the capabilities and support available to Violent Extremist Organizations and other adversaries.			
FY 2023 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603122D8Z / *Combating Terrorism Technology Support*	**Project (Number/Name)** 484 / *Combating Terrorism Technology Support (CTTS)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
In FY 2023, the SCOS Subgroup plans to initiate or continue funding 14 projects in areas focused on novel capabilities for irregular warfare, supporting integrated deterrence and build enduring advantages, prioritize China as the pacing challenge, and survivability. Examples include, but are not limited to: • Classified special communications projects that will develop a new satellite communications network, a next generation high data transfer network, and a High Frequency (HF) communication capability. • Classified technical collection projects that will develop a small form factor data storage capability, advanced spectrum collection capability, and small form factor signals of interest collection capability. • Classified technical collection project that continues development of a new Tagging, Tracking and Locating capability. • Classified special communications project that continues development of an alternate cell technology communications path. • Classified signature management projects that continue development of a new facial recognition risk reduction capability, a Closed-Circuit Television (CCTV) risk reduction capability, and new biological signature reduction capability. In FY 2023, the SCOS Subgroup also plans to complete 10 projects in areas focused on novel capabilities for irregular warfare, supporting integrated deterrence and build enduring advantages, Prioritizing China as the pacing challenge, and survivability. Examples include: • A classified Integrated Air Defense Geo-Location Technical Collection effort. • A classified Signature Management project to develop a Persona Management capability. • A classified Technical Collection project to develop new communication protocols that support counter surveillance and signals intelligence collection operations. • A classified Special Communications project focused on developing new Thin Film Antenna technologies. • A classified Cyber and Convergent technology project to develop a risk mitigation application. ***FY 2024 Plans:*** For FY 2024, the SCOS Subgroup plans to continue or complete funding 8 projects in areas focused on novel capabilities for irregular warfare, supporting integrated deterrence and build enduring advantages, Prioritizing China as the pacing challenge, and survivability. Examples include, but are not limited to: • Classified special communications projects that will develop a new satellite communications network, a next generation high data transfer network, and a High Frequency (HF) communication capability. • Classified technical collection projects that will develop a small form factor data storage capability, advanced spectrum collection capability, and small form factor signals of interest collection capability. • Classified technical collection project that continues development of a new Tagging, Tracking and Locating capability. • Classified special communications project that continues development of an alternate cell technology communications path.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603122D8Z / *Combating Terrorism Technology Support*	**Project (Number/Name)** 484 / *Combating Terrorism Technology Support (CTTS)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
• Classified signature management projects that continue development of a new facial recognition risk reduction capability, a Closed-Circuit Television (CCTV) risk reduction capability, and new biological signature reduction capability. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Increase reflective of Departmental priorities in special communications, cyber technology, and signature management.			
Title: Tactical Offensive Support (TOS) ***Description:*** The Tactical Offensive Support (TOS) Subgroup's mission is to execute rapid research and development projects and deliver superior capabilities with training to DoD and Interagency special operations tactical teams. The development focus is enabling small tactical units by providing state of the art overmatch capabilities in: Offensive Systems; Tactical Communications; Tactical Reconnaissance, Surveillance, and Target Acquisition Systems; and Specialized Infiltration, Access and Exfiltration Systems. ***FY 2023 Plans:*** In FY 2023, the TOS Subgroup plans to initiate or continue funding 20 projects in areas focused on increasing lethality and survivability. Examples include, but are not limited to: • Conduct basic research to improve super cavitating ammunition. • An advanced intermediate-caliber cartridge, side-fed Lightweight Assault Machine Gun (LWAMG) that allows machine gunners to provide effective volumes of fire and on-target performance at increased ranges. • A hybrid flash hider, suppressor, and muzzle brake contained in one easy-to-install device, for multiple calibers of weapons, that overall reduces the weapons' signature and lessens recoil impulse. • A low cost, hand-launched and recovered, fast VTOL loitering munition that employs Electro-Optical and Infrared sensors for both day and night operations to improve SOF force protection and rapid attack capability. • An advanced field-configurable, multi-role, sUAS platform designed to maneuver from outdoors to indoors that can selectively detect, identify, track, distract and/or destroy a variety of targets throughout complex urban terrain, utilizing organic ISR and 'plug-and-play' lethal payload capabilities as required. • A tactical deployment and recovery capability for US and UK Navy SOF surface and subsurface assets that increases environmental protection and improved signature reduction while ensuring direct interoperability between US and UK forces. • A caliber-specific, hybrid flash hider, suppressor, and muzzle brake contained in one easy to install device that will increase small tactical team lethality and allow operators to conduct target engagement with less potential for compromise. • An improved, multi-purpose type cartridge with increased muzzle velocities that demonstrates consistent accuracy to defeat current barriers at extended ranges. In FY 2023, the TOS Subgroup plans to complete 12 projects in areas focused on increasing lethality and survivability. Examples include, but are not limited to:	8.698	10.258	10.510

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603122D8Z / *Combating Terrorism Technology Support*	**Project (Number/Name)** 484 / *Combating Terrorism Technology Support (CTTS)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
• A weapon system, including supermatch, subsonic, and armor piercing incendiary ammunition, to increase hit potential by 50%, and lethal effects at extreme distances. • A high definition, mid-wave infrared thermal sight for use on lightweight medium machine guns and sniper rifles to enhance target identification at extreme ranges. • An overmatch optic that can be mounted on currently fielded small arms weapons, providing instant range, tracking and firing solution, for both ground and small Unmanned Aerial System (sUAS), during day and night operations at extended ranges. • A remotely operated lighting harness integrated with GPS for canines that handlers can operate based on mission activities. • A next generation Lightweight Medium Machine Gun (LWMMG) and lightweight ammunition to reduce operational load, providing operators a distinct advantage in both close-in and extended range fight and be able to transition rapidly from mounted to dismounted operations.			
FY 2024 Plans: For FY 2024, the TOS Subgroup plans to continue or complete funding 20 projects in areas focused on increasing lethality and enhancing survivability. Examples include, but are not limited to: • An unmanned ground system that integrates emerging quadrupedal robots with remote weapon platforms and advanced external optics to provide remote ground reconnaissance, surveillance, close to medium-range target acquisition, and small arms direct action capability. • A higher magnification optic equivalent to new and advanced extreme long-range weapon systems, that allows positive identification at extreme long ranges, with a digital overlay capable of receiving and displaying external information, such as target distance, as well as ballistic and weapon data. • An enhanced, target acquisition and small arms disabling fire capability for use in boat-to-boat or air-to-boat defensive operations. • A voice-controlled operating system for Advanced small Unmanned Aerial Systems (sUAS), leveraging Artificial Intelligence and Machine Learning, that will deliver an end user device to replace the traditional Operational Control Unit (OCU) and joystick. This will improve the speed of decision making and problem solving, thereby decreasing operator reaction time and increasing lethality. • A ballistically matched Multi-Purpose Round (MPR) that allows shooters to transition from match grade ammunition to MPR, improving accuracy and penetration. • A caliber-specific, hybrid flash hider, suppressor, and muzzle brake contained in one easy to install device that will increase small tactical team lethality and allow operators to conduct target engagement with less potential for compromise. • An improved, multi-purpose type cartridge with increased muzzle velocities that demonstrates consistent accuracy to defeat current barriers at extended ranges. • Continue basic research to improve super cavitating ammunition.			
FY 2023 to FY 2024 Increase/Decrease Statement:			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603122D8Z / *Combating Terrorism Technology Support*	**Project (Number/Name)** 484 / *Combating Terrorism Technology Support (CTTS)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Increase is due to inflation.			
Title: Human Performance and Training (HPT)	5.264	6.764	7.403
Description: The Human Performance and Training (HPT) Subgroup's objective is to provide Special Operations Forces (SOF), the Department of Defense (DoD), and interagency partners with agile, rapid response, R&D capabilities for optimizing performance in the operational environment and increasing readiness for tomorrow's threats. To meet this objective, the subgroup develops human-centered technologies that are performance outcome focused in the areas of immersive learning technology, human performance optimization, and innovative training and educational concepts. HPT's capabilities are implemented globally to prepare for critical missions in any operational environment to identify, disrupt, and defeat threats. ***FY 2023 Plans:*** In FY 2023, the HPT Subgroup plans to initiate or continue 6 projects in areas focused on novel capabilities for irregular warfare, survivability, increasing lethality, and enhancing human performance and training. Examples include, but are not limited to: • A SOF Peculiar Industrial Control Systems Defeat Range that integrates real-world sophisticated hardware and software rather than virtualized instantiations of peer and near-peer adversaries' sub-terrain operating environments. • A Program of Instruction to teach SOF Operators advanced cyber and electronic warfare skills for cyber defense, resilience, and the increased integration of cyber capabilities into the full spectrum of military operations. • A training course focused on teaching SOF operators how to think critically through their problem set and mission to, design, build, and employ customized small UAS systems utilizing locally procured Contractor off the shelf (COTS) components. In FY 2023, the HPT Subgroup also plans to complete 7 projects in areas focused on survivability, increasing lethality, and enhancing human performance and training. Examples include, but are not limited to: • Techniques for developing accurate and realistic 3D virtual cites for immersive, virtual reality-based pre-deployment operations training, mission planning, and mission rehearsal. • An AC-130J Virtual Reality Combat Mission Trainer to enable operational crews to engage in mission tasks within a simulated environment that replicates sensory information of real-world mission performance found in joint mission essential task (JMET) environments. • A multi-sensory (e.g., visual, auditory, tactile) and immersive military freefall jump master simulator to enhance classroom training and rehearsal of spotting techniques and aircraft procedures over virtual drop zones (DZ) modeled after real world DZs prior to going up in the air • Advanced Cyber Physical Testbeds that integrate real-world sophisticated hardware and software rather than virtualized instantiations of peer and near-peer adversaries' operating environments in order to train SOF cyber operators to conduct full spectrum cyber effects operations on par with peer and near-peer adversaries.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603122D8Z / *Combating Terrorism Technology Support*	**Project (Number/Name)** 484 / *Combating Terrorism Technology Support (CTTS)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
• Simulation-based immersive training to expose inexperienced military working dog (MWD) handlers to a broad range of tactical decision-making scenarios and dog behaviors prior to and as an integral part of working with a real-world MWD. ***FY 2024 Plans:*** In FY 2024, the HPT Subgroup plans to continue or complete 6 projects in areas focused on survivability, increasing lethality, and enhancing human performance and training. Examples include, but are not limited to: • An electro-optical see-through device (or heads-up-display) that can be added to the operator's helmet, integrating key information from multiple sources and present it in a single user defined display. • Special Operations Forces biometric assessment methods to illuminate the stresses of operations involving dense urban & subterranean environment. This data will be used to develop training interventions to mitigate these stresses before, during, and after mission execution. • An advanced brain-machine interface for communicating basic verbal commands to a K9. The system will allow for hands-free, partially silent communication at standoff distances to K9s using a brain-machine interface. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Increase reflective of Departmental priorities in human performance optimization, cyber training, and immersive learning technology.			
Accomplishments/Planned Programs Subtotals	137.971	72.614	75.593

	FY 2022	FY 2023
Congressional Add: Combating Terrorism Technology Support (CTTS)	-	80.500
FY 2023 Plans: FY 2023 congressional add supports the CTTS Tunneling program, Counter-UAS, Sub-Captivating Munitions, & AI in Explosive Ordinance Disposal.		
Congressional Adds Subtotals	-	80.500

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

N/A

D. Acquisition Strategy

N/A

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603133D8Z / *Foreign Comparative Testing*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	158.243	24.885	26.802	27.078	-	27.078	27.612	28.210	28.801	29.427	-	-
313: *Foreign Comparative Testing*	158.243	24.885	26.802	27.078	-	27.078	27.612	28.210	28.801	29.427	-	-

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

This program supports the Department's initiatives to Defend the Homeland, Deter Aggression, and Build a Resilient Joint Force.

The Foreign Comparative Testing (FCT) Program increases Joint Force readiness and lethality by providing near-term solutions to existing and future Department of Defense (DoD) capability gaps by leveraging the Research & Development (R&D) investments of allied nations and coalition partners. The FCT Program Element (PE) evaluates prototypes derived from allied and partner nation technologies to provide the U.S. Armed Services, U.S. Special Operations Command (USSOCOM), and Defense Agencies capabilities to counter emerging threats. The FCT Program's broad reach across our allies and friendly foreign countries enables development of innovative, cost effective, and interoperable solutions to meet needs communicated by the Joint Chiefs of Staff and the Combatant Commanders. FCT strengthens alliances by facilitating international collaboration and evaluating technologies that increase interoperability while serving as a catalyst for teaming and other business relationships between international and domestic industries.

Partner nations recognize the long-term value of the "two-way street" for Defense procurements for which FCT provides an avenue. Numerous successful projects have resulted in the licensed production of a qualified foreign item in the United States, including the creation of jobs and contributions to local economies. To date, companies from 34 states have benefited from FCT projects. FCT supports DoD best practices by incentivizing the use of prototyping and experimentation in advancing technological solutions to warfighter problems and acts as a hedge against threat developments. FCT enhances affordability by reducing development costs and risk, accelerating acquisition timelines, and increasing competition. Through increasing joint lethality and readiness, strengthening alliances, and delivering affordable performance on accelerated timelines, FCT supports the National Defense Strategy and the Under Secretary of Defense for Research and Engineering (OUSD R&E) critical technology areas. Authorized by Title 10, U.S. Code, Section 2350a (g), the FCT program is managed by the Office of the Under Secretary of Defense for Research and Engineering (OUSD R&E), International Prototypes and Experiments (IP&E) Office and projects are jointly conducted by the Military Services and USSOCOM.

Measurable Outcomes:
-FCT projects will demonstrate capability objectives within 12-36 months.
-Over its 43-year history, FCT has a transition rate of 61 percent (411 out of 679) for completed projects. Of the 411 projects that tested successful, 326 or 79 percent resulted in follow-on procurements of over $12.025 billion.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603133D8Z / *Foreign Comparative Testing*

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	25.352	26.802	27.554	-	27.554
Current President's Budget	24.885	26.802	27.078	-	27.078
Total Adjustments	-0.467	0.000	-0.476	-	-0.476
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.463	-			
• Program Adjustment	-0.004	-	-0.476	-	-0.476

Change Summary Explanation

The FY 2024 decrease is comprised of a re-alignment decrease of $0.600 million to support the Historically Black Colleges and Universities/Minority Serving Institutions program, which is a priority of the Under Secretary of Defense for Research and Engineering (USD(R&E)), a decrease of $0.028 million to support departmental priorities, and an increase of $0.152 million for an economic assumption inflation.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603133D8Z / *Foreign Comparative Testing*	Project (Number/Name) 313 / *Foreign Comparative Testing*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
313: *Foreign Comparative Testing*	158.243	24.885	26.802	27.078	-	27.078	27.612	28.210	28.801	29.427	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The FCT Program Element funding supports projects that test and evaluate innovative technologies already developed by partner nations and in doing so, directly aligns to the National Defense Strategy through increasing joint lethality in contested environments, strengthening partnerships, and fostering reform through delivery of capability at the speed of relevance. Program portfolio aligns with the critical technology areas where applicable. Individual projects typically average less than $1.000 million each and complete within 12-36 months. Projects are proposed by the Military Services and USSOCOM and are selected using a merit-based process that identifies the most promising, innovative, and cost-effective solutions to validate warfighter requirements, with an emphasis on transitioning technologies into current or future programs of record. Projects selection is based on potential to yield cost, schedule, or performance improvements over the status quo.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Norwegian Advanced Surface to Air Missile System (NASAMS) Operational Assessment (Air Force/Space Force) ***Description:*** This project conducts an operational assessment of the NASAMS fire distribution center integrated with the Combined Joint Task Force Horn of Africa Integrated Air and Missile Defense architecture. NASAMS provides a more affordable air and missile defense capability option against emerging unmanned aerial vehicles and land attack cruise missile threats. If successful, this technology will be available for rapid transition to regional Combatant Commands as required. Initiated project and test article contract in FY 2022. This project continues in FY 2023 with FY 2022 funds. Awarded test article contract and conducted test planning in 1Q FY 2023. Conduct operational simulations and evaluations in 2Q to 3Q FY 2023. Complete final integration and closeout reports in 4Q FY 2023.	1.980	-	-
Title: Semi-Autonomous Devices for Medical Care (Army) ***Description:*** This project evaluates commercially available interoperable medical devices such as ventilators and intravenous pumps that are remotely controlled. These devices provide improvements in the quality and safety of patient care by enabling immediate adjustment of device settings without requiring a human to physically be present. If successful, this technology will transition to the Army's Military Medical Development Activity for follow-on specific operational testing and requesting Food and Drug Administration clearance prior to procurement and fielding. Completed phase I laboratory testing in FY 2022. This project continues in FY 2023 with FY 2022 funding. Completed phase II non-clinical device interoperability testing in 2Q FY 2023. Complete final test and closeout reports in 3Q FY 2023.	0.674	-	-
Title: Skywall Auto Response (Army)	0.565	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603133D8Z / *Foreign Comparative Testing*	**Project (Number/Name)** 313 / *Foreign Comparative Testing*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Description: This project evaluates a non-kinetic counter unmanned aerial system for vehicles and fixed site configurations. This technology increases the probability of defeat while reducing collateral damage. If successful, this technology will transition the Army's Program Manager for Soldier Lethality and the Air Force Life Cycle Management Center for follow-on procurement and fielding. This technology is of interest to all Services and other government agencies. Test articles received and initial testing completed in FY 2022. This project continues in FY 2023 with FY 2022 funding. Complete test and demonstration events in 1Q to 3Q FY 2023. Complete final test and closeout reports in 4Q FY 2023.			
Title: Advanced Closed Cycle Hull Cleaning (Navy/USMC) ***Description:*** This project comparatively tests robotic systems that capture and treat marine biofouling collected during underwater hull cleaning operations. This will improve the DoD's global environmental compliance posture and increase operational readiness as existing methods of hull cleaning do not comply with new environmental regulations, particularly on the west coast of the United States due to the creation of biofouling. If successful, the Naval Sea Systems Command's Salvage and Diving office will update hull-cleaning specifications and the technology will transition to hull cleaning service providers as required to meet the new specifications. Comparative testing initiated during FY 2022. This project continues in FY 2023 with FY 2022 funding. Completed comparative testing during 2Q FY 2023. Complete final test and closeout reports during 3Q to 4Q FY 2023.	0.509	-	-
Title: Cold-Weather All-Terrain Vehicle (Army) ***Description:*** This project comparatively tests off-the-shelf cold weather capable tracked vehicles with enhanced off-road mobility. This accelerates the fielding of a replacement for an obsolete system and enables logistics support in austere conditions. If successful, this technology will transition to the Army's Program Executive Office for Combat Support and Combat Service Support for follow-on procurement and fielding through an Other Transaction Agreement. Test articles received and initial testing completed in FY 2022. This project continues in FY 2023 with FY 2022 funding. Complete first article and production testing in 1Q to 3Q FY 2023. Complete final test and closeout reports in 4Q FY 2023.	0.500	-	-
Title: Software Defined Acoustic Modem Evaluation (Navy/USMC) ***Description:*** This project comparatively tests commercial software-defined radios in underwater acoustic environments. This technology enables interoperable, reliable, and secure communication between surface and subsurface platforms and sensors. If successful, this technology will transition to Naval Undersea Warfare Center, Newport Division, for inclusion in follow-on large-scale prototype undersea network demonstration programs and additional evaluation. Phase I testing completed in FY 2022. This project continues in FY 2023 with FY 2022 funding. Phase II in-water testing completed in 1Q FY 2023. Phase III final demonstration conducted in 2Q FY 2023. Final test and closeout reports expected to complete in 3Q to 4Q FY 2023.	0.482	-	-
Title: Individual Assault Munition (Army)	0.300	-	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Description: This project evaluates a multi-purpose shoulder fired munition with a tandem warhead capable of defeating both armored vehicles and structures. This technology replaces two weapon systems and provides lethality overmatch in urban environments by enabling fire from enclosed spaces. If successful, this technology will transition to the Army's Product Director for Combat Armaments and Protection Systems for follow-on procurement and fielding. Performance testing completed in FY 2022. This project continues in FY 2023 with FY 2022 funding. Environmental testing conducted in 1Q to 2Q FY 2023. Final test and closeout reports completed in 3Q FY 2023.			
Title: Lightweight Short Range Guided Missile (USSOCOM) ***Description:*** This project comparatively tests man-portable, shoulder-fired missile systems that utilize seeker technology for engaging static or moving targets at extended ranges compared to existing unguided weapons systems within the USSOCOM inventory. This provides a more affordable guided munition than the FGM-148 Javelin weapon system. If successful, this technology will transition to USSOCOM's Program Executive Office, Special Operations Forces Warrior for follow-on procurement. Live fire testing completed in 4Q FY 2022. This project continues in FY 2023 with FY 2022 funding. Final test and closeout reports completed in 1Q FY 2023.	0.250	-	-
Title: Hybrid Vertical Takeoff and Landing (VTOL)/Fixed Wing Unmanned Aerial System (UAS) (Navy/USMC) ***Description:*** This project comparatively tests hybrid VTOL/Fixed Wing UAS to enable increased mission endurance/range, deployment from small boats and vehicles, and significant reduction in ground support footprint and manpower. If successful, this technology will transition to the Navy's Battlespace Awareness and Information Operations Program Office for follow-on testing and demonstrations to inform future procurement decisions. Performance testing and demonstrations completed in FY 2022. This project continues in FY 2023 with FY 2022 funding. Final test and closeout reports completed in 1Q FY 2023.	0.024	-	-
Title: Low-Cost Vertical Take-Off and Landing Precision Strike System (USSOCOM) ***Description:*** This project evaluates a small, agile loitering munition that can serve as both an intelligence, surveillance, and reconnaissance asset and a highly lethal munition, improving operational flexibility and effectiveness. This technology reduces the logistics burden by providing a reusable capability not available with existing loitering munitions. If successful, this technology will transition to USSOCOM's Precision Strike Systems Program of Record for follow-on procurement and fielding. ***FY 2023 Plans:*** Test planning occurred in 1Q FY 2023. Test articles expected to be received in 3Q FY 2023. Inert system testing expected to occur in 4Q FY 2023. This project continues in FY 2024 with FY 2023 funding. This project continues in FY 2024 with FY 2023	1.350	1.000	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
funding. Safety evaluation expected to occur in 1Q FY 2024. Lethality testing expected in 2Q FY 2024. Final test and closeout reports anticipated in 4Q FY 2024. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding decreases to zero in FY 2024 as testing concludes and project closed out.			
Title: Autonomous Wide Area Surveillance Sensor on small Unmanned Aerial Systems (sUAS) (Navy/USMC) ***Description:*** This project tests a video detection and ranging sensor on a small Group 1 UAS optimized for Maritime Wide-Area Surveillance in support of Naval and Marine Forces in the Littoral Battlespace. This technology autonomously detects small objects on the sea surface over very wide areas, during day and night, and in conditions up to Sea State 6. If successful, this technology will transition to the Navy and Marine Corps Small Tactical UAS Program Office (PMA-263) for follow-on procurement and fielding. ***FY 2023 Plans:*** Test article contract awarded in 1Q FY 2023. Test articles to be received in 3Q FY 2023. Complete testing in 4Q FY 2023. Complete final test and closeout reports completed in 4Q FY 2023. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding decreases to zero in FY 2024 as testing concludes and project closed out.	1.175	0.175	-
Title: Civil Affairs Solution - Army (CAS-A) Analytics with Synthetic Aperture Radar (SAR) Change Detection (USSOCOM) ***Description:*** This project tests intelligence software that fuses imagery from unmanned aerial systems and satellites with other sensor data and uses artificial intelligence and machine learning (AI/ML) to rapidly provide actionable analytics. This technology supports Department of Defense Civil Affairs operations by analyzing population migration caused by conflict or natural disasters to enable dynamic planning for large-scale operations. This project enhances the DoD capabilities in the AI/ML focus area. If successful, this technology will be available for transition to the Army's Distributed Common Ground System Program of Record. ***FY 2023 Plans:*** Test article contract awarded in 1Q FY 2023. Operational testing occurred in 2Q to 3Q FY 2023. Complete final test and closeout reports in 4Q FY 2023. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding decreases to zero in FY 2024 as testing concludes and project closed out.	0.630	1.310	-
Title: Precision Strike Indoor/Outdoor small Unmanned Aerial System (sUAS) (USSOCOM)	0.600	0.600	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Description: This project evaluates an sUAS for use during operations conducted in complex urban terrain, in both indoor and outdoor environments. This technology provides an affordable day/night reconnaissance, surveillance, and target acquisition capability with an optional lethal payload. If successful, this technology will transition to USSOCOM's Ground Organic Precision Strike Systems Program of Record for follow-on procurement and fielding. ***FY 2023 Plans:*** Phase I testing completed in 1Q FY 2023. Phase II testing completed in 2Q FY 2023. Complete final test and closeout reports in 4Q FY 2023. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding decreases to zero in FY 2024 as testing concludes and project closed out.			
Title: Comparative Test of 1000 volt Direct Current (DC) Power Systems for Directed Energy (Navy/USMC) ***Description:*** This project comparatively tests a Norwegian off-the-shelf large-scale energy storage system designed for maritime use against a comparable domestic product. This supports development of next generation directed-energy weapon systems for naval platforms. If successful, this technology will transition to the Navy's Guided Missile Destroyer program office to inform requirements for next generation platform development. ***FY 2023 Plans:*** Completed comparative testing in 1Q FY 2023. Complete final test and closeout reports in 2Q FY 2023. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding decreases to zero in FY 2024 as testing concludes and project closed out.	0.593	0.162	-
Title: Future Aviation Ground Power Unit (Army) ***Description:*** This project evaluates a modern, off-the-shelf aviation support system for military rotary wing aircraft. This technology improves aviation maintenance efficiency and reduces aircraft downtime. If successful, this technology will transition to the Army's Product Director for Aviation Ground Support Equipment for follow-on procurement and fielding. ***FY 2023 Plans:*** Performance verification testing conducted in 1Q to 2Q FY 2023. Complete final test and closeout reports in 3Q FY 2023. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding decreases to zero in FY 2024 as testing concludes and project closed out.	0.548	0.040	-
Title: Sappheiros Three-Dimensional Unattended Ground Sensors (Army)	0.500	0.600	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Description: This project evaluates a multi-modal sensor system that simultaneously provides terrestrial and subterranean perimeter surveillance. This technology offers increased operational capabilities over existing systems and addresses the associated gaps related to perimeter surveillance. If successful, this technology will transition to the Army's Advanced Unit Perimeter Security System and Marine Corps Tactical Remote Sensor Systems Programs of Record for follow-on procurement and fielding. ***FY 2023 Plans:*** Completed initial performance testing and demonstrations in 1Q FY 2023. Completed developmental testing in 2Q FY 2023. Complete operational testing in 3Q FY 2023. Conduct final demonstration in 4Q FY 2024. Complete final test and closeout reports in 4Q FY 2024. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding decreases to zero in FY 2024 as testing concludes and project closed out.			
Title: Target Detection Modernization for Mines (Navy/USMC) ***Description:*** This project evaluates a modern target detection device for application to existing Naval Mines. The device utilizes a multi-sensor suite (inertial, acoustic, photonic, and underwater electric) as well as sensor fusion to better detect, classify, and identify naval target vessels. This effort provides an affordable option to deliver improved performance of naval mines and replaces 20-year-old technology. If successful, the Navy's Mine Warfare Program Office (PMS 495) will transition the technology into the Quickstrike family of shallow-water, air delivered mines through an Engineering Change Proposal (ECP) in collaboration with the Air Force. ***FY 2023 Plans:*** Test planning occurred in 2Q FY 2023. Test articles to be received in 3Q FY 2023. Initiate testing in 4Q FY 2023. This project continues in FY 2024 with FY 2023 funding. Testing expected to complete in 2Q FY 2024. Final test and closeout reports anticipated in 4Q FY 2024. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding decreases to zero in FY 2024 as testing concludes and project closed out.	0.500	0.500	-
Title: Active Protection System, Hard-Kill (Navy/USMC) ***Description:*** This project evaluates a vehicle mounted system that autonomously detects, tracks, and engages threats with both Hard and Soft Kill countermeasures. This technology increases combat capabilities of light armored vehicles against rocket propelled grenades and anti-tank missiles. If successful, this technology will transition to Marine Corps Program Executive Office	0.480	0.985	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
for Land Systems for follow-on procurement and fielding on the Amphibious Combat Vehicle through an Engineering Change Proposal. ***FY 2023 Plans:*** Test planning and threat procurement occurred in 1Q FY 2023. Test articles received in 2Q FY 2023. Live fire testing completed in 3Q FY 2023. Final test and closeout reports completed in 4Q FY 2023. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding decreases to zero in FY 2024 as testing concludes and project closed out.			
Title: Airborne Threat Discrimination Sensors For Land and Ship Platforms (Navy/USMC) ***Description:*** This project comparatively tests wide-field-of-view electro-optic and infrared sensors for land and ship platforms as a complement to radar. This enables passive detection and tracking of challenging airborne threats. If successful, This technology will transition into relevant programs of record within the Navy's Program Executive Office for Integrated Warfare Systems and the Army's Program Executive Office for Ground Combat Systems. ***FY 2023 Plans:*** Conducted laboratory testing and field data collection events during 1Q to 3Q FY 2023. Final test and closeout reports completed in 4Q FY 2023. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding decreases to zero in FY 2024 as testing concludes and project closed out.	0.200	0.050	-
Title: Bridge Connector (Army) ***Description:*** This project evaluates an adapter that allows a floating bridge used by the U.S. Army to be used by German and British amphibious bridging systems. This technology enables enhanced joint multinational bridge operations in the European theatre to maximize limited resources. If successful, this technology will be transferred to U.S. Multi-Role Bridging Companies in Europe for immediate operational use as needed and will be available for additional follow-on procurements to support future operational needs. ***FY 2023 Plans:*** Test article contract awarded in 1Q FY 2023. Test articles received and testing initiated in 2Q FY 2023. ***FY 2024 Plans:*** Testing expected to complete in 2Q FY 2024. Final test and closeout reports anticipated in 4Q FY 2024. ***FY 2023 to FY 2024 Increase/Decrease Statement:***	0.300	0.400	0.300

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Funding decreases in FY 2024 as major test events occur in FY 2023.			
Title: 2.75" Guided Rocket for Multi-Domain Fast In-shore Attack Craft (FIAC) Engagement (Navy/USMC) ***Description:*** This project evaluates the capabilities of a “fire and forget” 2.75 inch rocket with an advanced Imaging Infrared seeker on an Unmanned Surface Vehicle (USV). This technology provides an effective asymmetric capability against FIAC swarms. If successful, this technology will transition to the Navy's Littoral Combat Ship Mission Modules Program Office for fielding on USVs. ***FY 2023 Plans:*** Test article contract awarded 1Q FY 2023. Unmanned Surface Vehicle integration planning occurred in 2Q to 4Q FY 2023. ***FY 2024 Plans:*** Test article delivery expected to occur in 2Q FY 2024. Live fire testing to occur in 3Q FY 2024. Final test and closeout reports anticipated in 4Q FY 2024. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding decreases in FY 2024 as test article procurements and major test events are completed.	0.025	0.795	0.500
Title: Anti-Submarine Warfare Sensor (ASW) for Unmanned Surface Vehicles (USVs) (Navy/USMC) ***Description:*** This project tests compact sonar sensors from Canada and Norway for potential application on U.S. Navy Unmanned Surface Vehicles (USVs). This project provides new capabilities for USVs to conduct ASW operations which are currently conducted by manned platforms. This project addresses the Autonomous Systems Critical Technology Area. If successful, this technology transitions to the Navy’s Unmanned Maritime Systems Program Office for follow on acquisition and fielding. Successfully completed demonstration of towed sensor at NATO Robotic Experimentation and Prototyping using Maritime Uncrewed Systems (REPMUS) annual military exercise in Portugal during 4Q FY 2022. This project continues in FY 2023 with FY 2022 funding. Hull mounted sensor test article contract awarded in 1Q FY 2023. Test planning to occur in 2Q to 3Q FY 2023. Test article expected to be received in 4Q FY 2023. ***FY 2024 Plans:*** Hull mounted sensor test article integration planned for 1Q FY 2024. Conduct at-sea testing and demonstration at Exercise Solid Curtain during 2Q FY 2024. Complete final test and closeout reports during 3Q to 4Q FY 2024. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding increases in FY 2024 to support hull mounted sensor test and demonstration events.	0.650	-	0.150
Title: Autonomous Anti-Submarine Warfare (ASW) Training Target (Navy/USMC)	-	0.600	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Description: This project evaluates an off-the-shelf autonomous mobile unmanned underwater vehicle that replicates the passive and active acoustic signatures of submarines. This technology provides enhanced ASW training effectiveness over current targets in U.S. Navy inventory and enables torpedo testing capability. If successful, this technology will transition to the Navy's Undersea Weapons Program Office for follow-on procurement and fielding. ***FY 2023 Plans:*** Initiated test planning in 1Q FY 2023. Test article contract awarded in 3Q FY 2023. This project continues in FY 2024 with FY 2023 funding. Test article delivery expected in 2Q FY 2024. Testing anticipated for 3Q FY 2024. Final test and closeout reports expected in 4Q FY 2024. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding decreases to zero in FY 2024 as testing concludes and project closed out.			
Title: M213 Fuze / Insensitive Munitions (IM) Hand Grenade (Army)	-	0.400	-
Description: This project comparatively tests off-the-shelf foreign fuzes for the M67 fragmentation hand grenade that exhibit reduced sensitivity to IM stimuli to increase warfighter safety. The legacy M67 was originally developed in the 1960s and does not meet today's IM safety requirements. If successful, this technology will transition to the Army's Program Executive Office for Ammunition for follow-on procurement and fielding. ***FY 2023 Plans:*** Lethality testing completed in 1Q FY 2023. Lethality analysis completed in 2Q FY 2023. Engineering tests completed in 3Q FY 2023. This project continues in FY 2024 with FY 2023 funding. Production fuze qualification testing expected to occur in 2Q to 3Q FY 2024. Final test and closeout reports expected in 4Q FY 2024. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding decreases to zero in FY 2024 as testing concludes and project closed out.			
Title: Lightweight Expeditionary Airfield Surfacing System (Navy/USMC)	-	0.800	0.800
Description: This project will evaluate a lightweight aircraft landing mat to replace legacy matting. This technology reduces the logistical footprint and increases installation efficiency for rapid deployment in austere locations. If successful, this technology will transition to the Navy and Marine Corps' Expeditionary Airfields program office for follow-on procurement and fielding. ***FY 2023 Plans:***			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Initiated test planning in 1Q FY 2023. Test article contract awarded in 3Q FY 2023. Test articles received in and phase I ground vehicle traffic testing initiated in 4Q FY 2023. ***FY 2024 Plans:*** Phase I testing expected to complete in 1Q FY 2024. Phase II aircraft trafficking testing expected to complete in 2Q FY 2024. Final test and closeout reports expected in 4Q FY 2024. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding remains constant in FY 2024 to complete phase II testing.			
Title: Enhanced Integrated Fire Control System for M3E1 (Army) ***Description:*** This project comparatively tests advanced fire control systems for the 84 millimeter shoulder fired reloadable recoilless M3E1 Multi-purpose Anti-armor Anti-personnel Weapon System. This technology provides enhanced targeting in both day and night operations at extended ranges. If successful, this technology will transition to the Army's Program Manager for Soldier Lethality for follow-on procurement and fielding. ***FY 2023 Plans:*** Initiate test planning in 1Q FY 2023. Award test article contract in 2Q FY 2023. Receive test articles in 3Q FY 2023. Initiate phase I testing in 4Q FY 2023. ***FY 2024 Plans:*** Receive phase II test articles in 1Q FY 2024. Conduct phase II testing in 2Q to 3Q FY 2024. Final test and closeout reports expected in 4Q FY 2024. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding increases in FY 2024 to support major test events and project closeout.	-	0.370	1.550
Title: High Power Electrical Isolation (Navy/USMC) ***Description:*** This project tests high power electrical disconnect switches to isolate next generation carrier based aircraft launch and recovery equipment for maintenance and repairs. This technology increases readiness by enabling concurrent operations and maintenance on complex mission critical systems. If successful, this technology will transition the Navy's Aircraft Launch and Recovery Equipment program office for follow-on procurement and fielding through an Engineering Change Proposal to the Electromagnetic Aircraft Launch System and Advanced Arresting Gear programs of record. ***FY 2023 Plans:***	-	0.402	0.656

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Initiate test planning in 1Q FY 2023. Test article contract award anticipated for 2Q FY 2023. Test articles expected to be received in 3Q FY 2023. Initiate Phase I and II testing in 4Q FY 2023. ***FY 2024 Plans:*** Phase III testing expected to occur in 1Q FY 2024. Phase IV and V testing expected to occur during 2Q to 3Q FY 2024. Final test and closeout reports expected in 4Q FY 2024. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding increases in FY 2024 to support major test events and project closeout.			
Title: 6T Lithium-Ion Batteries (Army) ***Description:*** This project comparatively tests foreign lithium-ion 6T batteries with increased energy capacity and longer cycle life against similar domestic products. This technology improves the mission capabilities and availability of military ground vehicles. If successful, this technology will be available as an option for procurement through the Defense Logistics Agency. ***FY 2023 Plans:*** Initiate test planning in 1Q FY 2023. Test article contract award anticipated for 2Q FY 2023. Test articles expected to be received in 3Q FY 2023. Initiate Phase I and II testing in 4Q FY 2023. ***FY 2024 Plans:*** Phase III testing expected to occur in 1Q FY 2024. Phase IV and V testing expected to occur during 2Q to 3Q FY 2024. Final test and closeout reports expected in 4Q FY 2024. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding remains constant in FY 2024 to support major test events and project closeout.	-	0.500	0.500
Title: Advanced Compact Unmanned Aerial Vehicle (UAV)-based Radar for All-visibility Targeting (Army) ***Description:*** This project evaluates a sensor system that fuses a compact digital beam forming radar with electro-optic and infrared sensors on Group 2 UAVs. This technology provides a persistent all-weather airborne reconnaissance capability. If successful, this technology will transition to the Army's Program Manager for Terrestrial Sensors for follow-on procurement and fielding. This technology is also of interest to various sensor programs across the DoD. ***FY 2023 Plans:*** Initiate test planning in 1Q FY 2023. Award test article contract in 2Q FY 2023. Receive test articles in 4Q FY 2023. ***FY 2024 Plans:***	-	0.622	0.435

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Conduct initial performance testing and demonstrations in 1Q FY 2024. Developmental testing expected to occur in 2Q FY 2024. Operational testing and final demonstrations expected to occur in 3Q FY 2024. Final test and closeout reports anticipated in 4Q FY 2024. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding decreases in FY 2024 as testing concludes and project is closed out.			
Title: Dual-mode Precision Guided 120 millimeter Mortar (USSOCOM) ***Description:*** This project evaluates a precision mortar round with both laser and Global Positioning System (GPS) guidance capabilities. This technology provides a tactical indirect fires system to defeat material and armored vehicles with pinpoint accuracy in contested environments. If successful, this technology will transition to USSOCOM's Program Manager for Special Operations Forces Lethality as well as service guided mortar programs for follow-on procurement and fielding. ***FY 2023 Plans:*** Test article contract awarded in 1Q FY 2023. Warhead arena testing conducted in 3Q FY 2023. Environmental testing completed in 4Q FY 2023. This project continues in FY 2024 with FY 2024 funds. ***FY 2024 Plans:*** Limited User Assessment anticipated for 1Q FY 2024. Final test and closeout reports expected in 2Q FY 2024. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding decreases in FY 2024 as test article procurements and major test events are completed in FY 2023.	-	0.750	0.500
Title: Alternate At-Sea Refueling (Navy/USMC) ***Description:*** This project evaluates a dual-fuel astern hose reel system installed on a commercial Offshore Support Vessel for underway replenishment. This technology provides an expanded logistics capability in contested maritime environments. If successful, the test article will be used for training and the technology will be available for follow-on procurement and fielding by Combatant Commanders to support operational needs. ***FY 2023 Plans:*** Test planning initiated in 2Q FY 2023. Test article contract awarded in 3Q FY 2023. Test article received in 4Q FY 2023. Phase I testing expected to occur in 4Q FY 2023. This project continues in FY 2024 with FY 2023 funding. Phase II testing expected to occur in 1Q FY 2024. Phase III testing expected to occur in 2Q FY 2024. Final test and closeout reports expected in 4Q FY 2024. ***FY 2023 to FY 2024 Increase/Decrease Statement:***	-	1.350	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Funding decreases to zero in FY 2024 as majority of funding is used for test article procurement. Testing costs in FY 2024 to be borne by service sponsor.			
Title: Low-Cost Innovative Projects (Projects Less Than One Million Dollars Each):	11.414	13.051	9.485
Description: The Office of the Under Secretary of Defense for Research and Engineering (OUSD R&E), International Prototypes and Experiments (IP&E) Office, selects multiple low-cost projects in the areas of Force Application, Force Protection, Force Support, Logistics, Artificial Intelligence and Machine Learning, Robotics and Autonomous Systems, Interoperability, and Countering Unmanned Systems. These projects were selected to deliver prototypes for evaluation, assessment, and Service adoption within 12 to 36 months. Soldier Borne Sensor System (Army) This project evaluates a next generation micro unmanned aerial systems with improved sensor capabilities and flight performance characteristics to enable enhanced situational awareness at the squad level. If successful, this technology will transition to the Army's Program Executive Office Soldier for follow-on procurement and fielding through the Soldier Borne Sensor Program of Record. Top Attack Armor (Army) This project comparatively tests improved vehicle protection technology for defeating overhead threats to Armored Fighting Vehicles. This provides protection against modern anti-tank threats while minimizing negative mobility impact. If successful, this technology will transition to the Army's Product Manager for Vehicle Protection Systems for integration into Ground Combat Systems and Next Generation Combat Vehicle Cross Functional Team programs for fielding through an engineering change proposal. Vehicle Mounted Camouflage System (Army) This project comparatively tests vehicle coverings that reduce detection across multiple spectrum bands including infrared, microwave, and radar to increase survivability in contested environments. If successful, this technology will transition to the Army's Product Manager for Vehicle Protection Systems for integration into Ground Combat Systems and Next Generation Combat Vehicle Cross Functional Team programs for fielding through an engineering change proposal. Water Free Chemical Decontaminant System (Army) This project evaluates a portable decontamination system that does not require water. This technology enables the thorough decontamination of sensitive equipment in forward environments, a capability that does not exist within the DoD today. If successful, this technology will transition to the Joint Program Manager for Chemical, Biological, Radiological, Nuclear Protection for follow-on procurement and fielding. Bacteriophage (Army) This project evaluates commercial phage mixtures for incorporation into a feminine hygiene wipe to selectively kill microbes that cause urinary tract infections (UTIs). Use of phage technology is also potentially applicable to			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
numerous other medical issues, and is an approach for combating multidrug resistant microbes. If successful, this technology will transition to a follow-on human study field trial prior to a fielding decision. Nanostructured Graphene Composites for Microwave Attenuation (Army) This project evaluates graphene-based composites for lightweight, low-cost, printable coatings to electromagnetically harden Joint lethality assets against detection and interdiction by enemy Integrated Air Defense Systems. If successful, this technology will transition to the Army's Long Range Precision Fires Cross Functional Team for integration with XM1155 Extended Range Artillery and other related munitions programs. Long Run-Time Thermal Batteries for Long Range Munitions (Army) This project comparatively tests novel electrolyte materials with low-melting temperature to increase thermal battery run time. Longer battery run time is required to support precision guidance capabilities for new rockets and missiles with longer range than legacy munitions. If successful, this technology will be transitioned to domestic thermal reserve battery manufacturers for incorporation into munitions procured by the Joint Program Executive Office for Armaments and Ammunition. Spectrometric Gamma Camera (Army) This project evaluates a portable gamma camera that enables localization, identification, and quantification of the threat coming from a radioactive source at a distance to increase detection performance and operator safety. If successful, this technology will transition to the Mounted Enhanced Radiac Long-Range Imaging Networkable vehicle mounted system by the Joint Program Executive Office for Chemical Biological Radiological Nuclear Defense. Unmanned Military Vehicle Mobility in Arctic Environments (Army) This project evaluates the mobility of a foreign Unmanned Ground Vehicle (UGV) for use on common Arctic surfaces such as snow, packed snow, and ice. This vehicle addresses Arctic mobility needs as described in the U.S. Army’s 2021 Arctic Strategy. If successful, this technology will transition to the Army's Robotic Combat Vehicle Program of Record for follow-on procurement and fielding. Three-Dimensional Printed Metal Parts (Army) This project comparatively tests foreign and domestic materials for printing three-dimensional metal parts using Fused Filament Fabrication methods as an alternative to traditional manufacturing and laser based printing methods that are not suitable for use in forward deployed locations. This enables rapid manufacture of metal parts at the tactical point of need and significantly reduces the logistical burden. If successful, best performing materials will transition to various DoD programs for follow-on parts qualification testing and fielding to include the Army's Infantry Battalion Mortar System, the Air Force's M137A1 cannon for the AC-130 gunship, and the Marine Corps' Expeditionary Fabrication laboratory Program of Record. Artificial Intelligence for Off-Road Autonomy (Army) This project evaluates artificial intelligence capabilities through a series of operational challenges, utilizing vision and proprioceptive sensing, machine learning, and intelligence navigation to increase			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
survivability and readiness of current systems. This technology enables navigation in complex military scenarios, providing increased tactical advantage through terrain sensing and increased mobility. If successful, this technology will transition to the Army's Next Generation Combat Vehicle Cross Functional Team for integration into the Optionally Manned Fighting Vehicle and Robotic Combat Vehicle programs. Warfighter Water Purification (Army) This project evaluates a man-portable water purification unit that relies on low-temperature plasma to eliminate all microbiological threats from indigenous water to provide potable drinking water at a rate of 5 thousand liters per day. There are currently no fielded devices at this small scale that are able to destroy all microbiological threats in water. If successful, this technology will transition to the Army's Product Manager for Soldier Clothing and Individual Equipment for follow-on procurement and fielding through the Individual Water Treatment Device Program of Record. Space Qualification Testing of Event Based Sensors (Air Force/Space Force) This project comparatively tests neuromorphic imaging sensors and algorithms for potential application to space-based surveillance platforms. This novel sensor technology provides benefits over legacy sensors for size, weight, and power constrained platforms such as small satellites. Results will inform various DoD Missile Warning and Intelligence, Surveillance, and Reconnaissance programs. Follow-on application specific technology demonstrations are being explored prior to a fielding decision. Comparative Real Time Air Quality Sensing of Pilot Breathing Lines in High-Performance Aircraft (Air Force/Space Force) This project evaluates an active in-line pilot breathing air monitoring capability in high performance military aircraft. This technology accelerates the delivery of technology that addresses an urgent operational need for the Air Force. If successful, this technology will transition to platform programs of record through the Air Force Life Cycle Management Center Human Systems Office. Event Based Sensing for Moving Target Indication (Air Force/Space Force) This project comparatively tests commercial event-based cameras for intelligence, surveillance, and reconnaissance applications to enable new approaches for affordable, long dwell early warning and moving target detection. This innovative technology could provide an affordable, rapid response surveillance capability. If successful, results will inform various DoD Intelligence, Surveillance, and Reconnaissance programs. Follow-on application specific technology demonstrations will be explored prior to a fielding decision. Air Launched small Unmanned Aerial System (sUAS) for Kinetic Engagement (Air Force/Space Force) This project evaluates the performance of new low-cost, air launched sUAS for multiple, simultaneous kinetic engagements. The air launched sUAS will be integrated into a Common Launch Tube (CLT) – found on numerous AFSOC and USSOCOM platforms – and equipped with Electro-Optic (EO) and kinetic payloads for target acquisition and engagement. This technology provides an affordable precision standoff strike capability with minimal risk to large conventional aircraft or ground forces. If successful, this technology			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
will transition to Air Force Special Operations Command MQ-9 Reaper Medium Altitude Long Endurance-Tactical Unmanned Aerial Vehicle Program of Record through the Air Force Life Cycle Management Center. Low Cost Supersonic Turbojet (Air Force/Space Force) This project tests an affordable commercially available turbojet engine for supersonic performance at high altitudes. This technology is not currently available from domestic manufacturers and enables swarms of very inexpensive unmanned aerial platforms that can operate at supersonic speeds. If successful, this technology will transition to on-going air launched unmanned aerial vehicle development programs. Precision Vertical Takeoff and Landing Unmanned Aerial System (VTUAS) Recovery (Navy/USMC) This project evaluates a pilot-free, autonomous recovery of Vertical Take-Off and Landing Unmanned Aerial Systems (VTUAS). This technology provides autonomous deployment, operation and recovery of VTUAS while reducing warfighter threat exposure and increasing survivability. If successful, this technology will transition to follow-on demonstration events prior to follow-on procurement and fielding recommendations. Extended Reality (XR) Helmet Mounted Display (HMD) (Navy/USMC) This project comparatively tests commercially available XR HMDs for T-45 operational flight training simulators. This technology provides advantages over virtual reality headsets by allowing users to see and interact with mock cockpits in the real world while simultaneously conducting flight training in a virtual environment. If successful, this technology will transition to Undergraduate Flight Training Systems and Naval Aviation Training Systems and Ranges Program Offices for follow-on procurement and fielding. Organic Precision Fires – Infantry, Light (Navy/USMC) This project comparatively tests Group 1 loitering munitions to provide an organic asset with precise kinetic effects within a Marine Infantry Company. If successful, this technology will transition to the Marine Corps Infantry Battalion Experimentation office for follow-on user evaluations through the Marine Corps Rapid Capabilities Office prior to follow-on procurement and fielding. Portable High Power Directed Energy Systems for Aviation Support (Navy/USMC) This project evaluates a portable high power laser system capable of removing aircraft corrosion and coatings in operational environments. This technology reduces the health risk to maintenance personnel and increases maintenance efficiency. If successful, this technology will transition to the Navy's Common Aviation Support Equipment Program Office for follow-on procurement and fielding. Beyond Lithium-ion Battery for Expeditionary Warfare Support (Navy/USMC) This project evaluates next generation Lithium-Sulfur battery cells for various military applications including ground vehicles. Lithium-Sulfur batteries provide up to double the energy storage as existing Lithium-ion batteries while also improving safety. If successful, this technology will transition to battery			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
manufacturers as DoD customers such as the Army's Ground Vehicle Systems Center, publish new battery specifications in future solicitations. Micro-Remotely Operated Vehicle (ROV) Rapid Response Underwater Incidents and Threats (Navy/USMC) This project comparatively tests low cost, man portable, micro-ROVs as a rapid response platform for inspection and preparation for neutralization of threat objects in the undersea environment. This technology provides an expeditionary capability to rapidly respond to asymmetric threats. If successful, this technology will transition to the Navy's Maritime Expeditionary Standoff Response (MESR) Program through an Engineering Change Proposal. Minimizing Electromagnetic Emissions Switched Beam Antenna (Navy/USMC) This project evaluates a novel antenna design that combines both omnidirectional and electronically steerable directional beamforms in a single system. This provides increased range and throughput for line of sight communications while decreasing risk of detection. If successful, this technology will transition to the Navy's Amphibious Tactical Communication System as well as other applicable service communications programs of record for follow-on procurement and fielding. Fast Rope Insertion/Extraction System (USSOCOM) This project comparatively tests different fast rope designs used by foreign militaries to address domestic production supply chain issues. Fast rope provides a critical capability enabling rapid deployment of personnel from helicopters where aircraft cannot touch down. If successful, new fast ropes will be purchased directly from manufacturers by the Army's Integrated Logistics Support Center. Green Pulsed Lasers for Optical Communications (Navy/USMC) This project comparatively tests compact, high-energy, air-cooled pulsed green lasers to increase the performance of air-to-underwater optical communications. This technology enables secure communications from aircraft to underwater vessels at operationally relevant depths with data rates 100 times higher than existing radio frequency communications. If successful, this technology will transition to the Navy's Undersea Communications and Integration Program Office for insertion into future optical communications programs of record. Limit of Detection of Rapid Response Fentanyl Strips (Army) This project seeks to determine the precise limit of detection of commercial off the shelf fentanyl test strips. This data is necessary to inform end user requirements prior to field user evaluations and wider military adoption. This technology provides a capability for trace detection of fentanyl in the field to counter emerging threats to military forces. If successful, this technology will transition to the Army's Dismounted Reconnaissance Sets, Kits, and Outfits modernization program for follow-on procurement and fielding. The technology will also be available for purchase by individual units for immediate use as needed.			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Vehicle Filtration Systems (Army) This project comparatively tests modern NATO approved air filtration systems with unique design attributes against inefficient legacy domestic filters. This technology provides enhanced protection from damaging particles associated with chemical, biological, radiological, and nuclear (CBRN) weapons for military vehicles. If successful, this technology will transition to the Army's Optionally Manned Fighting Vehicle Program of Record for follow-on procurement and fielding. Additionally, this technology has applicability to several existing and future planned DoD vehicle programs. Foreign Object Damage Barrier (Navy/USMC) This project evaluates an innovative barrier system to prevent Foreign Object Debris from (FOD) entering paved runways and airfields. This technology reduces FOD incidents by up to 80% which reduces the likelihood of damage to aircraft engines and increases readiness. If successful, this technology will transition to the Navy and Marine Corps Common Aviation Support Equipment program office for follow-on procurement and fielding at tactical land based airfields. Naval Enhanced Global Positioning System (GPS) Antenna System (Navy/USMC) This project comparatively tests foreign GPS Anti-Jam antennas against existing domestic systems. Foreign technology provides new capabilities such as GPS interference signal direction finding and reduces procurement costs by over eighty percent. If successful, this technology will transition to the Global Positioning System (GPS) Based Positioning Navigation and Timing Service Program of Record for follow-on procurement and fielding on various DoD vehicle platforms. Intelligent Unmanned Ground Vehicle (UGV) for Contested Environments (Navy/USMC) This project will demonstrate the expeditionary utility of an advanced logistics UGV that leverages Artificial Intelligence and Machine Learning to integrate and fuse sensor inputs. This technology provides fully autonomous navigation capabilities during operations in contested environments. If successful, the results of this effort will inform future UGV acquisition requirements including the Marine Corps' Expeditionary Modular Autonomous Vehicle and Army's Robotic Combat Vehicle-Light development programs. High Durability Armor Steel (Navy/USMC) This project comparatively tests the environmental toughness of foreign high hard steels used for ballistic protection in armored vehicle applications. This effort addresses domestic supply chain deficiencies and significantly reduces sustainment costs by providing better quality, more durable, and longer lasting materials. If successful, the Army Research Laboratory will modify existing armor steel specifications and this technology will be adopted by vehicle manufacturers. Ration Heater (Army) This project comparatively tests foreign exothermic ration heater performance, shelf life and safety characteristics. This technology provides a heat source without generation of hydrogen by-product that is potentially flammable or explosive if used in confined spaces. If successful, this technology will transition to the Army's Combat Feeding Directorate for follow-on procurement and fielding through the Meal, Ready-to-Eat Improvement program.			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Joint Light Tactical Vehicle (JLTV) Force Protection (Army) This project evaluates a novel, medium-hardness steel alloy underbody armor add-on kit for the JLTV. This technology provides a relatively lightweight force protection capability to counter anti-vehicle mines and improvised explosive threats. If successful, this technology will transition to the JLTV Joint Program Office for follow-on procurement and fielding.			
FY 2023 Plans: Description: The Office of the Under Secretary of Defense for Research and Engineering (OUSD R&E), International Prototypes and Experiments (IP&E) Office, selects multiple low-cost projects in the areas of Force Application, Force Protection, Force Support, Logistics, Artificial Intelligence and Machine Learning, Robotics and Autonomous Systems, Interoperability, and Countering Unmanned Systems. These projects were selected to deliver prototypes for evaluation, assessment, and Service adoption within 12 to 36 months.			
Soldier Borne Sensor System (Army) Technical characterization occurred in 1Q FY 2023. Limited operational evaluation conducted in 2-3Q FY 2023.			
Top Attack Armor (Army) Completed final test and closeout reports in 1Q FY 2023.			
Vehicle Mounted Camouflage System (Army) Completed field testing in 1-2Q FY 2023. Completed final test and closeout reports in 3Q FY 2023.			
Water Free Chemical Decontaminant System (Army) Completed test infrastructure development in 1Q FY 2023. Completed laboratory testing in 2Q FY 2023. Completed operational assessments in 3Q FY 2023. Completed final test and closeout reports in 4Q FY 2023.			
Bacteriophage (Army) Completed prototype phage wipe integration and test events during 1-3Q FY 2023. Completed final test and closeout reports in 4Q FY 2023.			
Nanostructured Graphene Composites for Microwave Attenuation (Army) Conducted electromagnetic characterization testing during 1-2Q FY 2023. Completed mechanical characterization testing in 3Q FY 2023. Completed final test and closeout reports in 4Q FY 2024.			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Long Run-Time Thermal Batteries for Long Range Munitions (Army) Test planning conducted during 1-2Q FY 2023. Phase I test articles received in 3Q FY 2023. Phase I testing conducted in 3Q FY 2023. Initiated procurement of optimized phase II test articles in 4Q FY 2023. Spectrometric Gamma Camera (Army) Test articles received in 1Q FY 2023. Limited efficacy testing and equipment compatibility testing occurred in 2-4Q FY 2023. Unmanned Military Vehicle Mobility in Arctic Environments (Army) Received test articles in 1Q FY 2023. Conducted operational testing and demonstrations in 2Q FY 2023. Completed final test and closeout reports in 3Q FY 2023. Three-Dimensional Printed Metal Parts (Army) Test articles received in 1Q FY 2023. Phase I materials characterization testing occurred in 1-3Q FY 2023. Phase II field testing initiated in 4Q FY 2023. Artificial Intelligence for Off-Road Autonomy (Army) Test article contract awarded in 2Q FY 2023. Initiated test planning and setup in 3Q FY 2023. Warfighter Water Purification (Army) Test article contract awarded in 1Q FY 2023. Test articles received in 2Q FY 2023. Physical testing and chemical-biological screening completed in 2Q FY 2023. Initiated device validation and field demonstrations in 3Q FY 2023. Space Qualification Testing of Event Based Sensors (Air Force/Space Force) Project closed out 1Q FY 2023. Comparative Real Time Air Quality Sensing of Pilot Breathing Lines in High-Performance Aircraft (Air Force/Space Force) Custom test articles received in 1Q FY 2023. Completed initial evaluations in 1Q FY 2023. Completed mock flight tests in 2Q FY 2023. Completed final test and closeout reports in 3Q FY 2023. Event Based Sensing for Moving Target Indication (Air Force/Space Force) Conducted airborne testing in 1Q FY 2023. Conducted high altitude balloon testing in 2-3Q FY 2023. Completed final test and closeout reports in 4Q FY 2023. Air Launched small Unmanned Aerial System (sUAS) for Kinetic Engagement (Air Force/Space Force) Test article contract awarded in 1Q FY 2023. Test articles received in 2Q FY 2023. Phase I laboratory testing completed in 3Q FY 2023. Phase II test articles received in 4Q FY 2023.			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Low Cost Supersonic Turbojet (Air Force/Space Force) Test article contract awarded in 1Q FY 2023. Test articles received in 2Q FY 2023. Phase I test facility upgrade validation completed in 2Q FY 2023. Phase II laboratory baseline performance testing completed in 3Q FY 2023. Phase III high altitude and speed laboratory performance testing completed in 4Q FY 2023. Precision Vertical Takeoff and Landing Unmanned Aerial System (VTUAS) Recovery (Navy/USMC) Phase II mobile landing tests completed in 2Q FY 2023. Phase III general testing on various VTUAS and Phase IV cyber vulnerability testing occurred in 3Q FY 2023. Final test and closeout reports completed in 4Q FY 2024. Extended Reality (XR) Helmet Mounted Display (HMD) (Navy/USMC) Completed mock cockpit development in 1Q FY 2023. Completed HMD cockpit integration in 2Q FY 2023. Completed HMD comparative testing in 3Q FY 2023. Completed final test and closeout reports in 4Q FY 2023. Organic Precision Fires – Infantry ,Light (Navy/USMC) FCT testing was completed in FY 2022. End user evaluations conducted in 1-3Q FY 2023. Final test and closeout reports completed in 4Q FY 2023. Portable High Power Directed Energy Systems for Aviation Support (Navy/USMC) Completed test planning and technology validation in FY 2022. Conducted field demonstrations through FY 2023. Completed final test and closeout reports in 4Q FY 2023. Beyond Lithium-ion Battery for Expeditionary Warfare Support (Navy/USMC) Test article contracts awarded in 1Q FY 2023. Test articles received in 2Q FY 2023. Laboratory testing occurred in 3-4Q FY 2023. Final test and closeout reports completed in 4Q FY 2023. Micro-Remotely Operated Vehicle (ROV) Rapid Response Underwater Incidents and Threats (Navy/USMC) Test articles received and laboratory testing completed in 1Q FY 2023. Prototype integration occurred in 2Q FY 2023. Prototype testing completed in 3Q FY 2023. User demonstrations conducted in 4Q FY 2023. This project continues in FY 2024 with FY 2023 funds. Minimizing Electromagnetic Emissions Switched Beam Antenna (Navy/USMC) Test article contract awarded in 1Q FY 2023. Phase I laboratory performance testing occurred in 2-4Q FY 2023. Fast Rope Insertion/Extraction System (USSOCOM) Test article contracts awarded in 1Q FY 2023. Test articles received and laboratory testing completed in 2Q FY 2023. Application testing completed in 3Q FY 2023. Final test and closeout reports completed in 4Q FY 2023.			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Green Pulsed Lasers for Optical Communications (Navy/USMC) Initiate test planning in 1Q FY 2023. Test article contract award anticipated for 2Q FY 2023. Test articles expected to be received in 3Q FY 2023. Phase I testing expected to occur in 4Q FY 2023. Limit of Detection of Rapid Response Fentanyl Strips (Army) Initiate test planning in 1Q FY 2023. Award test article contract in 2Q FY 2023. Receive test articles in 3Q FY 2023. Initiate laboratory testing in 4Q FY 2023. This project continues in FY 2024 with FY 2023 funding. Vehicle Filtration Systems (Army) Receive phase I test articles in 2Q FY 2023. Initiate phase I filter testing in 3-4Q FY 2023. Foreign Object Damage Barrier (Navy/USMC) Initiate test planning in 1Q FY 2023. Award test article contract in 2Q FY 2023. Receive test articles in 4Q FY 2023. Naval Enhanced Global Positioning System (GPS) Antenna System (Navy/USMC) Initiate test planning in 1Q FY 2023. Test article contract award anticipated for 2Q FY 2023. Test articles expected to be received in 3Q FY 2023. Initiate laboratory testing in 4Q FY 2023. Intelligent Unmanned Ground Vehicle (UGV) for Contested Environments (Navy/USMC) Initiate test planning in 2Q FY 2023. Award test article contract in 3Q FY 2023. Receive test article in 4Q FY 2023. High Durability Armor Steel (Navy/USMC) Initiate test planning in 1Q FY 2023. Award test article contracts in 2Q FY 2023. Initiate phase I mechanical testing in 3Q FY 2023. Initiate phase II environmental testing in 4Q FY 2023. Ration Heater (Army) Initiate test planning in 1Q FY 2023. Award test article contract in 2Q FY 2023. Receive test articles in 3Q FY 2023. Initiate laboratory testing in 4Q FY 2023. Joint Light Tactical Vehicle (JLTV) Force Protection (Army) Initiate test planning in 1Q FY 2023. Award test contract in 2Q FY 2023. Test article integration to occur in 4Q FY 2023. This project continues in FY 2024 with FY 2023 funding. ***FY 2024 Plans:*** Description: The Office of the Under Secretary of Defense for Research and Engineering (OUSD R&E), International Prototypes and Experiments (IP&E) Office, selects multiple low-cost projects in the areas of Force Application, Force Protection, Force Support, Logistics, Artificial Intelligence and Machine Learning, Robotics and Autonomous Systems, Interoperability, and			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Countering Unmanned Systems. These projects will be selected to deliver prototypes for evaluation, assessment, and Service adoption within 12 to 36 months. Soldier Borne Sensor System (Army) Operational evaluation expected to occur in 2Q FY 2024. Final test and closeout reports expected in 3Q FY 2024. Long Run-Time Thermal Batteries for Long Range Munitions (Army) Optimized phase II test articles to be received in 1Q FY 2024. Phase II testing anticipated to occur in 1Q FY 2024. Final test and closeout reports expected to complete in 2Q FY 2024. Spectrometric Gamma Camera (Army) Operational assessment expected to occur in 1-2Q FY 2024. Final test and closeout reports completed in 3Q FY 2024. Three-Dimensional Printed Metal Parts (Army) Phase II field demonstrations expected to occur in 2-3Q FY 2024. Final test and closeout reports expected in 4Q FY 2024. Artificial Intelligence for Off-Road Autonomy (Army) Phase I testing to occur in 1Q FY 2024. Phase II testing to occur in 2Q FY 2024. Phase III testing to occur in 3Q FY 2024. Initiate Phase IV testing in 4Q FY 2024. This project continues in FY 2025 with FY 2024 funding. Warfighter Water Purification (Army) Device validation expected to complete in 1Q FY 2024. Field demonstrations expected to complete in 3Q FY 2024. Final test and closeout reports expected in 4Q FY 2024. Air Launched small Unmanned Aerial System (sUAS) for Kinetic Engagement (Air Force/Space Force) Phase II Common Launch Tube integration and ejection testing planned for 1Q FY 2024. Phase III surrogate aircraft and live testing planned for 2-3Q FY 2024. Final test and closeout reports expected 4Q FY 2024. Low Cost Supersonic Turbojet (Air Force/Space Force) Final test and closeout reports expected to complete in 1Q FY 2024. Micro-Remotely Operated Vehicle (ROV) Rapid Response Underwater Incidents and Threats (Navy/USMC) Final test and closeout reports expected to complete in 1Q FY 2024. Minimizing Electromagnetic Emissions Switched Beam Antenna (Navy/USMC) Phase II environmental testing expected to complete in 1Q FY 2024. Phase II environmental testing expected to complete in 1Q FY 2024. Phase III operational demo anticipated for 3Q FY 2024. Final test and closeout reports expected in 4Q FY 2024.			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Green Pulsed Lasers for Optical Communications (Navy/USMC) Phase II testing expected to occur in 1Q FY 2024. Phase III testing expected to occur in 2-3Q FY 2024. Final test and closeout reports expected in 4Q FY 2024. Limit of Detection of Rapid Response Fentanyl Strips (Army) Conduct field demonstration and experimentation in 1-2Q FY 2024. Final test and closeout report expected in 3Q FY 2024. Vehicle Filtration Systems (Army) Receive phase II test articles in 1Q FY 2024. Initiate phase II environmental testing in 2Q FY 2024. This project continues in FY 2025 with FY 2024 funding. Foreign Object Damage Barrier (Navy/USMC) Testing expected to occur in 1-3Q FY 2024. Final test and closeout reports expected in 4Q FY 2024. Naval Enhanced Global Positioning System (GPS) Antenna System (Navy/USMC) Field testing expected to occur in 2-3Q FY 2024. Final test and closeout reports expected to complete in 4Q FY 2024. Intelligent Unmanned Ground Vehicle (UGV) for Contested Environments (Navy/USMC) Conduct testing in 1-3Q FY 2024. Complete final test and closeout reports in 4Q FY 2024. High Durability Armor Steel (Navy/USMC) Complete phase I and II testing in 1Q FY 2024. Conduct phase III operational testing in 2-3Q FY 2024. Final test and closeout reports are expected in 4Q FY 2024. Ration Heater (Army) Complete laboratory testing in 1Q FY 2024. Conduct operational testing in 2-3 Q FY 2024. Final test and closeout reports expected in 4Q FY 2024. Joint Light Tactical Vehicle (JLTV) Force Protection (Army) Limited efficacy and equipment compatibility testing expected to occur in 1Q FY 2024. Live fire testing expected to occur in 2Q FY 2024. Final test and closeout reports expected in 3Q FY 2024. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding decreases from FY 2023 to FY 2024 as major test events occur and several on-going projects complete in FY 2023.			
Title: Foreign Comparative Testing Prototyping & Experimentation Focus Areas	0.636	1.340	12.202
Description: Previously funded effort. The FCT program will select new projects to evaluate allied/partner nation technologies that address emerging DoD capability gaps and provide substantial cost, schedule, and/or performance benefit to the warfighter. As projects are selected, they will be reported individually. Evaluation will be aligned to the National Defense Strategy (NDS)			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
and current Office of the Under Secretary of Defense, Research and Engineering critical technology areas, to deliver increased readiness and a more lethal Joint Force while strengthening alliances, attracting new partners, and achieving greater performance and affordability. ***FY 2023 Plans:*** FCT anticipates supporting one to two additional new projects spread across the USD R&E critical technology areas and Service readiness requirements in FY 2023. Deliverables will include integrated products and software that enhance warfighting capabilities across multi-domain battlefield environments. This will be accomplished through test and evaluation of prototypes, demonstrations, and concept experimentation in coordination with the Services and United States Special Operations Command and other DoD Agencies. ***FY 2024 Plans:*** The FCT anticipates supporting ten to fifteen new projects spread across the USD R&E critical technology areas and Service readiness requirements in FY 2024 and continued support to open FY 2022 and FY 2023 projects. Deliverables will include integrated products and software that enhance warfighting capabilities across multi-domain battlefield environments. This will be accomplished through test and evaluation of prototypes, demonstrations, and concept experimentation in coordination with the Services and United States Special Operations Command and other DoD Agencies. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** This funding will be allocated for the selection of new projects that will commence in FY 2024. Projects will be selected through a merit-based process and will address current OUSD R&E critical technology areas and Service readiness requirements. Funding increases from FY 2023 to FY 2024 due to completion of on-going projects from prior years and selection of new projects.			
Accomplishments/Planned Programs Subtotals	24.885	26.802	27.078

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

Successful FCT projects support capability acquisition in several ways: technology upgrade insertion into a current platform or program providing greater capability or prolonging the life of the weapon system, informed/refined requirements for planned systems, or direct transition/procurement. FCT leverages the Services' and Defense Agencies' most efficient and effective acquisition approaches for rapid prototyping. This includes using Other Transaction Authorities and new or existing contract vehicles within middle-tier acquisition strategy. The FCT Program supports the Service Executive Acquisition strategies and works with each Services and U.S. Special Operation Command to enhance the speed of new technology infusion to maintain overmatch on tomorrow's battlefield.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603183D8Z / *Joint Hypersonic Technology Development & Transition*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	-	49.900	60.156	52.292	-	52.292	52.360	52.427	55.505	55.560	Continuing	Continuing
066: *Joint Hypersonic Transition Office (JHTO)*	-	49.900	60.156	52.292	-	52.292	52.360	52.427	55.505	55.560	Continuing	Continuing

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

This program supports the Department's initiatives to Build Sustainable and Long-Term Advantage, and Build a Resilient Joint Force and Defense Ecosystem.

The Joint Hypersonics Transition Office (JHTO), within the Office of the Under Secretary of Defense for Research and Engineering (OUSD(R&E)), was created to establish a university consortium for hypersonics research; support workforce development; expedite testing, evaluation, and acquisition of hypersonic technologies to meet the stated needs of the warfighter, including flight testing, ground-based-testing, and underwater launch testing; ensure that prototyping demonstration programs on hypersonic systems integrate advanced technologies to speed the maturation and deployment of future hypersonic systems; develop strategies and roadmaps for hypersonic technologies to enable the transition of such technologies to future operational capabilities for the warfighter; and, develop and implement a strategy for enhancing the current and future hypersonics workforce.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	51.178	52.156	50.184	-	50.184
Current President's Budget	49.900	60.156	52.292	-	52.292
Total Adjustments	-1.278	8.000	2.108	-	2.108
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	8.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.270	-			
• Program Adjustments	-0.008	-	2.108	-	2.108

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2022	FY 2023
Project: 066: *Joint Hypersonic Transition Office (JHTO)*		
Congressional Add: *Program Increase*	-	3.000

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603183D8Z *I Joint Hypersonic Technology Development & Transition*

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2022	FY 2023
Congressional Add: *University Research*	-	5.000
Congressional Add Subtotals for Project: 066	-	8.000
Congressional Add Totals for all Projects	-	8.000

Change Summary Explanation

The FY 2024 increase of $2.108 million is comprised of a realignment of $1.092 million to support the Historically Black Colleges and Universities/Minority Serving Institutions program, which is a priority of the Under Secretary of Defense for Research and Engineering (USD(R&E)). In addition $0.052 million supports departmental priorities and as well as an economic assumptions increase of $0.292 million.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603183D8Z / *Joint Hypersonic Technology Development & Transition*	Project (Number/Name) 066 / *Joint Hypersonic Transition Office (JHTO)*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
066: *Joint Hypersonic Transition Office (JHTO)*	-	49.900	60.156	52.292	-	52.292	52.360	52.427	55.505	55.560	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Joint Hypersonics Transition Office (JHTO), within the Office of the Under Secretary of Defense for Research and Engineering (OUSD(R&E)), was created to establish a university consortium for hypersonics research and support workforce development; expedite testing, evaluation, and acquisition of hypersonic technologies to meet the stated needs of the warfighter, including flight testing, ground-based-testing, and underwater launch testing; ensure that prototyping demonstration programs on hypersonic systems integrate advanced technologies to speed the maturation and deployment of future hypersonic systems; develop strategies and roadmaps for hypersonic technologies to enable the transition of such technologies to future operational capabilities for the warfighter; and develop and implement a strategy for enhancing the current and future hypersonics workforce.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: University Consortium for Applied Hypersonics (UCAH)	22.194	28.333	27.823
Description: The JHTO established the University Consortium for Applied Hypersonics and plans to solicit research projects through the Consortium that address priorities and gaps identified by the JHTO Hypersonics Science and Technology (S&T) Roadmap, focusing on workforce development, applied research and advanced technology development related to the hypersonics mission. To facilitate development of the next generation hypersonics workforce, the JHTO intends to leverage the Consortium to award scholarships to graduate students who are focusing on key hypersonic development areas. Additionally, the Consortium will host Consortium Industry Days, Project Industry Days, and participate in career/internship fairs to cross-level information and enhance workforce development.			
FY 2023 Plans: FY 2023 base plans for the UCAH facilitate development of the next generation hypersonics workforce, the JHTO intends to leverage the Consortium to award scholarships to graduate students who are focusing on key hypersonic development areas. Additionally, the Consortium will host Consortium Industry Days, Project Industry Days, and participate in career/internship fairs to cross-level information and enhance workforce development.			
FY 2024 Plans: FY 2024 base plans for the UCAH are a continuation of the path identified for FY 2023, to include continued execution of research projects through the Consortium with the planned expansion of scope of the projects to further address priorities and gaps identified by the JHTO Hypersonics Science and Technology (S&T) Roadmap.			
FY 2023 to FY 2024 Increase/Decrease Statement:			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603183D8Z / *Joint Hypersonic Technology Development & Transition*	**Project (Number/Name)** 066 / *Joint Hypersonic Transition Office (JHTO)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
The decrease of $0.510 between FY 2023 and FY 2024 supports the planned scope of projects under management within the Consortium.			
Title: Navigation, Guidance and Controls (NGC) Science and Technology Development ***Description:*** In alignment with the jointly-developed Hypersonics S&T Roadmap, the JHTO funds NGC science and technology projects to improve the operational capabilities of both offensive and defensive hypersonic systems. These projects focus on navigation in contested environments, on-vehicle trajectory generation, communications risk reduction, guidance electronics, and conformal antenna development. Additional details regarding these projects are sensitive and/or classified and can be be provided upon request. ***FY 2023 Plans:*** Continue under the jointly developed Hypersonics S&T Roadmap to improve the operational capabilities of both offensive and defensive hypersonic systems. Additional details regarding FY 2023 NGC projects are sensitive and/or classified. ***FY 2024 Plans:*** Continue activities from FY 2023. Additional details regarding FY 2024 NGC projects are sensitive and/or classified. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The decrease of $0.096 between FY 2023 and FY 2024 is the result of a re-prioritization to focus on near-term technology insertion, reducing priority of NGC efforts.	5.940	4.817	4.721
Title: Propulsion Science and Technology Development ***Description:*** In alignment with the jointly-developed Hypersonics S&T Roadmap, the JHTO funds propulsion science and technology projects designed to enhance propulsion capabilities for both offensive and defensive hypersonic systems. These efforts will close critical gaps in the development of hypersonic cruise missiles and enhance range and/or payload capacity of boost-glide systems. Focus areas for these projects include solid rocket motor component technologies, expanding the operating envelope of Dual-Mode Ramjet/Scramjet propulsion systems, developing new actuator technologies for axial thrusters, and establishing a proof-of-principle for an improved endothermic fuel for hypersonic applications. Additional details regarding these projects are sensitive and/or classified and can be provided upon request. ***FY 2023 Plans:*** In alignment with the Hypersonics S&T Roadmap the focus areas for these projects include solid rocket motor component technologies, expanding the operating envelope of Dual-Mode Ramjet/Scramjet propulsion systems, developing new actuator	4.310	3.317	3.004

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603183D8Z / *Joint Hypersonic Technology Development & Transition*	**Project (Number/Name)** 066 / *Joint Hypersonic Transition Office (JHTO)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
technologies for axial thrusters, and establishing a proof-of-principle for an improved endothermic fuel for hypersonic applications. Additional details regarding FY 2023 propulsion projects are sensitive and/or classified. ***FY 2024 Plans:*** Continue activities from FY 2023. Additional details regarding FY 2024 propulsion projects are sensitive and/or classified. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The decrease of $0.313 million between FY 2023 and FY 2024 is the result of increased priority on, and funding for, technology insertion projects.			
Title: Systems Engineering, Design and Analysis (SEDA) Science and Technology Development ***Description:*** In alignment with the Hypersonics S&T Roadmap continue to improve the modeling and prediction of hypersonic vehicle plumes, wakes, and signatures in addition to providing performance baselines for offensive and defensive systems. Additional details regarding FY 2023 SEDA projects are sensitive and/or classified. ***FY 2023 Plans:*** In alignment with the Hypersonics S&T Roadmap continue to improve the modeling and prediction of hypersonic vehicle plumes, wakes, and signatures in addition to providing performance baselines for offensive and defensive systems. ***FY 2024 Plans:*** Continue activities from FY 2023. Additional details regarding FY 2024 SEDA projects are sensitive and/or classified. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The decrease of $0.021 between FY 2023 and FY 2024 reflects minor budget fluctuations.	2.078	1.817	1.796
Title: Materials, Structures and Manufacturing (MSM) Science and Technology Development ***Description:*** In alignment with the jointly-developed Hypersonics S&T Roadmap, the JHTO funds MSM science and technology projects essential to develop new high-temperature materials for hypersonic applications and to design more efficient and effective manufacturing methods for hypersonic structural components. Specific projects seek to characterize alternative ceramic matrix composites for hypersonics, improve the ability to produce multi-phase monolithic ceramic dielectric materials, test and characterize the performance of leading edge coatings, and improve manufacturing processes to build cruiser fins. Additional details regarding these projects are sensitive and/or classified and can be provided upon request. ***FY 2023 Plans:***	2.278	1.817	1.546

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603183D8Z / *Joint Hypersonic Technology Development & Transition*	**Project (Number/Name)** 066 / *Joint Hypersonic Transition Office (JHTO)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Continue to work within the Hypersonics S&T Technology Roadmap to develop new high-temperature materials for hypersonic applications. ***FY 2024 Plans:*** Continue activities from FY 2023. Additional details regarding FY 2024 MSM projects are sensitive and/or classified. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The decrease of $0.271 million between FY 2023 and FY 2024 reflects minor budget fluctuations.			
Title: Ordnance Science and Technology Development ***Description:*** In alignment with the jointly-developed Hypersonics S&T Roadmap, the JHTO funds ordnance science and technology projects to better understand hypersonic ordnance effects and improve those effects across a broad range of target sets. Projects will develop and demonstrate a survivable fuze system designed to function under extreme hypersonic terminal conditions, model shock loads associated with a multi-mission warhead, and conduct high-fidelity modeling to analyze and optimize the effects of hypersonic munitions. Additional details regarding these projects are sensitive and/or classified. ***FY 2023 Plans:*** Continue within the Hypersonics S&T Roadmap to fund and better understand hypersonic ordnance effects by improving those effects across a broad range of target sets. Additional details regarding FY 2023 Ordnance projects are sensitive and/or classified. ***FY 2024 Plans:*** Continue activities from FY 2023. Additional details regarding FY 2024 Ordinance projects are sensitive and/or classified. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The increase of $0.407 million between FY 2023 and FY 2024 reflects minor budget fluctuations.	3.680	4.353	4.760
Title: Aerodynamics and Aerothermodynamics Science and Technology Development ***Description:*** In alignment with the jointly-developed Hypersonics S&T Roadmap, the JHTO funds aerodynamics and aerothermal science and technology projects to enhance aero optics modeling and simulation testing. This project seeks to increase the fidelity of infrared aero optics modeling and simulation data while driving down man-hours through creation/validation of a more useful and collaborative collection format. Additional details are sensitive and/or classified. ***FY 2023 Plans:***	3.335	3.017	3.957

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603183D8Z / *Joint Hypersonic Technology Development & Transition*	**Project (Number/Name)** 066 / *Joint Hypersonic Transition Office (JHTO)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
In conjunction with the Hypersonics S&T Roadmap, continue to fund aerodynamics and aerothermal science and technology projects working towards decreasing man-hours. Additional details regarding FY 2023 aerodynamics and aerothermal projects are sensitive and/or classified. ***FY 2024 Plans:*** Continue activities from FY 2023. Additional details regarding FY 2024 aerodynamics and aerothermal projects are sensitive and/or classified. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The increase of $0.940 million between FY 2023 and FY 2024 reflects minor budget fluctuations.			
Title: Tactical High-speed Offensive Ramjet for Extended Range (THOR-ER) ***Description:*** In FY 2022, THOR-ER transitioned from Program Element 0603338D8Z Defense Modernization and Prototyping. The THOR-ER project will develop and demonstrate a full-scale missile prototype incorporating advanced solid fuel ramjet technologies, culminating in a series of operationally relevant flight demonstrations. THOR-ER enables leap-ahead gains in missile range and cruise speed while maintaining form factors similar to currently fielded solid-rocket motor systems. Technology developed as part of the THOR-ER project will enhance the affordability and survivability of next generation weapon systems. THOR-ER is a co-development effort partnering with the U.S. Navy Naval Air Warfare Center, Weapons Division China Lake; the Norwegian Defence Research Establishment; and, the Norwegian industrial base partner, Nammo.	1.400	-	-
Title: JHTO Systems Engineering Field Activity at Naval Surface Warfare Center Crane Division (NSWC Crane) ***Description:*** Supports systems engineering and integration for hypersonics development to generate efficiencies and facilitate technology transition. Support will include coordinating with systems engineering teams across the Services and programs; negotiating more modular Government Reference Architectures to support individual programs; define and execute system on-ramping plans, and guide accelerated development plans. Additionally, the activity will represent the JHTO as a technical execution area co-lead for workforce development. ***FY 2023 Plans:*** Continue cross-service systems engineering, technology transition, and workforce development initiatives. ***FY 2024 Plans:*** Continue cross-service systems engineering, technology transition, and workforce development initiatives. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** No funding change.	4.685	4.685	4.685
Accomplishments/Planned Programs Subtotals	49.900	52.156	52.292

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603183D8Z / *Joint Hypersonic Technology Development & Transition*	**Project (Number/Name)** 066 / *Joint Hypersonic Transition Office (JHTO)*

	FY 2022	FY 2023
Congressional Add: Program Increase ***FY 2023 Plans:*** Gather multi-fidelity data and data analysis for future demonstration projects, validate, and refine surrogate applications.	-	3.000
Congressional Add: University Research ***FY 2023 Plans:*** Use existing digital tools to design, validate, and test existing surrogate applications with a reduction in time to design, provide a case study for the application for model-based engineering, and reduce the time to modeling and simulation at all levels of fidelity.	-	5.000
Congressional Adds Subtotals	-	8.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603225D8Z / *Joint DOD DOE Munitions Technology Development*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	-	18.341	17.279	19.567	-	19.567	19.985	20.430	20.858	21.295	Continuing	Continuing
225: *Joint DOD DOE Munitions*	-	18.341	17.279	19.567	-	19.567	19.985	20.430	20.858	21.295	Continuing	Continuing

Note

New Start (Y/N): N

A. Mission Description and Budget Item Justification

This program supports the Department's initiatives to Deter Aggression and Prevail in Conflict, Defend the Homeland, Build Sustainable and Long-Term Advantage, and Build a Resilient Joint for and Defense Ecosystem.

The Department of Defense (DoD)/Department of Energy (DOE) Joint Munitions Technology Development Program (JMP) enables military superiority by setting and driving the critical path for cutting-edge capability-driven munitions science and technology (S&T) to equip the Joint Force for the future fight. The JMP portfolio comprises essential cross-cutting and foundational S&T investments that enable Future Force operational capabilities in the near, mid, and far term. In setting the technical direction for the DoD, the Joint DoD/DOE Munitions Program performs S&T to advance the state of the art for non-nuclear munitions technology in the focus areas of decision tools, delivery, munition controls, lethal effects, and readiness.

A Memorandum of Understanding between the DoD and DOE provides the basis for the cooperative effort. Through this interdepartmental cooperation and joint investment (DOE matches the DoD's investment at 1:1), DoD leverages the DOE's substantial investments in intellectual capital and highly specialized skills, advanced scientific equipment and facilities, and computational tools not available within the DoD, bolstering good stewardship of taxpayer dollars. The portfolio is monitored by a panel of Tri-Service subject matter experts who conduct rigorous technical and programmatic review to prioritize essential investments. The technology, resources, and capabilities return for DoD in this program is estimated at two to three times its investment.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603225D8Z *I Joint DOD DOE Munitions Technology Development*

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	19.003	18.898	19.457	-	19.457
Current President's Budget	18.341	17.279	19.567	-	19.567
Total Adjustments	-0.662	-1.619	0.110	-	0.110
• Congressional General Reductions	-	-1.619			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.659	-			
• Program Adjustments	-0.003	-	0.110	-	0.110

Change Summary Explanation

FY 2024 minimal increase due to programmatic adjustments.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603225D8Z / *Joint DOD DOE Munitions Technology Development*	Project (Number/Name) 225 / *Joint DOD DOE Munitions*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
225: *Joint DOD DOE Munitions*	-	18.341	17.279	19.567	-	19.567	19.985	20.430	20.858	21.295	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Projects within the Joint Munitions Technology Development Program (JMP) portfolio enable capability advancements in: higher speed and hypersonic delivery, counter unmanned aerial systems, microelectronics, longer range precision effects, networked and collaborative systems of systems, agility at the engagement level, logistics in contested environments, increased capacity/affordable mass, survivability during deployment and target engagement, rapid technology refreshes/adaptation to changing threats, post-launch re-programming, open systems architectures, and weapon cyber-resiliency. JMP investments may be leverageable for nuclear deterrence, space, quantum science, and 5G, but the portfolio does not specifically focus on these capability areas.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Joint DoD/DOE Munitions Technology Development	18.341	17.279	19.567

Description: DoD/DOE Munitions Technology Development focuses on the following key areas: (1) the development of in silico decision tools for munition design and in-theater function; (2) innovation of munitions delivery technology to include weapon bodies, propulsion systems, propellants, and environment/target hardening; (3) development of state-of-the-art munition controls for fuzing, microelectronics, power, sensors, kill chains, and survivable components; (4) design of lethal effects through explosive, formulation, warhead, and target damage innovations; and (5) development and transition of decisive readiness technology for munitions through the full munitions lifecycle (design through end-of-life).

FY 2023 Plans:

In FY 2023, the portfolio will address priority DoD S&T capability advancements and leverages DOE investment.

• The Decision Tools focus area will a) experimentally validate a high-fidelity damage model to produce datasets suitable for training machine learning algorithms supporting lethality assessments/weaponeering, b) transfer a high-performance decision tool code to a graphical processing unit platform to accelerate calculation speed, c) apply experimental high-explosives data to simulations and validate predictions for high explosives encountering complex shock environments during employment, and d) develop particle package testing and extraction for accurate prediction of primary and secondary debris flows from weapon-target interactions.
• The Delivery focus area will a) validate a multi-fidelity aerodynamic database for relevant weapon geometries and package a predictive code to reduce development and fielding times of advanced flight body geometries.
• Munition Controls will a) develop a prototype production process for high energy density supercapacitor and b) demonstrate a hardware component capable of a single-radar mode for a GPS-denied navigation solution.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603225D8Z / *Joint DOD DOE Munitions Technology Development*	**Project (Number/Name)** 225 / *Joint DOD DOE Munitions*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
• Lethal Effects will a) integrate advanced diagnostics into an arena-test alternative to improve munitions effectiveness measurements, and b) validate machine-learning approach for designing energetic material prototype production. • Readiness will a) determine local corrosion disparities between conventional and additively-manufactured parts in operational use, b) validate a test method for a power system failure mode analysis, and c) develop, verify, and validate a predictive model for adhesive failures in components. ***FY 2024 Plans:*** • Develop weaponeering and decision tools for assessment of target interaction effects to enhance lethality modeling codes. • Develop novel imaging methods and models of high explosive fracture behavior to enable lighter munitions and increased range and speed. • Develop reactive flow models to enable warhead geometries necessary for miniature swarming munitions and extreme environment applications. • Demonstrate a numerical integration methodology for hydrocodes to reduce the computational cost and schedule of munition simulations by >20X for designers and weaponeers. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The increase of $2.288 million between FY 2023 and FY 2024 supports the development of decision tools and models to improve or enhance munitions.			
Accomplishments/Planned Programs Subtotals	18.341	17.279	19.567

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603288D8Z / *Science and Technology (S&T) Analytic Assessments*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	106.387	23.067	29.227	24.328	-	24.328	24.840	25.378	25.908	26.473	-	-
328: *Science and Technology Analytic Assessments*	100.224	17.259	22.000	17.335	-	17.335	17.655	18.047	18.425	18.814	-	-
177: *Technology Watch/Horizon Scanning*	6.163	5.808	7.227	6.993	-	6.993	7.185	7.331	7.483	7.659	-	-

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

This program supports the Department's initiatives to Defend the Homeland, Deter Aggression, Prevail in Conflict, and Build an Enduring Advantage.

This Program Element (PE) directly supports the Office of Strategic Intelligence and Analysis (OSI&A) for the Office of the Under Secretary of Defense, Research and Engineering (OUSD(R&E)). OSI&A's net technical assessment (NTA) framework integrates intelligence, comparative assessment, and independent analysis to shape the development of innovative capabilities and address emerging threats from a diverse range of state and non-state actors as outlined in the National Defense Strategy (NDS) and as reported through the intelligence community (IC). The complexity of capability gaps in the future operating environment combined with the speed of emerging threat development requires a "red vs blue" NTA approach. This approach provides integrated baselines for OUSD(R&E) analyses and investment decisions that are reflective of cross-cutting Joint Force plans, missions, and concepts. Trends and potential impacts related to global critical and emerging technology developments are analyzed and assessed, and findings are integrated with IC reporting to enable decision advantage in OUSD(R&E) and inform strategies for maintaining technological superiority and modernizing key capabilities for the Joint Force.

Analysis and assessments are focused on challenges related to NDS objectives and competitors' research and development trends. Two main lines of effort accomplish this mission:
1) An NTA is conducted using integrated information from the acquisition, intelligence, operational, and technical communities to quantify key attributes of emerging critical challenges and assess counter technology options. The framework includes execution of the following activities:
- Independent teams of industry, academic, and Federally Funded Research and Development Center/University Affiliated Research Center (FFRDC/UARC) partners conduct comparative analyses and assessments of critical technology research and development efforts between U.S. and competitor nations inform decision and drive investment across the Enterprise.
- Baseline operational and technical assessments underpin technology development efforts across OUSD(R&E).
- Technology-based wargames identify opportunities stemming from emerging technologies; evaluate the demands of the future operational environment; and integrate the operational, technology, and intelligence communities across the DoD and IC.
- Integrated methodologies and findings from technology forecasting, maturation assessments, and NTA efforts support global research watch activities to identify technological development areas for research and investment.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603288D8Z / *Science and Technology (S&T) Analytic Assessments*

2) Technology watch and forecasting capabilities enable OUSD(R&E)'s monitoring and analysis of global basic and applied research activities, while intelligence integration informs R&E enterprise portfolio decisions and the U.S. S&T intelligence posture by establishing linkages across both entities. These efforts characterize the global technology environment for decision advantage across DoD and U.S. government technology development enterprises.
- Recurring technical exchanges between OUSD(R&E) portfolio managers and the subject matter expert analysts and production centers of the IC facilitate the direct exchange of intelligence needs and finished intelligence products to establish a comprehensive understanding of the global technology landscape;
- Open-source analysis, including technology watch and horizon scanning activities, identifies emerging and disruptive technology trends in areas of future military utility to inform strategic investment decisions.

Due to the emergent nature of challenges and threats, specific analytic foci are unlikely to be identified beyond the current budget year. The process for developing and executing assessments can span fiscal years and may have multiple phases as trends progress and new information arises.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	23.936	24.052	24.756	-	24.756
Current President's Budget	23.067	29.227	24.328	-	24.328
Total Adjustments	-0.869	5.175	-0.428	-	-0.428
• Congressional General Reductions	-	-0.325			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	5.500			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.865	-			
• Program Adjustments	-0.004	-	-0.428	-	-0.428

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2022	FY 2023
Project: 328: *Science and Technology Analytic Assessments*		
Congressional Add: *Strategic Multilayer Assessment Cell*	-	5.500
Congressional Add Subtotals for Project: 328	-	5.500
Congressional Add Totals for all Projects	-	5.500

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603288D8Z *I Science and Technology (S&T) Analytic Assessments*

Change Summary Explanation

FY 2024 decrease of $0.428 million is comprised of a re-alignment of $0.539 million to support the Historically Black Colleges and Universities/Minority Serving Institutions program, which is a priority of the Under Secretary of Defense for Research and Engineering (USD(R&E)), and $0.026 million to support departmental priorities, and an economic assumption increase of $0.137 million.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603288D8Z / *Science and Technology (S&T) Analytic Assessments*	Project (Number/Name) 328 / *Science and Technology Analytic Assessments*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
328: *Science and Technology Analytic Assessments*	100.224	17.259	22.000	17.335	-	17.335	17.655	18.047	18.425	18.814	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Science and Technology (S&T) Analytic Assessments Project Code funds NTA through the integration of intelligence, comparative assessment, and independent analysis to shape the development of innovative capabilities and address emerging threats from a diverse range of state and non-state actors as outlined in the NDS and as reported through the IC. The emerging nature of the problem sets makes specific identification of project topics beyond the current budget year unlikely.

Independent technology analysis performed by industry, academic, and FFRDC/UARC performers and DoD laboratories. Main lines of effort include:
- Quantitative, engineering-level analyses of novel technologies and concepts that identify areas of future technology overmatch.
- Comparative assessment of critical technology research and development efforts between U.S. and competitor nations.
- Technology maturation forecasting that characterizes the future maturation of defense-related technologies in related aggregate groups of capability enablers.

Operational and technical assessments identify prioritized operational issues and associated technology focus areas through comprehensive kill chain analysis across all domains through the year 2040. Characterizations of future operating environments and challenges inform the scoping and design efforts of science and technology and engineering analyses for DoD. Main lines of effort include:
- Technology-based Wargames. Wargame outputs inform future concept and capability development, prototyping and experimentation activities, threat forecasting, and DoD S&T investments. The wargames identify opportunities stemming from emerging technologies, evaluate the demands of the future operational environment, and integrate the operational, technology, and intelligence communities.
- Future Operating Environment Analyses. This analysis fuses IC characterizations of future threats with operational impacts to the Joint Force, enabling further technology-specific analysis in areas of critical challenge or opportunity.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Science and Technology Analytic Assessments	17.259	16.500	17.335
Description: The Science and Technology (S&T) Analytic Assessments Project code supports the development of innovative capabilities to meet emerging threats from the diverse range of state and non-state actors confronting the U.S.. These capabilities support the objectives of the NDS and the National Military Strategy. Throughout this process the analysis will be tightly coupled with both the IC and the operational community.			
FY 2023 Plans: Independent Technology Engineering Analysis:			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603288D8Z / *Science and Technology (S&T) Analytic Assessments*	**Project (Number/Name)** 328 / *Science and Technology Analytic Assessments*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
- Conduct engineering- and physics-based threat assessments informed by IC reporting to identify gaps in U.S. capabilities. - Conduct analysis of novel technology and concepts to address capability gaps and potential counters to intelligence-derived emerging technologies in future operating environments. - Conduct independent assessments of U.S. and strategic competitors' critical capability and technology development. - Produce comparative assessments within DoD critical technology areas of existing and planned U.S. capabilities and weapons systems characterizing emerging threat systems and capabilities in future operating environments. - Integrate methodologies and findings from technology forecasting, maturation assessments, and NTA efforts to support global research watch activities that identify technological development areas for research and investment. - Conduct comparative assessments of and report on efforts by the U.S. and the People's Republic of China to advance critical modernization technologies with military applications (FY 2022 NDAA §1251). Operational and Technical Assessment: - Update foundational data of U.S. and adversary capabilities to enable mission-oriented analysis of emerging threats. - Assess emerging operational scenarios against future red and blue capability timelines. - Design and execute technology-based wargames to inform and better align DoD modernization activities, joint concept and capability development, and threat forecasting. ***FY 2024 Plans:*** Continued execution of FY 2023 plans. FY 2024 activities include additional quantities of operational and engineering analyses in specific technology areas. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The FY 2024 increase of $0.835 million reflects an internal reprioritization to increase comparative assessment efforts in the S&T Analytic Assessments project in this project code 328, as well as minor budget fluctuations.			
Accomplishments/Planned Programs Subtotals	17.259	16.500	17.335

	FY 2022	FY 2023
Congressional Add: Strategic Multilayer Assessment Cell	-	5.500
FY 2023 Plans: Funding in FY 2023 will allow execution of the Strategic Multilayer Assessment (SMA) Cell. The SMA Cell supports senior leadership in the Combatant Commands (CCMDs) with actionable assessments of complex operational and technical challenges. SMA efforts leverage multi-agency, multi-disciplinary approaches to answer the Combatant Commanders' key strategic questions that are not within the DoD's core		

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603288D8Z / *Science and Technology (S&T) Analytic Assessments*	**Project (Number/Name)** 328 / *Science and Technology Analytic Assessments*

	FY 2022	FY 2023
competency. The assessments help maintain our competitive advantage in an increasingly complex global environment. SMA assessments are framed during the year of execution and are in response to specific tasking from senior leadership in the CCMDs. The SMA Cell researches options from across the U.S. Government, foreign partners, academia, and the private sector. Joint Chiefs of Staff Directorate for Operations (J-3) and the Office of the Under Secretary of Defense for Research and Engineering share management and oversight responsibilities for SMA efforts. Joint Chiefs of Staff Directorate for Operations (J-3) plans and executes SMA efforts.		
Congressional Adds Subtotals	-	5.500

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603288D8Z / *Science and Technology (S&T) Analytic Assessments*	Project (Number/Name) 177 / *Technology Watch/Horizon Scanning*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
177: *Technology Watch/Horizon Scanning*	6.163	5.808	7.227	6.993	-	6.993	7.185	7.331	7.483	7.659	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Technology Watch/Horizon Scanning (TW/HS) Project Code supports emerging and disruptive technology characterization through the identification of technology research trends and the forecasting of future concepts and technology maturation with the potential for military application through 2040. TW/HS activities inform the Department's investment decisions in technology areas to maintain or regain global competitive advantage. The program provides tailored technical assessments that identify the military relevance, research opportunities, and investment targets for emerging and disruptive technologies. OSI&A enables intelligence-informed decision advantage across the S&T enterprise portfolio and informs the U.S. S&T intelligence posture by establishing linkages across the R&E and IC entities.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Technology Watch/Horizon Scanning	5.808	7.227	6.993

Description: The program utilizes multiple analytic methodologies to identify nascent technologies characterize the future global S&T operating environment. This characterization, in combination with other technical analysis performed by OSI&A, will inform strategic technology development decisions across the OUSD(R&E) Enterprise. OSI&A will work in collaboration with international allies and partners to further the field of critical and emerging technology research and analysis.

FY 2023 Plans:

Technology Watch and Forecasting:
- Integrate methodologies and findings from technology scanning and forecasting, maturation assessments, data analysis, and net technical assessment efforts to characterize global developments in science and technology research.
- Analyze financial data from public, private, and venture capital sources to identify where U.S. and foreign industries are investing resources in promising areas of technology development.
- Conduct horizon scans that identify and track global technology trends.
- Collaborate with international allies and partners to identify emerging technology trends and research activities in the furtherance of common research and analysis opportunities that support a more connected and resilient research ecosystem.

Intelligence Integration:
- Conduct formal technical exchanges between OUSD(R&E) portfolio managers and IC subject matter expert to establish a common understanding of global technology developments.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603288D8Z / *Science and Technology (S&T) Analytic Assessments*	**Project (Number/Name)** 177 / *Technology Watch/Horizon Scanning*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
- Coordinate IC support for OSI&A-sponsored technical analysis and independent comparative technology assessments and provide OSD-level support to S&T intelligence initiatives. - Direct the Defense Intelligence Enterprise to provide analytic input to R&E-defined critical intelligence needs and disseminate the IC response to R&E stakeholders. ***FY 2024 Plans:*** Continued execution of FY 2023 plans and refinement of horizon scanning and technology assessment methodologies. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The decrease of $0.234 million between FY 2023 and FY 2024 is the result of an internal reprioritization to increase comparative assessment efforts in the S&T Analytic Assessments project in this PE (PE 0603288D8Z P328).			
Accomplishments/Planned Programs Subtotals	5.808	7.227	6.993

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

N/A

D. Acquisition Strategy

N/A

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603289D8Z *I Advanced Innovative Analysis and Concepts*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	291.228	45.050	53.176	55.626	-	55.626	56.844	58.099	59.316	60.564	Continuing	Continuing
329: *Advanced Innovative Analysis and Concepts*	291.228	45.050	53.176	55.626	-	55.626	56.844	58.099	59.316	60.564	Continuing	Continuing

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

This program supports the Department's initiatives to Deter Aggression and Prevail in Conflict, Defend the Homeland, Build Sustainable and Long-Term Advantage, and Build a Resilient Joint Force and Defense Ecosystem.

The Strategic Capabilities Office (SCO) conducts analysis to identify and accelerate the development, demonstration, and transition of game-changing capabilities to shape and counter emerging threats and increase the lethality of the Joint Force in contested environments. In a partnership endeavor across the Office of the Secretary of Defense (OSD), Joint Staff, Combatant Commands (CCMDs), the Services, the Intelligence Community (IC), and other U.S. Government agencies, the SCO combines capability innovation with new concepts for warfighting that leverage new technology areas, including autonomy, artificial intelligence, and machine learning. SCO conducts projects on accelerated timelines, in all warfighting domains, at any classification or access level.

The Advanced Innovative Analysis and Concepts program element supports development, study, and analysis of integrated concepts and prototypes, analysis in support of ongoing efforts to shape and counter emerging threats, cross-Service and cross-Defense/Intelligence concepts, and red-teaming. Projects focus on proving component and subsystem maturity prior to integration in major systems, and may involve risk reduction initiatives. This Program Element also supports the development of concept proposals for assessment by the Technical and Transition Cross Functional Teams established in accordance with the National Defense Authorization Act (NDAA) for FY 2020 for development under the Advanced Innovative Technologies Program Element. Due to the nature of these projects, specific applications and detailed plans are available at a higher classification level.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603289D8Z *I Advanced Innovative Analysis and Concepts*

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	46.351	53.890	55.371	-	55.371
Current President's Budget	45.050	53.176	55.626	-	55.626
Total Adjustments	-1.301	-0.714	0.255	-	0.255
• Congressional General Reductions	-	-0.714			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.294	-			
• Program Adjustments	-0.007	-	0.255	-	0.255

Change Summary Explanation

The FY 2024 increase of $0.255 is comprised of realignment of $0.058 million to support departmental priorities and an economic assumption increase of $0.313 million.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603289D8Z / *Advanced Innovative Analysis and Concepts*	Project (Number/Name) 329 / *Advanced Innovative Analysis and Concepts*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
329: *Advanced Innovative Analysis and Concepts*	291.228	45.050	53.176	55.626	-	55.626	56.844	58.099	59.316	60.564	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Strategic Capabilities Office (SCO) conducts analysis in support of ongoing efforts to shape and counter emerging threats, with special emphasis on: innovative and architecture-level concepts, cross-Service and cross-Defense/Intelligence concepts, red-teaming, and on a case-by-case basis, research and development projects to demonstrate new concepts. SCO identifies, analyzes, and accelerates the development, demonstration, and transition of selected capabilities to shape and counter emerging threats, and to improve U.S. security posture. In a partnership endeavor across the Office of the Secretary of Defense (OSD), Joint Staff, Combatant Commands (CCMDs), the Services, the Intelligence Community (IC), and other U.S. Government agencies, SCO combines capability innovation with concepts of operation to develop novel, high-leverage approaches to address pressing national security challenges. SCO conducts projects on accelerated timelines, at any classification or access level.

The Advanced Innovative Analysis and Concepts program element supports development, study, and analysis of integrated concepts and prototypes, analysis in support of ongoing efforts to shape and counter emerging threats, cross-Service and cross-Defense/Intelligence concepts, and red-teaming. Projects focus on proving component and subsystem maturity prior to integration in major systems, and may involve risk reduction initiatives. Due to the nature of these projects, specific applications and detailed plans are available at a higher classification level.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Innovative Analysis and Concept Generation	24.230	29.041	30.081
Description: The Strategic Capabilities Office conducts analysis, studies, demonstrations of integrated concepts and prototypes, component and subsystem maturation, and risk-reduction demonstrations in support of ongoing efforts to shape and counter emerging threats, and develops project proposals for prototyping under the Advanced Innovative Technologies Program Element. Due to the nature of these projects, specific applications and detailed plans are available at a higher classification level. ***FY 2023 Plans:*** Continue to innovate in partnership with Services Program Offices and CCMDs to identify game-changing uses of existing and mature systems and technologies to prepare for presentation to the Cross Functional Teams. ***FY 2024 Plans:*** Continue to innovate in partnership with Services Program Offices and CCMDs to identify game-changing uses of existing and mature systems and technologies to prepare for presentation to the Cross Functional Teams. ***FY 2023 to FY 2024 Increase/Decrease Statement:***			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603289D8Z / *Advanced Innovative Analysis and Concepts*	**Project (Number/Name)** 329 / *Advanced Innovative Analysis and Concepts*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
The increase of $1.04 million will enable 1-2 additional studies to identify high-impact concepts for prototype development.			
Title: Formulation and Risk Reduction ***Description:*** Subsequent to review and recommendation of project concepts by the new Technical and Transition Cross Functional Teams, the Strategic Capabilities Office performs engineering trade studies and conducts component tests to prepare selected projects to be ready to enter into full prototype development under the Advanced Innovative Technologies Program Element. Activities, such as proving component and subsystem maturity prior to integration in major systems, are intended to finalize key requirements to reduce technical risk during prototype development. Due to the nature of these projects, specific applications and detailed plans are available at a higher classification level. ***FY 2023 Plans:*** Conduct formulation and risk reduction for five to six projects reviewed by the Cross Functional Teams and proposed to begin 6.4 work in FY 2024. ***FY 2024 Plans:*** Conduct formulation and risk reduction for five to six projects reviewed by the Cross Functional Teams and proposed to begin 6.4 work in FY 2025. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The increase of $1.35 million will allow additional work for projects selected to enter Formulation in FY24 to be ready to enter Execution in FY 2025.	20.820	22.650	24.000
Title: Small Business Innovative Research (SBIR)/Small Business Technology Transfer (STTR) ***Description:*** This project includes estimates of funds required for SBIR/STTR based upon planned extramural research and development spending. These funds are transferred to the SBIR/STTR programs in the year of execution. $1.294 million was previously transferred to SBIR/STTR in FY22. ***FY 2023 Plans:*** Funding will be transferred to the Department's SBIR and STTR programs in the year of execution. ***FY 2024 Plans:*** Funding will be transferred to the Department's SBIR and STTR programs in the year of execution. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The increase of $0.060 million is due to planned extramural research and development spending.	-	1.485	1.545
Accomplishments/Planned Programs Subtotals	45.050	53.176	55.626

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603289D8Z / *Advanced Innovative Analysis and Concepts*	**Project (Number/Name)** 329 / *Advanced Innovative Analysis and Concepts*

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603330D8Z / *Quantum Sciences Technology*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	-	-	-	75.000	-	75.000	100.000	100.000	100.000	100.000	Continuing	Continuing
444: *Quantum Transition Acceleration*	-	-	-	75.000	-	75.000	100.000	100.000	100.000	100.000	Continuing	Continuing

Note

New Start (Y/N): Yes

A. Mission Description and Budget Item Justification

This program supports the Department's initiative to Build Sustainable and Long-Term Advantage.

Quantum Technology is approaching a tipping point that will determine how quickly it can make an impact. If the United States can stay on pace, many important outcomes for the Department of Defense (DoD) can be realized including robust position, navigation and timing for DoD freedom of operations with precision strike even with contests in spectrum, space, or cyber operations. Also, greatly enhanced capabilities in the spectrum giving the DoD significant advantages for Electronic Warfare (EW), Command, Control, and Communications (C3) and Intelligence, Surveillance, and Reconnaissance (ISR). Finally, quantum computation allowing rapid advances in materials and chemistry for advanced energetics, propulsion, and platform coatings, possibly optimization for stealth properties, logistics, and machine learning.

Without deliberately addressing these challenges, we risk slowdown of technological maturity. Two challenges and barriers to implementation are: component and supply chain maturity of bleeding edge capability in photonics, including lasers, active light manipulation, light delivery, and packaging; and misalignment of government with industry regarding quantum technology development priorities, maturity time-line realism, and technology protection strategy.

This effort’s funding will improve quantum supply chain maturity and accelerate DoD priority quantum technology.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603330D8Z *I Quantum Sciences Technology*

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	0.000	0.000	0.000	-	0.000
Current President's Budget	0.000	0.000	75.000	-	75.000
Total Adjustments	0.000	0.000	75.000	-	75.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program New Start	-	-	75.000	-	75.000

Change Summary Explanation

As a new start in FY 2024, the $75.000 million will develop critical components and supply chain for quantum technology while simultaneously accelerating quantum devices toward commercialization and operational capability.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603330D8Z / *Quantum Sciences Technology*	Project (Number/Name) 444 / *Quantum Transition Acceleration*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
444: *Quantum Transition Acceleration*	-	-	-	75.000	-	75.000	100.000	100.000	100.000	100.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Department of Defense (DoD) has pioneered and advanced classical sensor technology for decades. Over the past years, quantum sensing technology has shown the ability to meet program level metrics throughout DoD R&D programs. In order to sustain technological superiority, the Department must continue to work to transition sensor research and development for United States Air Force, Army and Navy applications.

This funding will mature, demonstrate, and transition emerging quantum sensing and quantum navigation technologies to rapidly address warfighter problem sets. This work will include testing and evaluation, device integration, and application analysis to aid in future acquisition and sustainment of innovative technologies developed in DoD research programs.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Quantum Sensors	-	-	45.000
Description: The Department of Defense's (DoD) research and development of quantum technologies is critical to maintaining the Nation's technological superiority. This effort focuses on maturing, demonstrating, and transitioning quantum inertial sensors, gravity sensors, atomic clocks, and quantum electro-magnetic sensors. The specific quantum technologies developed will be sourced from existing projects that have already demonstrated performance advantages.			
FY 2024 Plans: - Start Modeling and Simulation (M&S) of quantum technology in operational scenarios while comparing to commercial alternatives if available. - Measure quantum sensor environmental capabilities in various operationally relevant situations. - Initiate size, weight and power (SWaP) redesign of quantum sensors, ensuring the future quantum sensors are compatible with current/future military applications. - Conduct initial systems requirement review (SRR) with industry contractors outlining integration plan for quantum sensors into specified applications. - Initiate documentation of military-grade technical data package outlining the specifications for quantum sensors.			
FY 2023 to FY 2024 Increase/Decrease Statement:			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603330D8Z / *Quantum Sciences Technology*	**Project (Number/Name)** 444 / *Quantum Transition Acceleration*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
PE 0603330D8Z increase of $45.000 million between FY 2023 and FY 2024 will commercialize priority quantum technology and mature it for DoD operational needs.			
Title: Quantum Supply Chain ***Description:*** This effort focuses on identifying, developing and maturing critical components supporting technology for atomic clocks, quantum sensors, and quantum computers; Supports aligning and leveraging multiple organizations for DoD needs across academic institutions, national laboratories, non-profits, and private industry. This effort will accelerate the transition of laboratory-scale systems to manufacturable commercial products. ***FY 2024 Plans:*** - Initialize critical technology identification and assessment procedure with stake-holders across government and industry. - Initialize early projects that can leverage existing activities within DoD (e.g. the Microelectronics Commons and the DoD Manufacturing Institutes) - Initiate projects identified as supporting improved manufacturability or performance of the quantum sensors funded through this Program Element. - Establish information mechanism to more easily integrate quantum specific components through Process Design Kit (PDK) and/or Assembly Design Kits (ADK). This PDK and/or ADK will combine multiple information libraries from multiple fabrication sources (e.g. national laboratories, manufacturing institutes, and private fabrication facilities). - Establish National Laboratory testbed to identify the hardest integration problems associated with quantum technology and develop technology solutions for those problems. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** PE 0603330D8Z increase of $30.000 million will enable low-volume manufacturing of critical components for quantum technology. It will leverage existing resources and institutions in government and the private sector.	-	-	30.000
Accomplishments/Planned Programs Subtotals	-	-	75.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603338D8Z / *Defense Modernization and Prototyping*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	127.390	93.463	-	-	-	-	-	0.000	-	-	-	-
720: *Quick Reaction Special Projects (QRSP)*	40.432	47.470	-	-	-	-	-	-	-	-	-	-
721: *Emerging Capabilities Tech Dev (ECTD)*	86.958	45.993	-	-	-	-	-	-	-	-	-	-

Note

New Start (Y/N): N

In FY 2023, all funding and project investment areas in the Defense Modernization and Prototyping (DM&P) Program Element (PE) transitioned to PE 0603838D8Z Defense Innovation Acceleration (DIA).

A. Mission Description and Budget Item Justification

The Defense Modernization and Prototyping (DM&P) Program Element (PE) is an innovation accelerator that rapidly identifies, prototypes, and transitions solutions that help fill capability gaps in priority technology areas and maintain our Nation's technological superiority and military advantage. DM&P identifies innovative solutions that fall into the seams, gaps, and fissures of Service development programs and aligns with the Office of the Under Secretary of Defense for Research and Engineering (OUSD(R&E)) critical technology areas and strategic priorities. Through targeted prototyping, DM&P rapidly matures and transitions capabilities that fill gaps within Joint Warfighting Concepts, increase interoperability between Service programs, and inform multi-Service joint experimentation and demonstration efforts such as the Rapid Defense Experimentation Reserve (RDER), Project Convergence, and Warfighting Lab Incentive Fund (WLIF). DM&P achieves this through a tailored execution model that:

- Encourages innovation from small businesses and non-traditional performers by addressing DoD "pain points";
- Identifies and funds prototyping efforts within the year of execution to accelerate the rate of innovation and address emerging opportunities and threats;
- Leverages Services, defense agency, and industry investments through partnerships that share risk and increase alignment with OUSD priorities;
- Incorporates transition sponsor participation during project development, prototyping, and evaluation;
- Is informed by Department-level strategies and priorities, including the National Defense Strategy, OUSD(R&E) critical technology areas, and the Combatant Commands' (CCMD) Integrated Priority Lists (IPLs);
- Coordinates with other defense innovation partners, including Service Labs, Federally Funded Research and Development Centers/University Affiliated Research Centers, academia, and the private sector; thereby increasing impact and reducing duplication; and
- Maximizes value by balancing innovation with operational requirements, achieving an average transition rate of approximately 80 percent to Programs of Record or Service and defense agency partners.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603338D8Z / *Defense Modernization and Prototyping*

DM&P includes two project codes that fund innovative and emerging technologies to mature and transition solutions that close key capability gaps in OUSD(R&E) priority areas. Quick Reaction Special Projects (QRSP) focuses on innovation discovery with a strong emphasis on small businesses and non-traditional partners. Emerging Capabilities Technology Development (ECTD) focuses on maturing innovative capabilities into integrated solutions that address emerging gaps. Activities within these projects include early exploration of potentially game-changing technologies and concepts, harnessing small and non-traditional business innovation to address Department of Defense (DoD) leap-ahead technology challenges, and mission-focused capability development of advanced systems to address DoD modernization needs. DM&P emphasizes fully transitioning these innovations and emerging technologies as enduring capabilities to the Services, CCMDs, and other end users.

With funds available throughout the year of execution, DM&P enables the OUSD(R&E) to identify, accelerate, and rapidly transition innovation from small businesses and non-traditional performers that otherwise would not be realized through traditional research and development pathways. Accordingly, DM&P programs can be responsive and flexible to the DoD and Warfighter needs, supporting rapid prototyping to meet immediate capability needs or game-changing technologies that maintain technological superiority. This execution model causes the DM&P PE to lag traditional RDT&E PE obligation and execution benchmarks; however, since inception, both the QRSP and ECTD programs have achieved an unbroken 100 percent obligation rate.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	96.579	141.561	140.554	-	140.554
Current President's Budget	93.463	0.000	0.000	-	0.000
Total Adjustments	-3.116	-141.561	-140.554	-	-140.554
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-141.561			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-3.101	-			
• Program Adjustments	-0.015	-	-	-	-
• DIA Re-alignment to 0603838D8Z	-	-	-140.554	-	-140.554

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2022	FY 2023
Project: 721: *Emerging Capabilities Tech Dev (ECTD)*		
Congressional Add: *Open Source Supply Chain Analytics Resource (OSSCAR)*	3.000	-
Congressional Add: *Hypersonic Modeling and Simulation Center of Excellence*	4.600	-
Congressional Add: *Ship–Based Multi–Sensor Prototype Development and Demonstration*	8.000	-
Congressional Add Subtotals for Project: 721	15.600	-

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603338D8Z / *Defense Modernization and Prototyping*

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2022	FY 2023
Congressional Add Totals for all Projects	15.600	-

Change Summary Explanation

FY 2023 and out-year funding in the Defense Modernization and Prototyping (DM&P) Program Element (PE) transitioned to PE 0603838D8Z Defense Innovation Acceleration (DIA).

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603338D8Z / *Defense Modernization and Prototyping*	Project (Number/Name) 720 / *Quick Reaction Special Projects (QRSP)*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
720: *Quick Reaction Special Projects (QRSP)*	40.432	47.470	-	-	-	-	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY 2023, all resources in this project were transferred to the Defense Innovation Acceleration Program Element (0603838D8Z).

A. Mission Description and Budget Item Justification

Quick Reaction Special Projects (QRSP) funds the development of risk-reducing prototypes to expedite the delivery of effective, affordable, and critically needed technologies. These lower-cost prototypes and QRSP's innovative business processes give OUSD(R&E) the agility to quickly identify new disruptive technologies that have the potential for near-term, game-changing impacts. QRSP also enables the DoD to directly engage with small businesses and non-traditional performers not typically engaged, thus leveraging commercial investment and fostering innovation.

QRSP's focus on innovation discovery leads to smaller efforts supported by joint and interagency partnerships with clearly defined milestones and risk reduction. Prototyping efforts are identified throughout the year leveraging "Innovation Discovery and Demonstration" venues and other engagements with industry, Service Labs, Federally Funded Research and Development Centers (FFRDCs), and other innovation centers. This approach enables QRSP to rapidly mature innovative technologies; quickly identifying technological dead ends, and prioritizing investments that deliver affordable capabilities faster than standard acquisition cycles. Individual projects generally span 12 to 24 months, typically costing less than $1.000 million per phase.

Recent success stories and significant transitions of note include:

- Advanced Security Tag – DUST Identity, a small business, was able to pivot its commercial tagging technology to solve a DoD contested logistics problem after connecting with DoD entities at a DM&P Innovation Outreach event. The two-year prototyping effort developed, tested, and integrated DUST's unique tagging technology into platforms of interest and successfully transitioned to the U.S. Navy.
- ALITEC – Adranos Inc., a small business, upon winning the U.S. Army's inaugural xTechSearch, partnered with QRSP to accelerate development of a novel solid rocket propellant formulation incorporating an aluminum-lithium alloy. The two-year prototyping effort accelerated formulations development, which provides higher performance, and reduced emission of corrosive environmental contaminates compared to traditional solid rocket propellants. The ALITEC propellant successfully transitioned to the U.S. Army.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Low Cost Innovative Projects (Projects less than $1.000 million per phase)	26.720	-	-
Description: Investing in prototypes with the potential to deliver rapid capabilities, QRSP identifies, matures, and transitions innovative technologies. In FY 2022, QRSP selected, executed, and transitioned multiple low-cost projects, including:			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603338D8Z / *Defense Modernization and Prototyping*	**Project (Number/Name)** 720 / *Quick Reaction Special Projects (QRSP)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
• Endless Diver: This project developed enhanced capabilities for Unmanned Undersea Vessels (UUVs). The prototype transitioned to U.S. Special Operations Command (USSOCOM). • Mulligan: This effort developed and tested a low probability of detection radio frequency communication system. The prototype transitioned to USSOCOM for testing and validation. • Hefted Blade: This microelectronics effort developed a prototype antenna system. The prototype system completed testing and demonstration before transitioning to DoD partners. • Perched Mantlet: This effort developed an unattended ground sensor prototype to detect low and medium altitude threats. Additional details are classified. In FY 2023, development of the prototype capability transitions to Program Element 0603838D8Z Defense Innovation Acceleration for continued development with final transition to DoD partners. • Single Tag: This project created a software prototype that leveraged artificial intelligence (AI) to drastically reduce analyst time required to label data and identify anomalies over hundreds or thousands of images at once. The software transitioned to the intelligence community. • Advanced Security Tag: This project developed a novel capability to mark, scan, and catalog military components used to track and control inventories while eliminating or mitigating the risks associated with parts tracking, quality control, and security management within maintenance and operational chains. This project transitioned to the U.S. Navy. • Automated Network Inference and Fusion: The tool enabled more robust effects-based analysis and course of action development for selected networks and nodes that allow its customers to carry out national security and military strategies. In FY 2023, development of the software toolset transitions to Program Element 0603838D8Z Defense Innovation Acceleration for continued development with final transition to the U.S. Air Force. • Identity Warrior: This project leveraged advances in optics, cloud computing, and artificial intelligence/machine learning (AI/ML) to passively capture and analyze human signatures at a distance and screen individuals against known adversaries in real-time on existing Android computing platforms located throughout the Joint Force. In FY 2023, development of the prototype capability transitions to Program Element 0603838D8Z Defense Innovation Acceleration for continued development with final transition to the U.S. Army. • Automated Threat Identification and Classification Module: This project leveraged advances in AI, advanced analytics, and deep learning to automate the analysis of large, diverse data sets from disparate sources to quickly prioritize identified threat information and deliver actionable information across Joint All Domain Operations. This project transitioned to the U.S. Army. • Undersea and Surface Obstacle Avoidance System: This project leveraged an existing autonomous underwater and surface vehicle technology to research, test, develop, and evaluate a revolutionary integrated dual-modality undersea and surface obstacle avoidance system. This system transitioned to the U.S. Navy. • Interpretable Machine Learning: This project developed interpretability algorithms that “bolt on” to existing neural networks and provide explanations of a network’s prediction. These explanations confirm that the network uses reasonable and robust features, building trust in the neural network and mitigating fragility. The algorithms transitioned to the U.S. Navy.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603338D8Z / *Defense Modernization and Prototyping*	**Project (Number/Name)** 720 / *Quick Reaction Special Projects (QRSP)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
• Expeditionary Water Obstacle Crossing: This project designed, built, tested, and demonstrated a waterborne logistics platform prototype capable of transporting materials from ship to shore and in open ocean conditions. The ease of manufacture, low observability, ruggedness, and low cost of the platform provided an innovative logistics solution to enable expeditionary advanced basing operations. A full-scale prototype and accompanying autonomy software transitioned to the U.S. Marine Corps (USMC) Systems Command. • Weapon System Virtual Reality: This project developed a human-machine interface to enhance student training and provide critical feedback to instructors. The project transitioned to the U.S. Air Force for joint and international training of MQ-9, F-16, and F-35 aircrew. • AGES: This project developed and demonstrated a battery storage and tactical generator microgrid capability that meets critical operational requirements in extreme cold weather environments; emphasizing scalable, flexible, and high-power quality for continuous and high energy demands. In FY 2023, development of the prototype transitions to Program Element 0603838D8Z Defense Innovation Acceleration for continued development and evaluation with final transition to the Joint Services. • ISAAC: This project leveraged small business innovators in the artificial AI/ML space to further develop non-traditional intelligence, surveillance, and reconnaissance (ISR) collection and better understand Diplomatic, Informational, Military, Economic, Financial, Intelligence, and Law Enforcement (DIMEFIL) actions. In FY 2023, development of the prototype capability transitions to Program Element 0603838D8Z Defense Innovation Acceleration for continued development with final transition to multiple Combatant Commands. • Non-Traditional Sensors: This project integrated and demonstrated a novel method of sensor cueing using a payload as a non-traditional sensor. Reports from this weapon system were used to cue various national and theater-level ISR capabilities. The ground components developed by this project transitioned to a DoD partner. • USSOCOM Ignite: This annual program is a low-cost innovation accelerator that combines the ingenuity and out-of-the-box thinking of military students with real-world military problems curated by USSOCOM. Students from multiple universities worked together to develop prototype solutions to relevant challenges like drone autonomy, sensor and data fusion, and casualty care at the tactical edge. In FY 2023, development of prototypes transitions to Program Element 0603838D8Z Defense Innovation Acceleration for continued development with final transition into operational capabilities. • JUNU: This project developed and demonstrated an innovative electronic-warfare capability extensible to existing ground and air platforms to address modern challenges. In FY 2023, development of the capability transitions to Program Element 0603838D8Z Defense Innovation Acceleration for continued development with final transition to the U.S. Army and U.S. Air Force. • Dark Skies: This is a classified program. Additional information is available upon request. In FY 2023, development of the prototype capability transitions to Program Element 0603838D8Z Defense Innovation Acceleration for continued development. • Project 2106: This is a classified program. Additional information is available upon request. • DRAGON: This project delivered a cost-effective solution for incoming threat detection by incorporating advancements across multiple technology focus areas including improved sensors, machine learning, and edge processing. In FY 2023, development			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603338D8Z / *Defense Modernization and Prototyping*	**Project (Number/Name)** 720 / *Quick Reaction Special Projects (QRSP)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
of the technology transitions to Program Element 0603838D8Z Defense Innovation Acceleration for continued development and evaluation with final transition to U.S. Navy. • Aircrew Alert: This project developed the first wearable personal communicator for aircrew alerting. This capability enables a new set of communication services built to address the challenges of ensuring resilient communications in all environments. This capability transitioned to the U.S. Air Force and is expected to have a variety of applications across the DoD. • Golden Apple: This spiral development effort leveraged the success of a previous Capability Prototypes project to ensure ISR sensors continue to perform threat detection and tracking in future scenarios. Additional details of this program are classified. Golden Apple transitioned to the U.S. Navy. • AJME: This project designed and developed a prototype software that automates the exchange of specific messages across joint systems, improving the clarity and speed of communications necessary for coordinated fires support. In FY 2023, development of the technology transitions to Program Element 0603838D8Z Defense Innovation Acceleration for continued development with final transition to the U.S. Air Force. • SDT: This is a classified program. Additional information is available upon request. In FY 2023, development of the prototype capability transitions to Program Element 0603838D8Z Defense Innovation Acceleration for continued development. • Future Technology Threat Understanding: This project established a metric-based analysis methodology and rapid prototyping approach developed to scope, prioritize, and empirically evaluate how the confluence of a wide range of advancing technologies may lead to future threats. In FY 2023, development of the threat prototype transitions to Program Element 0603838D8Z Defense Innovation Acceleration for continued development with final transition to USSOCOM. • SQUAAD: This project developed a measurement system to determine the ground strength of a geographical area. This system will allow deployed forces to characterize the state of the ground accurately and rapidly. The SQUAAD capability transitioned to the U.S. Air Force. • High-Performance Micropropulsion System for Picosatellites: This project developed a cost-effective, high-thrust propulsion system. The system was incorporated into a flight unit for an on-orbit demonstration as part of the transition to an interagency partner. • PhASP: This project demonstrated and delivered a novel laser protection capability for sensors. The capability transitioned to the U.S. Navy for testing and integration. • Project 6312: This is a classified program. Additional information is available upon request. • 3D Printed Radiation Shielding of Electronic Components: This project investigated and developed a novel approach to mitigate radiation damage in extreme environments to microelectronic systems using unique additive manufacturing techniques. In FY 2023, development of the prototype capability transitions to Program Element 0603838D8Z Defense Innovation Acceleration for continued development with final transition to DoD and interagency partners. • Activated Aluminum Fuel for Dismounted Troops: This project developed a novel energy solution that is safer and more cost-effective than existing alternatives while remaining compatible with existing fuel cells. The capability transitioned to the USMC for testing and integration.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603338D8Z / *Defense Modernization and Prototyping*	**Project (Number/Name)** 720 / *Quick Reaction Special Projects (QRSP)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
• DLOFTS: This project delivered an innovative transportable refueling system to transfer fuel to shore-based units rapidly. In FY 2023, development of the capability transitions to Program Element 0603838D8Z Defense Innovation Acceleration for continued development with final transition to the U.S. Navy and U.S. Air Force. • TMS ECU: This project developed a tactical microgrid standard-compliant controller for environmental conditioning units enabling networked capability to optimally operate heating and cooling equipment, reducing power demand and fuel consumption. In FY 2023, development of the capability transitions to Program Element 0603838D8Z Defense Innovation Acceleration for continued development with final transition to the U.S. Army. • JADOTS: This project is developing a new software capability to enable analysis and planning of kinetic and non-kinetic fires for multi-domain effects. Prototype development was initiated in FY 2022. In FY 2023, JADOTS transitions to Program Element 0603838D8Z Defense Innovation Acceleration for further development. • El Camino: This project is developing a novel capability to enhance unmanned aerial systems (UAS) navigation in adverse conditions. Prototype development was initiated in FY 2022. Additional details are classified. In FY 2023, El Camino transitions to Program Element 0603838D8Z Defense Innovation Acceleration for further development. • Kestrel: This project is developing, testing, and demonstrating several technologies that will improve the Warfighter's ability to execute undersea missions, bringing immediate benefit to the operational force. In FY 2022, the project-initiated design and manufacturing of select components. In FY 2023, Kestrel transitions to Program Element 0603838D8Z Defense Innovation Acceleration for further development. • MeTRA: This small business-led effort is developing a model-based systems engineering environment and knowledge management collaboration platform to reduce cyber knowledge gaps and support agile analysis for data-driven security decisions. In FY 2022, MeTRA initiated modeling and process assessments. In FY 2023, MeTRA transitions to Program Element 0603838D8Z Defense Innovation Acceleration for further development.			
Title: Direct to Retina ***Description:*** This small business-led project developed the first and only augmented reality/virtual reality (AR/VR) eyewear glasses that project images directly onto the retina. This revolutionary technology will replace current mixed reality technology, which requires organic light-emitting diodes (OLED) screens, heavy headgear, and bulky lenses. By projecting the image directly onto the retina, the operator will have an entire 220-degree field of view, infinite depth of view, reduced lag time, and increased battery life. In FY 2022, the project completed design and fabrication of critical elements required to develop the initial prototype. Work continues in FY 2023 using FY 2022 funds to finalize development and demonstrate the prototype before transitioning to a formal Program of Record within the U.S. Air Force.	1.000	-	-
Title: Tactical Agency Capability - Human/Machine Team (TAC-H)	1.050	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603338D8Z / *Defense Modernization and Prototyping*	**Project (Number/Name)** 720 / *Quick Reaction Special Projects (QRSP)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Description: This project is developing human-machine collaborative decision-making tools to provide ground units with faster-than-human responses to threats. As battlefield environments become more complex and lethal, the Joint Force requires capabilities that reduce cognitive burden and accelerate decision-making by leveraging autonomous platforms and human-machine collaborative systems at the tactical edge. TAC-H will develop and demonstrate a real-time decision-making engine fusing disparate data sources and providing the Warfighter with recommended courses of action based on the current operating environment. In FY 2022, the project completed a preliminary design review for software components and conducted initial tests to improve the accuracy and efficiency of the software. In FY 2023, the TAC-H project transitioned to operational units for operational use.			
Title: Next Generation Hypersonic Testing (NiGHT) ***Description:*** This project tested and assessed the utility of a novel technology developed by an innovative start-up company. Details of this technology and its applications are classified. Additional information is available upon request. In FY 2023, NiGHT transitions to Program Element 0603838D8Z Defense Innovation Acceleration for further development.	1.700	-	-
Title: The Gates ***Description:*** This is a classified program. Additional information is available upon request.	1.500	-	-
Title: Project 3567 ***Description:*** This is a classified program. Additional information is available upon request.	2.000	-	-
Title: Intelligence, Reconnaissance, Surveillance, and Targeting (ISRT) ***Description:*** This project is developing laser target designators (LTD) for integration onto a small form factor gimbal to support ISR and targeting missions. This project will reduce the size, weight, and power (SWaP) of the gimbal, integrate tracking and targeting algorithms, and optimize optical and laser performance. These improvements will enable precision fires while conducting ISR missions with a small unmanned aerial system (UAS). Design of the ISRT prototype initiated in FY 2022. In FY 2023, ISRT transitions to Program Element 0603838D8Z Defense Innovation Acceleration for further development.	1.000	-	-
Title: EXACT ***Description:*** This project develops a low-SWaP capability to provide accurate, robust, and reliable positioning, navigation, and timing (PNT) information. Additional details are classified. In FY 2023, EXACT transitions to Program Element 0603838D8Z Defense Innovation Acceleration for further development.	1.000	-	-
Title: Autonomous Low-Profile Vessel (ALPV) Project	1.500	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603338D8Z / *Defense Modernization and Prototyping*	**Project (Number/Name)** 720 / *Quick Reaction Special Projects (QRSP)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Description: This project designs, develops, and tests an autonomous maritime surface logistics platform prototype capable of transporting up to a 10-ton payload across large distances of the ocean with minimal visibility and possibility of detection. The low-profile and low cost of the platform provides an innovative logistics solution to support expeditionary advanced basing operations. Prototype development was initiated in FY 2022. In FY 2023, ALPV transitions to Program Element 0603838D8Z Defense Innovation Acceleration for further development.			
Title: Autonomous Amphibious Response Vehicle (A2RV) ***Description:*** The A2RV project delivered a novel amphibious robotic system for hazards in littoral waters. Prototype development continues in FY 2023 using FY 2022 funds to finalize development and demonstrate the prototype prior to transitioning to the U.S. Marine Corps Littoral Explosive Ordnance Neutralization (LEON) Program of Record for procurement and field insertion.	1.000	-	-
Title: Big Blue ***Description:*** This is a classified program. Additional information is available upon request. In FY 2023, Big Blue transitions to Program Element 0603838D8Z Defense Innovation Acceleration for further development.	1.000	-	-
Title: Low-Cost Precision Delivery ***Description:*** This project develops a low-cost precision delivery capability with a modular, multi-purpose payload carrier for a variety of applications. The project-initiated prototype development and completed an initial demonstration in FY 2022. In FY 2023, Low-Cost Precision Delivery transitions to Program Element 0603838D8Z Defense Innovation Acceleration for further development.	1.000	-	-
Title: Innovation Discovery and Demonstration Venues (IDD) ***Description:*** Agile and flexible experimentation and demonstration venues for innovation discovery enable the DoD to rapidly identify nascent and novel technologies and emerging capabilities, particularly from small businesses and non-traditional performers. IDD supports multi-domain venues and demonstrations that enable system developers to engage directly with Warfighters supporting the rapid discovery and transition of emerging technologies to Services, defense agencies and CCMDs. In FY 2022, 12 demonstration and early experimentation events were conducted featuring over 380 innovative technologies from focus areas including autonomous technologies, virtual reality, machine learning, signature management, and cybersecurity. 137 of the technologies transitioned directly to DoD operational users or were leveraged by formal Programs of Record. The venues also provided over 300 small businesses and non-traditional innovators with Warfighter feedback critical to rapidly mature their technologies into viable prototypes.	5.000	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603338D8Z / *Defense Modernization and Prototyping*	**Project (Number/Name)** 720 / *Quick Reaction Special Projects (QRSP)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Strategic Multi-Layered Assessment (SMA) Reach Back Cell	2.000	-	-
Description: The SMA Cell supports senior leadership in the CCMDs with actionable assessments of complex operational and technical challenges. SMA efforts leverage multi-agency, multi-disciplinary approaches to answer the Combatant Commanders' key strategic questions not within the DoD's core competency. The assessments help maintain a competitive advantage in an increasingly complex global environment. The Joint Staff Deputy Director established the SMA Cell for Global Operations at the request of the Commander, U.S. Central Command (USCENTCOM). SMA assessments are framed during the year of execution and are in response to specific tasks from senior leadership in the CCMDs. The SMA Cell identifies options across the U.S. Government, academia, and the private sector. SMA efforts are facilitated by the Joint Chiefs of Staff/J-3 Operations and are executed by the OUSD(R&E). The SMA Cell provides USCENTCOM with population-based and regional expertise supporting ongoing operations in the USCENTCOM area of responsibility. In FY 2023, the SMA Reach Back Cell funding is realigned to support the development of prototypes that address the Joint Warfighting Concepts and other DoD priorities.			
Accomplishments/Planned Programs Subtotals	47.470	-	-

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

Quick Reaction Special Projects (QRSP) will support performance metrics to transition projects to the joint Warfighter and enable DoD modernization capabilities.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603338D8Z / *Defense Modernization and Prototyping*	Project (Number/Name) 721 / *Emerging Capabilities Tech Dev (ECTD)*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
721: *Emerging Capabilities Tech Dev (ECTD)*	86.958	45.993	-	-	-	-	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY 2023, all resources in this project were transferred to the Defense Innovation Acceleration Program Element (0603838D8Z).

A. Mission Description and Budget Item Justification

Emerging Capabilities Technology Development (ECTD) funding supports the Office of the Under Secretary of Defense for Research and Engineering (OUSD(R&E)) mission to accelerate the development and fielding of overmatch capabilities to the Warfighter by rapidly identifying, maturing, and exploiting emerging technologies. Prototyping activities focus on achieving capabilities that transition to fill challenging gaps in defense capabilities, such as the Joint Warfighting Concept. Project selection is informed by Joint Staff and OUSD(R&E) leadership priorities. ECTD prototype activities enable developers to showcase new and maturing capabilities in realistic environments and against realistic threats with operational user involvement. Efforts are designed to encourage teaming between organizations to generate integrated concepts that result in leap-ahead warfighting capabilities. Executed in close coordination with the Services, Combatant Commands (CCMDs), and the Joint Staff, ECTD activities refine future warfighting concepts, inform Service Program of Record capability requirements, and provide residual joint warfighting capability through leave-behind prototypes. Individual projects generally span two to three years, typically costing less than $15.000 million.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Fully Networked Command, Control, and Communications (FNC3) Universal Command & Control (UC2)	6.305	-	-
Description: The UC2 data-centric, machine-to-machine (M2M) messaging standard provides an efficient, evolvable, and broadly applicable interface that connects any sensor in any domain to any shooter. The FNC3 UC2 project addresses a Secretary of Defense priority for integrated communications and networking. By focusing on a DoD-wide standard for the information layer, the project seeks to enable independent development, separate from the technologies and capabilities within the other FNC3 layers. FNC3 U2 untangles the restrictive dependencies within the command-and-control communications stacks and increases legacy and future weapon systems' flexibility, interoperability, and resiliency. Aligned with the Joint All-Domain Command & Control (JADC2) concept, UC2-conformant weapon systems will enable Warfighters to respond dynamically to unanticipated, asymmetric, and evolving threats. Further, the FNC3 UC2 project will provide Warfighters faster access to new capabilities while simplifying development and sustainment life cycles and lower operating and training costs. In FY 2022, the FNC3 UC2 project completed an integrated, Joint Service experimentation and demonstration activity set within a DoD testing range environment that assessed the interconnected performance of the UC2-adapted interfaces now resident within participating Service weapon systems. FNC3 U2 transitioned into the OUSD(R&E) Test Resources Management Center (TRMC) for further development.			
Title: Advanced Tactical Communications (ATC)	0.500	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603338D8Z / *Defense Modernization and Prototyping*	**Project (Number/Name)** 721 / *Emerging Capabilities Tech Dev (ECTD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Description: The ATC project is developing a low-size, weight, and power (SWaP) communications capability, leveraging novel technologies that operate outside the traditional radio frequency (RF) spectrum. The developed capability will provide up to a 100-fold increase in communication bandwidth, enabling new and novel warfighting capabilities on SWaP-constrained platforms such as tactical ground vehicles and small-unmanned aerial systems. In FY 2022, ATC completed the initial system design and began subcomponent development. In FY 2023, ATC transitions to Program Element 0603838D8Z Defense Innovation Acceleration for further development.			
Title: Cyber-Electromagnetic Camouflage ***Description:*** This project prototyped an advanced capability to preserve freedom to maneuver and protect ground-based forces from advanced threats. The prototype leverages advancements in artificial intelligence and advanced radiofrequency (RF) microelectronic technologies to provide performance advantages over existing solutions in a reduced SWaP form factor. In FY 2022, technical architecture development and initial design packages for the final prototype were completed. Work continues in FY 2023 using FY 2022 funds to complete prototype development and evaluation before transitioning to the U.S. Army and USSOCOM. Additional details are classified.	2.500	-	-
Title: Phantom ***Description:*** Phantom delivered a tool suite and end-user training applications that modernized DoD capabilities to keep pace with future RF spectrum technologies. In FY 2022, mission planning, classroom training, configuration tools, and analytics solutions were completed. Work continues in FY 2023 using FY 2022 funds to complete prototype development and operational utility assessment before transitioning to various DoD customers. Additional details are classified.	3.530	-	-
Title: Polar Skywave Radar (PSR) ***Description:*** The PSR project matured RF hardware and advanced radar processing algorithms to validate that over-the-horizon skywave radar is viable for a future surveillance system in the polar region. PSR focused on ten major tasks to extend skywave radar to the polar region, including deploying high frequency (HF) radar hardware for a scaled model and refining signal processing techniques. In FY 2022, PSR deployed transmit and receive equipment. Experiments were conducted to measure ionospheric backscatter of the polar ionosphere and begin development of processing techniques. Ionospheric models were compared to collected data for model verification and improvement. Work continues in FY 2023 with FY 2022 funds to perform additional data collections to assess the seasonal ionospheric conditions and their impact on performance. Techniques will be tested and improved against data from varying ionospheric conditions. Results will be used to improve system performance predictions before transitioning to the U.S. Air Force Life Cycle Management Center (AFLCMC) for further development.	2.500	-	-
Title: Flying Self Emplacement Sea Glider	0.500	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603338D8Z / *Defense Modernization and Prototyping*	**Project (Number/Name)** 721 / *Emerging Capabilities Tech Dev (ECTD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Description: Flying Self Emplaced Sea Glider merges two unmanned systems: Unmanned Undersea Vehicle (UUVs) and Unmanned Aerial Vehicles (UAVs), resulting in a hybrid unmanned system capable of autonomous flight followed by a transition to underwater operation. Flying emplacement allows these UUVs to avoid adverse ocean currents and long transit times to arrive at a needed location quickly and without the logistical burden of traditional manned deployment. This effort includes vehicle operation with a newly developed multi-mode avionics suite capable of command and control in both operating regimes, new power management architecture, and representative payloads. In FY 2022, the project completed development and integration of a representative payload. In FY 2023, Flying Self Emplacement Sea Glider transitions to Program Element 0603838D8Z Defense Innovation Acceleration for further development.			
Title: Echelon ***Description:*** This project develops a common digital twin technical framework capable of supporting a wide variety of military RF systems. Echelon will support virtual testing of digital twin prototypes, enabling the DoD to evaluate the effectiveness of prototype systems or subsystems in realistic environments and against red threats early in development. The developed high-fidelity, multi-physics framework will enable Service research and acquisition programs to mature digital twin prototypes before purchasing extensive hardware, enabling programs to shorten the development lifecycle of current system upgrades and next-generation systems. This effort includes the hardware and software implementation of the first instantiation of the Echelon technical framework. In FY 2022, the Echelon project completed development and delivery of the initial Echelon framework increment and framework validation methodology. Leveraging this initial framework, U.S. Army and U.S. Air Force transition partners initiated development of their respective Echelon-enabled digital twins. In late FY 2022, initial work began to validate the framework leveraging these Echelon-enabled digital twins simulated within an Echelon-enabled, high-fidelity multi-physics environment. In FY 2023, Echelon transitions to Program Element 0603838D8Z Defense Innovation Acceleration for further development.	4.558	-	-
Title: DISARM ***Description:*** This project develops and validates a low-cost concept pairing an emerging sensing technology with an already-fielded capability to provide a novel low-cost system to intercept airborne threats. In FY 2022, initial modeling and simulation were completed to confirm interoperability; an initial physics-based assessment was conducted to assess how the new capability could augment current air defense capabilities and confirm the performance and cost benefits. Additional details are classified. In FY 2023, DISARM transitions to Program Element 0603838D8Z Defense Innovation Acceleration for further development.	0.500	-	-
Title: Eris ***Description:*** This project rapidly prototypes and tests a novel, low-cost concept to enhance Joint Force resilience in the presence of modern threats. In FY 2022, technical architecture development and initial system design were completed. Additional	1.000	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603338D8Z / *Defense Modernization and Prototyping*	**Project (Number/Name)** 721 / *Emerging Capabilities Tech Dev (ECTD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
details are classified. In FY 2023, Eris transitions to Program Element 0603838D8Z Defense Innovation Acceleration for further development.			
Title: Aided Target Recognition (AiTR) ***Description:*** This project accelerates developing and demonstrating a modular processing component that enables automatic threat detection capabilities on size, weight, and power (SWaP) constrained platforms. AiTR provides embedded capabilities for existing and next-generation sensors, resulting in approximately 50 percent improvement in target identification range. Prototype development in FY 2022 ensured that AiTR met the SWaP requirements for effective use. In FY 2023, AiTR transitions to Program Element 0603838D8Z Defense Innovation Acceleration for further development.	1.500	-	-
Title: Extended Range Threat Detection ***Description:*** This project rapidly prototypes and integrates new capabilities into an existing radar system, leveraging novel improvements to counter advanced peer threats. Once developed and tested, the capability will significantly increase threat detection and tracking ranges, affording the Joint Force more time to facilitate target engagements. In FY 2022, initial system design and operational architecture were developed. Additional details are classified. In FY 2023, Extended Range Threat Detection transitions to Program Element 0603838D8Z Defense Innovation Acceleration for further development.	2.000	-	-
Title: Chariot ***Description:*** Chariot is a Machine Learning Operations Platform that reduces the time and lowers the costs to build, deploy, retrain, and redeploy AI/ML models specific to the requirements of decision-makers. Chariot delivers AI-enabled outcomes at operationally relevant speeds for decision-makers to enable critical processes like kill chains, logistics, transportation, intelligence (multi-domain and cross-domain), operational processes, and strategic planning across the Joint Force. In FY 2022, Chariot successfully integrated the capability across four U.S. Government sites leveraging an interim authority to test. Work continues in FY 2023 with FY 2022 funds to obtain full authority to operate (ATO). Chariot will transition to U.S. Special Operations Command (USSOCOM), Special Operations Command Central (SOCCENT), Special Operations Command Europe (SOCEUR), and Special Operations Command Pacific (SOCPAC) for operational use upon acceptance and receipt of ATO.	2.500	-	-
Title: FADE ***Description:*** FADE assesses the potential to leverage commercial low-cost autonomous platforms for airlift resupply missions when outfitted with additional technologies and capabilities required to operate in military environments. Findings from FADE will transition into the decision-making process for evaluation, demonstration, and procurement of future airlift platforms. In FY 2023, FADE transitions to Program Element 0603838D8Z Defense Innovation Acceleration for further development.	0.500	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603338D8Z / *Defense Modernization and Prototyping*	**Project (Number/Name)** 721 / *Emerging Capabilities Tech Dev (ECTD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Artemis ***Description:*** Artemis develops and demonstrates a sensor package optimized for high-altitude operations. The multi-mode sensors are packaged to minimize size and power requirements and to protect electronics from environmental interference. Design of the sensor package initiated in FY 2022, with a demonstration of the sensor package during stratospheric flight planned for FY 2024, before transition to the U.S. Army for qualification testing. In FY 2023, Artemis transitions to Program Element 0603838D8Z Defense Innovation Acceleration for further development.	1.500	-	-
Title: RAGNAR ***Description:*** This project develops and demonstrates multi-function radiofrequency systems. RAGNAR will leverage 'best of breed' commercial-off-the-shelf (COTS) components, along with advancements in AI, and integrate the selected elements into a modular platform. Development efforts will collaborate with non-traditional performers to drive innovation and deliver a low-cost, modular capability to the U.S. Army, U.S. Air Force, and U.S. Navy. RAGNAR leverages a partnership with the U.S. Army and uses innovative contracting mechanisms to access multiple small business while reducing development risk. Details about the functionality and application of RAGNAR are classified. Market research was initiated in FY 2022 to understand vendor capability and identify the optimal COTS components to use during development. In FY 2023, RAGNAR transitions to Program Element 0603838D8Z Defense Innovation Acceleration for further development.	0.500	-	-
Accomplishments/Planned Programs Subtotals	30.393	-	-

	FY 2022	FY 2023
Congressional Add: Open Source Supply Chain Analytics Resource (OSSCAR) ***FY 2022 Accomplishments:*** In FY 2022, OSSCAR developed a capability that enables planners and operators to rapidly analyze and leverage open-source supply chain data to adapt to a dynamic operational environment. Quickly accessing and assessing publicly available information provides insights for developing distribution and sustainment courses of action and allows for vetting critical suppliers to the U.S. or adversary supply chains. Work continues in FY 2023 with FY 2022 funds for integration into fielded hardware to enable display on end-user devices. In FY 2023, a proof-of-concept prototype will be delivered to the U.S. Army and USSOCOM for demonstration and assessment before transition. This technology area is a Congressional interest item, and additional resources were provided above the President's budget.	3.000	-
Congressional Add: Hypersonic Modeling and Simulation Center of Excellence ***FY 2022 Accomplishments:*** In FY 2022, the project established a Hypersonics Research Center of Excellence focused on experimental and computational analysis of hypersonic flows, thermal protection systems, and other	4.600	-

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
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	FY 2022	FY 2023
hypersonic phenomenology to support advanced hypersonic technology prototyping. Specific demonstrations and activities will be finalized within the project execution period of performance. This technology area is a Congressional interest item, and additional resources were provided above the President's budget.		
Congressional Add: Ship–Based Multi–Sensor Prototype Development and Demonstration	8.000	-
FY 2022 Accomplishments: In FY 2022, the project identified novel sensor technologies for integration into a multimodal sensor prototype. Combining multiple sensor technologies will enable the prototype to provide a more accurate and robust capability to detect, identify, classify, and track targets in a maritime environment. An at-sea demonstration of the prototype is anticipated to evaluate its performance in operationally-relevant environments. Demonstrations and activities will be finalized within the project execution period of performance. This technology area is a Congressional interest item, and additional resources were provided above the President's budget.		
Congressional Adds Subtotals	15.600	-

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

ECTD leverages the DoD's most efficient and effective acquisition approaches for rapid prototyping. These approaches include using Other Transaction Authorities, Broad Area Announcements, and new or existing contract vehicles.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603342D8Z / *Defense Innovation Unit (DIU)*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	63.669	36.537	69.925	104.729	-	104.729	95.210	76.237	73.096	75.274	Continuing	Continuing
434: *DIU*	63.669	36.537	69.925	104.729	-	104.729	95.210	76.237	73.096	75.274	Continuing	Continuing

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

This program supports the Department's initiatives to Build Sustainable and Long-Term Advantage, and Build a Resilient Joint Force Defense Ecosystem

The Defense Innovation Unit (DIU) mission is to strengthen U.S. national security by accelerating the adoption of commercial technology throughout the military and growing the national security innovation base. DIU partners with organizations across the DoD and the interagency to rapidly prototype, field, and scale commercial solutions that can save lives, lead to new operational concepts, increase efficiencies, and save taxpayer dollars. With offices in Silicon Valley, Boston, Austin, Chicago, and in the Pentagon, DIU is able to attract the best and brightest talent and cutting-edge solutions.

The National Defense Strategy for FY 2022 asserts that we have returned to an era of inter-state strategic competition with Russia and China, heightening the sense of urgency with which the nation, and Department of Defense (DoD), must reform our acquisition policies and approach to sustaining military-technical superiority. Notably, 11 of the 14 critical technology focus areas are dual use and rapidly developed by the commercial sector. While adversaries are challenging the U.S. across several dimensions, most importantly, our near peer competitors are at par or ahead of the U.S. in critical technology areas. Consistent with the Administration's research and development budget priorities, this new era of competition requires technological superiority to ensure the United States' ability to project power, maintain international norms and rule of law, provide credible deterrence, and prevail in conflict.

DIU increases the Department's access to commercial technologies and talent, with the ultimate goal of fielding leading-edge technology to warfighters at the speed of relevance. Working across the country, and in collaboration with our allies and partners, DIU is developing new ways of doing business, growing our national security innovation base to include more "non-traditional" companies that had previously not collaborated with the military, working with traditional vendors in novel ways to increase efficiency, and challenging innovators to share their knowledge and expertise in support of our nation's defense.

Through a competitive prototype process, DIU identifies and provides access to technology companies and products on behalf of DoD organizations. Additionally, DIU executes projects to leverage commercial sector technology analogous to military applications thereby increasing dual-use technology agility for the DoD. DIU Prototyping funds facilitate the award of projects that can augment commercial technologies, existing government-owned capabilities, or concepts for defense application.

DIU focuses on six technology areas where commercial industry is the lead:

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603342D8Z / *Defense Innovation Unit (DIU)*

• Artificial Intelligence (AI)/ Machine Learning (ML) – Applying AI/ML learning to accelerate critical decision making and operational impact.
• Autonomy – Adopting and countering autonomous systems with a focus on human-machine interaction and scalable teaming.
• Cyber – Making enterprise combat information open, accessible, and secure for defense personnel across the globe.
• Energy – Leveraging proven advancement in energy and materials technology to enhance capabilities and strengthen resilience across installation and distributed operations.
• Human Systems – Optimizing the human system and its enabling platforms through enhanced equipment, innovative training, and novel health applications.
• Space – Developing on-demand access to space, persistent satellite capabilities, and broadband space data transfer.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	26.749	42.925	58.838	-	58.838
Current President's Budget	36.537	69.925	104.729	-	104.729
Total Adjustments	9.788	27.000	45.891	-	45.891
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	27.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	9.788	-	36.477	-	36.477
• Re-alignment from PE 0604341D8Z	-	-	9.414	-	9.414

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2022	FY 2023
Project: 434: *DIU*		
Congressional Add: *Small Craft Electric Propulsion*	-	5.000
Congressional Add: *Program Increase*	-	22.000
Congressional Add Subtotals for Project: 434	-	27.000
Congressional Add Totals for all Projects	-	27.000

Change Summary Explanation

FY 2024 total adjustment of $45.891 million is comprised of:
(1) $1.811 million decrease to support the Historically Black Colleges and University/Minority Serving Institutions program which is a priority of the Under Secretary of Defense for Research and Engineering (USD(R&E));
(2) $0.087 million decrease to support departmental priorities;

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603342D8Z *I Defense Innovation Unit (DIU)*

(3) $9.414 million increase for realignment from PE 0604341D8Z;
(3) $38.000 million increase for the Defense Advanced Battery Supply Chain and Ground Vehicles and Fuel requirements; and
(4) $0.375 million increase for economic assumption.

FY 2023 increase for congressional adds:
$5.000 million for Small Craft Electric Propulsion
$22.000 million for Program Increase

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603342D8Z / *Defense Innovation Unit (DIU)*	Project (Number/Name) 434 / *DIU*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
434: *DIU*	63.669	36.537	69.925	104.729	-	104.729	95.210	76.237	73.096	75.274	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Defense Innovation Unit (DIU) mission is to strengthen U.S. national security by accelerating the adoption of commercial technology throughout the military and growing the national security innovation base. DIU partners with organizations across the DoD and the interagency to rapidly prototype, field, and scale commercial solutions that can save lives, lead to new operational concepts, increase efficiencies, and save taxpayer dollars. With offices in Silicon Valley, Boston, Austin, Chicago, and in the Pentagon, DIU is able to attract the best and brightest talent and cutting-edge solutions.

The National Defense Strategy for FY 2022 asserts that we have returned to an era of inter-state strategic competition with Russia and China, heightening the sense of urgency with which the nation, and Department of Defense (DoD), must reform our acquisition policies and approach to sustaining military-technical superiority. Notably, 11 of the 14 critical technology focus areas are dual use and rapidly developed by the commercial sector. While adversaries are challenging the U.S. across several dimensions, most importantly, our near peer competitors are at par or ahead of the U.S. in critical technology areas.

Consistent with the Administration's research and development budget priorities, this new era of competition requires technological superiority to ensure the United States' ability to project power, maintain international norms and rule of law, provide credible deterrence, and prevail in conflict.

DIU increases the Department's access to commercial technologies and talent, with the ultimate goal of fielding leading-edge technology to warfighters at the speed of relevance. Working across the country, and in collaboration with our allies and partners, DIU is developing new ways of doing business, growing our national security innovation base to include more "non-traditional" companies that had previously not collaborated with the military, working with traditional vendors in novel ways to increase efficiency, and challenging innovators to share their knowledge and expertise in support of our nation's defense.

Through a competitive prototype process, DIU identifies and provides access to technology companies and products on behalf of DoD organizations. Additionally, DIU executes projects to leverage commercial sector technology analogous to military applications thereby increasing dual-use technology agility for the DoD. DIU Prototyping funds facilitate the award of projects that can augment commercial technologies, existing government-owned capabilities, or concepts for defense application.

DIU focuses on six technology areas where commercial industry is the lead:

• Artificial Intelligence (AI)/ Machine Learning (ML) – Applying AI/ML learning to accelerate critical decision making and operational impact.
• Autonomy – Adopting and countering autonomous systems with a focus on human-machine interaction and scalable teaming.
• Cyber – Making enterprise combat information open, accessible, and secure for defense personnel across the globe.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603342D8Z / *Defense Innovation Unit (DIU)*	**Project (Number/Name)** 434 / *DIU*

• Energy – Leveraging proven advancement in energy and materials technology to enhance capabilities and strengthen resilience across installation and distributed operations.
• Human Systems – Optimizing the human system and its enabling platforms through enhanced equipment, innovative training, and novel health applications.
• Space – Developing on-demand access to space, persistent satellite capabilities, and broadband space data transfer.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Defense Innovation Unit (DIU)	25.837	27.925	36.729
Description: The U.S. DoD relies on innovation to maintain our nation's ability to deter, and if need be, prevail in conflict. With outposts in Mountain View, California; Cambridge, Massachusetts; Washington, D.C.; Austin, Texas; and Chicago, Illinois, DIU serves as a bridge between those in the U.S. Military executing national security and defense missions with companies developing cutting-edge commercial technology. DIU continuously experiments with methods to identify, contract, prototype, and transition novel commercial solutions from leading companies to the warfighter for applications in headquarters or operational environments and transfer technology with commercial entities that would not otherwise do work with the DoD. The end goal is to accelerate DoD adoption of cutting-edge technology and grow the national security innovation base to support U.S. military-technical superiority. ***FY 2023 Plans:*** Identify and deliver cutting-edge commercial innovation to the Joint Force. DIU is rapidly prototyping and deploying innovative commercial technologies to fill critical capability gaps identified by DoD customers in the Services, components, Defense Agencies, and Combatant Commands. DIU works to solve challenges and issues for the Department in areas such as artificial intelligence and machine learning, autonomy, energy, human systems, cyber, and space. ***FY 2024 Plans:*** DIU will continue its mission to identify and deliver cutting-edge commercial innovation to the Joint Force. DIU is rapidly prototyping and deploying innovative commercial technologies to fill critical capability gaps identified by DoD customers in the Services, components, Defense Agencies, and Combatant Commands. DIU works to solve challenges and issues for the Department in areas such as artificial intelligence and machine learning, autonomy, energy, human systems, cyber, and space. DIU will increase efforts in facilitating additional follow-on prototype contract awards of projects that can augment commercial technologies, existing government-owned capabilities, or concepts for defense application. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The increase of $8.429 million between FY 2023 and FY 2024 is due to a realignment of funds from PE 0604341D8Z to increase efforts and augment commercial technologies, existing government-owned capabilities, or concepts for defense application.			
Title: Defense Advanced Battery Supply Chain	10.700	15.000	48.000

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603342D8Z / *Defense Innovation Unit (DIU)*	**Project (Number/Name)** 434 / *DIU*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Description: DoD's low-demand signal and complex specifications for batteries make it difficult to engage with high-volume automotive battery suppliers. This typically results in the use of inferior and expensive batteries for military applications. DIU is engaging commercial companies to develop standard battery modules that leverage state-of-the-art technologies for defense applications. Funding is being executed through multiple Commercial Solution Openings by DIU's internal contracting office based on its Other Transaction Authority to prototype domestic production of multiple advanced battery cells and packaging that meet DoD standards These prototypes will assess and strengthen the manufacturing and supply chain resiliency of advanced batteries from domestic producers; accelerate efforts to partner with domestic battery producers targeting the commercial market for standardization and certification; align defense and Defense Industrial Base to commercial advanced battery development and production; address supply chain challenges for the use of commercial batteries. This funding supports the onshoring of domestic manufacturing, production, and standardization of advanced batteries at the raw material, battery cell, and module levels. ***FY 2023 Plans:*** Align the Department's battery requirements to commercial battery standards: - Testing commercial batteries to DoD standards. - Prototyping commercial batteries to meet DoD standards. - Investing in commercial battery production to ensure security of supply for DoD needs. Matching the alignment of DoD battery requirements to commercial battery standards allows the Department access to more advanced batteries at reduced costs. ***FY 2024 Plans:*** Prototype and validate standardized commercial battery modules: - Test modules in fully electric and hybrid tactical vehicles, storage systems, weapons, and maritime vessels. - Increase access to developing domestic infrastructure and align defense capabilities to the rapidly evolving commercial sector standards. - Execute additional supporting solicitations for prototypes of raw materials, battery safety management, and smaller form factors from commercial technologies Supporting on-shoring of domestic battery manufacturing capabilities is consistent with the Inflation Reduction Act. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The increase of $33.000 million between FY 2023 and FY 2024 will allow for an increase in the Defense Advanced Battery Supply Chain efforts.			
Title: Tactical Vehicle Hybridization	-	-	10.000

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603342D8Z / *Defense Innovation Unit (DIU)*	**Project (Number/Name)** 434 / *DIU*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Description: Liquid fuels create battlefield logistics challenges and do not inherently support future operational requirements. However, fully electric tactical vehicles present their own battlefield logistics challenges, making quick conversion to pure-electric impractical. Further hybridizing vehicles is a critical step in the transition to an all-electric tactical fleet. By integrating commercial technologies on hybrid power systems, battery integration, and auxiliary power units, the DoD can speed up transition to electric by years. This funding will expand on the Tactical Vehicle Hybridization project launched by DIU in FY22 on behalf of the Army and the Marines. This funding will enable the commercial vendors to expand capabilities to the powertrain, allowing full hybrid options and expand the capabilities to the remaining variants of Tactical Vehicles. ***FY 2024 Plans:*** Expand the anti-idle hybridization capability to up to 5 more vehicle variants and add additional hybridization capabilities for the current set of tactical vehicle variants (Joint Light Tactical Vehicles (JLTV), Family of Medium Tactical Vehicles (FMTV), Heavy Expanded Mobility Tactical Truck (HEMITT), Logistic Vehicle System Replacement (LVSR), and High Mobility Multi-purpose-Wheeled Vehicle (HMMWV)). Capabilities include: hybridizing the powertrain, integrating auxiliary power units, and enabling battlefield recharging. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Increase from FY 2023 to FY 2024 supports Ground Vehicle and Fuel efforts.			
Title: Synthetic Fuels for Contested Environments	-	-	5.000
Description: The DoD lacks an ability to generate liquid fuel on-site. Defense fuel logistics are reliant on the global energy supply chain, which is easily disrupted. Current transport means are costly, inefficient, slow, and vulnerable to attack. Simultaneously, our fuel source is dependent on carbon-intense commercially procured fuel market. By creating a highly-agile, rapidly-deployable synthetic fuel production system (leave-behind or onboard) that could be dispersed throughout any area of responsibility (AOR) to produce just-in-time fuel at the edge, the DoD can mitigate the impact of fuel logistics disruption. ***FY 2024 Plans:*** Expand upon the FY 2023 DIU/Air Force project to produce synthetic hydrocarbon fuels (jet fuel, diesel, etc.) on-site, from ubiquitous feedstocks such as air or seawater, in a small, mobile form-factor that enables agile combat employment concepts and is carbon neutral. This funding will contribute to developing a fully containerized solution that can be employed in an austere environment. Additionally, this funding will enable the establishment of one or more fixed Sustainable Aviation Fuel (SAF) centers as required by the FY 2023 NDAA. ***FY 2023 to FY 2024 Increase/Decrease Statement:***			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603342D8Z / *Defense Innovation Unit (DIU)*	**Project (Number/Name)** 434 / *DIU*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Increase from FY 2023 to FY 2024 supports Synthetic Fuels for Contested Environments efforts.			
Title: Hydrogen at the Tactical Edge for Contested-Logistics (HyTEC) ***Description:*** Fuel supply chains are vulnerable to disruption and an energy dense alternative fuel is necessary to sustain operational capabilities and improve energy resilience. Hydrogen technologies are commercially available in every stage of the hydrogen supply chain at high TRL which would allow for onsite fuel production thereby reducing the demand for complex fuel logistics supply chains, particularly in contested environments. ***FY 2024 Plans:*** This funding would develop a working integrated solution capable of hydrogen (H2) generation, storage, and fueling on naval vessels and on remote islands. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Increase from FY 2023 to FY 2024 supports Hydrogen at the Tactical Edge for Contested (HyTEC) efforts.	-	-	5.000
Accomplishments/Planned Programs Subtotals	36.537	42.925	104.729

	FY 2022	FY 2023
Congressional Add: Small Craft Electric Propulsion ***FY 2023 Plans:*** This project will leverage Congressionally directed funds toward commercial, electric personal watercraft capable of performing search and rescue (SAR) / Maritime Reconnaissance (MR) operations in littoral and riverine areas and off naval vessels.	-	5.000
Congressional Add: Program Increase ***FY 2023 Plans:*** Aligned with the FY 2022 National Defense Strategy (NDS) and COCOM needs. The Defense Innovation Unit (DIU) will focus funding to accelerate the project timelines of a select number of FY 2023 priority projects and address capability common gaps for high-priority warfighter needs that the Department is not currently addressing. Key priorities identified include: Soldier Robotic Controller, Blue Unmanned Air System (UAS), Tactical Vehicle Hybridization, Hybrid Space Architecture, Global Navigation Satellite System Spoofing, and Gig Eagle.	-	22.000
Congressional Adds Subtotals	-	27.000

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603342D8Z / *Defense Innovation Unit (DIU)*	**Project (Number/Name)** 434 / *DIU*	

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
• BA 04; O&M: *PE 0901583D8Z*	21.002	24.367	26.100	-	26.100	26.703	27.249	27.805	28.377	-	-

Remarks

NA

D. Acquisition Strategy

N/A

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603375D8Z / *Technology Innovation*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	-	38.695	18.505	123.837	-	123.837	133.258	44.041	44.961	45.941	Continuing	Continuing
375: *Technology Innovation*	-	27.816	18.505	41.881	-	41.881	43.107	44.041	44.961	45.941	Continuing	Continuing
376: *Quantum Information Science Technology Innovation*	-	10.879	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	-	-
377: *Anomalous Incidents Research*	-	0.000	0.000	81.956	-	81.956	90.151	0.000	0.000	0.000	-	-

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

This program supports the Department's initiatives to Deter Strategic Attacks, Defend the Homeland, and Build a Resilient Joint Force and Defense Ecosystem.

In order to sustain technological superiority, the Department must take immediate advantage of the rapid evolution of emerging technologies that will be a source of battlefield advantage, when integrated with military systems and novel concepts of operation. This program focuses on rapidly moving these technologies to a TRL where they would then be ready to demonstrate in a prototyping or demonstration acceleration program to support warfighter needs. This funding is focused on supporting efforts within the Department's Critical Technology Areas that contribute to the broader joint mission needs.

The ability to react quickly to emerging technologies is critical to staying ahead of our adversaries. For example, from FY 2020- FY2022 this program was able to quickly take advantage of breakthroughs at DARPA in quantum technology and developed a project developing higher maturity prototypes for the Services to integrate into applications.

Leveraging these technologies from both defense and commercial sources, to include non-traditional sources such as startup companies, has the potential to rapidly address warfighter problem sets in areas where commercial innovation outstrips government investment in the same technology areas.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603375D8Z / *Technology Innovation*

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	39.761	109.535	42.618	-	42.618
Current President's Budget	38.695	18.505	123.837	-	123.837
Total Adjustments	-1.066	-91.030	81.219	-	81.219
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-56.000			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-35.030			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.059	-			
• Program Adjustments	-0.007	-	81.219	-	81.219

Change Summary Explanation

FY 2023 Appropriation included reduction of $56.000 million for inadequate justification, and directed the realignment of $35.030 million to line 46A, Defense Innovation Acceleration.

The FY 2023 reduction of $91.030 million is comprised of a congressional directed realignment of $35.030 million to line 46A, Defense Innovation Acceleration and an inadequate justification reduction of $56.000 million.

The FY 2024 increase of $81.219 million is comprised of a realignment of $0.927 million to support the Historically Black Colleges and Universities/Minority Serving Institutions program, which is a priority of the Under Secretary of Defense for Research and Engineering (USD(R&E)), $0.045 million to support departmental priorities, an economic assumption increase of $0.235 million and an increase of $81.956 million for support to the National Security Council-led efforts to understand the biological and physical mechanisms that may relate to emerging Anomalous Health Incidents affecting DoD and other U.S. Government personnel.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603375D8Z / *Technology Innovation*	Project (Number/Name) 375 / *Technology Innovation*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
375: *Technology Innovation*	-	27.816	18.505	41.881	-	41.881	43.107	44.041	44.961	45.941	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Tech Innovation program focuses on rapid innovation and demonstration efforts to address priority warfighter problem sets and National Defense Strategy focus areas. The current effort is focused on development of atomic clocks and biotechnology to accelerate progress along these two DoD Modernization priority roadmaps. Combatant Commanders and the Intelligence Community (IC) continue to receive signals that adversaries are looking to deny access to Global Positioning System (GPS) time as a capability disrupt the common networked tactical picture. Under this program, commercial companies will mature DARPA's investment in innovative atomic clocks with tri-service technical oversight, creating a prototype Next Generation Atomic Clock (NGAC) for commercial production. This program will also demonstrate emerging biotechnology advancements to stimulate additional investment in biotechnology that can address DoD needs. The anomalous health incidents (AHI) program focuses on research and development to determine the cause of AHI affecting government personnel at locations around the world. The National Security Council led efforts include multi-Service/multi-Agency Laboratory collaboration to assess bioeffects and causes of AHI.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Technology Innovation	27.816	-	41.881
Description: The program focuses rapid innovation and demonstration in emerging defense and commercial technology areas to address the National Defense Strategy technology focus areas and priority warfighter problem sets. Prior year projects included funding of promising commercial advanced technology demonstration projects in the areas of biotechnology, quantum science, fully networked command, control, and communications, and space. ***FY 2024 Plans:*** Final NGAC design and critical design review will take place in FY 2024. Build of the prototype clock will commence thereafter. Demonstration of five biotechnology efforts started in FY 2023, including demonstration of biomagnets for low detectability of RF materials, Synbio food production at the point-of-need, biological automated collector/detector for expeditionary reconnaissance, probiotics for warfighter fatigue mitigation and biomanufacturing of synthetic proteins for non-lethal weapon applications. The program will also evaluate and select the next proposals for FY 2025 biotechnology projects. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The increase from FY 2023 to FY 2024 represents the realignment of the Next Generation Atomic Clock (NGAC) and Biotechnology Optimized for Operational Solutions and Tactics (BOOST) programs from the Defense Innovation Acceleration Program Element 0603838D8Z along with increased technology costs to meet emerging technologies selected to address high priority National Defense warfighter problems.			
Title: Anomalous Health Incidents (AHI)	0.000	18.505	-

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603375D8Z / *Technology Innovation*	**Project (Number/Name)** 375 / *Technology Innovation*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Description: The National Security Council led multi-Service/multi-Agency Laboratory collaboration will conduct research and development to determine the cause of AHI, in-depth bioeffects, and countermeasures. Will be executed out of P377, changes will be reflected in R-docs and Hyperion once Hyperion reopens. ***FY 2023 Plans:*** Initiate R&D efforts to support the DoD aspects of the National Security Council-led efforts to understand the biological and physical mechanisms that may relate to emerging Anomalous Health Incidents affecting DoD and other U.S. Government personnel. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding has been re-aligned to Project Code 377 beginning in FY 2024.			
Accomplishments/Planned Programs Subtotals	27.816	18.505	41.881

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

N/A

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603375D8Z / *Technology Innovation*	Project (Number/Name) 376 / *Quantum Information Science Technology Innovation*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
376: *Quantum Information Science Technology Innovation*	-	10.879	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Department of Defense (DoD) has pioneered and advanced quantum information science (QIS) for nearly thirty years. In order to sustain technological superiority, the Department must continue to proactively engage in QIS research and development in timing, sensing, computing, and networking applications.

Leveraging innovative technologies from both defense and commercial sources, to include non-traditional sources such as startup companies, has the potential to rapidly advance this field to address warfighter problem sets. This funding will be used to demonstrate and mature emerging QIS technologies.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Quantum Information Science Technology Innovation	10.879	-	-
Accomplishments/Planned Programs Subtotals	10.879	-	-

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603375D8Z / *Technology Innovation*	Project (Number/Name) 377 / *Anomalous Incidents Research*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
377: *Anomalous Incidents Research*	-	0.000	0.000	81.956	-	81.956	90.151	0.000	0.000	0.000	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The program focuses on research and development to determine the cause of anomalous health incidents (AHI) affecting government personnel at locations around the world. The National Security Council led efforts include multi-Service/multi-Agency Laboratory collaboration to assess bioeffects and causes of AHI.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: AHI	-	-	81.956
Description: The National Security Council led multi-Service/multi-Agency Laboratory collaboration will conduct research and development to determine the cause of AHI, in-depth bioeffects, and countermeasures. ***FY 2024 Plans:*** Continue multi-Agency/multi-Laboratory efforts to determine the cause of AHI with additional bioeffects testing and development of countermeasures. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The increase of $81.956 million from FY 2023 to FY 2024 is due to a transfer from project 375 and represents reprogramming of the National Security Council goals established for research and development investigating the causes and effects of AHI and is an essential element of the overall strategy established by the National Security Council to connect other activities within the DOD to work on AHI issues.			
Accomplishments/Planned Programs Subtotals	-	-	81.956

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603379D8Z *I Advanced Technical Integration*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	11.000	-	11.000	0.000	0.000	0.000	0.000	Continuing	Continuing
801: *Information Technology Integration*	-	0.000	0.000	11.000	-	11.000	0.000	0.000	0.000	0.000	Continuing	Continuing

Note

New Start (Y/N): Yes

A. Mission Description and Budget Item Justification

This program is reported in accordance with Title 10, United States Code, Section 119(a)(1) in the Special Access Program Annual Report to Congress. For further information, please contact the Deputy Chief Technology Officer for Science and Technology (DCTO(S&T)) within the Office of the Under Secretary of Defense for Research and Engineering (OUSD(R&E)).

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	0.000	0.000	0.000	-	0.000
Current President's Budget	0.000	0.000	11.000	-	11.000
Total Adjustments	0.000	0.000	11.000	-	11.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program New Start	-	-	11.000	-	11.000

Change Summary Explanation

Advanced Technical Integration is a new start in FY 2024.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603379D8Z / *Advanced Technical Int egration*	Project (Number/Name) 801 / *Information Technology Integration*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
801: *Information Technology Integration*	-	0.000	0.000	11.000	-	11.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This program is reported in accordance with Title 10, United States Code, Section 119(a)(1) in the Special Access Program Annual Report to Congress. For further information, please contact the Deputy Chief Technology Officer for Science and Technology (DCTO(S&T)) within the Office of the Under Secretary of Defense for Research and Engineering (OUSD(R&E)).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Information Technology Integration	-	-	11.000
FY 2024 Plans: Information is classified.			
FY 2023 to FY 2024 Increase/Decrease Statement: PE 0603379D8Z is a new start in FY 2024.			
Accomplishments/Planned Programs Subtotals	-	-	11.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603379D8Z / *Advanced Technical Int egration*	**Project (Number/Name)** 801 / *Information Technology Integration*

Remarks

Classified

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603379D8Z / *Advanced Technical Int egration*	**Project (Number/Name)** 801 / *Information Technology Integration*

	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Classified																												
Classified.									[redacted]																			

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603379D8Z / *Advanced Technical Int egration*	**Project (Number/Name)** 801 / *Information Technology Integration*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Classified				
Classified.	1	2024	4	2025

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603527D8Z / *Retract Larch*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	-	95.599	79.493	57.401	-	57.401	55.039	55.995	54.902	56.975	Continuing	Continuing
527: *Retract Larch*	-	95.599	79.493	57.401	-	57.401	55.039	55.995	54.902	56.975	Continuing	Continuing

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

Classified.

This program is reported in accordance with Title 10, United States Code, Section 119(a)(1) in the Special Access Program Annual Report to Congress. For further information, please contact the Deputy Chief Technology Officer for Science and Technology (DCTO(S&T)) within the Office of the Under Secretary of Defense for Research and Engineering (OUSD(R&E)).

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	98.862	79.493	76.816	-	76.816
Current President's Budget	95.599	79.493	57.401	-	57.401
Total Adjustments	-3.263	0.000	-19.415	-	-19.415
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-3.248	-			
• Program Adjustments	-0.015	-	-19.415	-	-19.415

Change Summary Explanation

FY 2024 reduction of $19.415 million is comprised of a realignment of $1.672 million to support the Historically Black Colleges and Universities/Minority Serving Institutions program, which is a priority of the Under Secretary of Defense for Research and Engineering (USD(R&E)), $18.066 million to support departmental priorities and an economic assumption increase of $0.323 million.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603527D8Z / *Retract Larch*	Project (Number/Name) 527 / *Retract Larch*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
527: *Retract Larch*	-	95.599	79.493	57.401	-	57.401	55.039	55.995	54.902	56.975	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This program is reported in accordance with Title 10, United States Code, Section 119(a)(1) in the Special Access Program Annual Report to Congress. For further information, please contact the Deputy Chief Technology Officer for Science and Technology (DCTO(S&T)) within the Office of the Under Secretary of Defense for Research and Engineering (OUSD(R&E)).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Retarct Larch	95.599	79.493	57.401
Description: Information is classified. ***FY 2023 Plans:*** Information is classified. ***FY 2024 Plans:*** Information is classified. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Information is classified.			
Accomplishments/Planned Programs Subtotals	95.599	79.493	57.401

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603618D8Z / *Joint Electronic Advanced Technology*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	14.773	17.710	24.155	19.793	-	19.793	20.350	20.808	21.243	21.707	Continuing	Continuing
245: *EW Enterprise Exploration and Innovation*	14.773	17.710	24.155	19.793	-	19.793	20.350	20.808	21.243	21.707	Continuing	Continuing

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

This program supports the Department's initiatives to Deter Aggression and Prevail in Conflict, Build Sustainable and Long-Term Advantage, and Building a Resilient Joint Force and Defense Ecosystem.

The electromagnetic spectrum (EMS) environment (EME) is the largest and most complex warfighting environment. It is universally pervasive, largely unseen, and can only be perceived through the use of advanced electronic technologies. Understanding and addressing EME warfighting challenges is essential to all military operations. It is through the use of EMS technologies that we perceive operational realities, the state and disposition of all military and nonmilitary forces and groups within operational environments, and coordinate all actions of our military forces.

Historically, the United States has had significant technological advantages in EMS warfighting technologies, specifically sensors, communications, and countermeasures. This superiority is being challenged due to the rapid commercialization of advanced electronic systems and components, the broad proliferation of these technologies, and the concurrent rise of cyber-related EMS technologies. Potential adversaries have leveraged these advances to develop and field competing and asymmetric capabilities to offset historic U.S. advantages. These efforts have made U.S. operations in the EMS and cyberspace significantly more difficult, and they continue to do so at an accelerating rate. Adversary radars are evolving from fixed analog systems to programmable digital variants with agile waveforms and unknown behaviors making preprogrammed electronic countermeasure less effective. Foreign developments include new generations of challenging threats ranging from small unmanned air systems and easily transportable Man-Portable Air Defense Systems (MANPADS) to dedicated anti-access area denial (A2/AD) military systems including integrated air defense systems and increasingly capable cruise and ballistic missiles that have incorporated the most advanced sensors, communication and electromagnetic warfare (EW) technologies.

Because the accelerating pace of technological innovation has increased the rate at which new EMS and cyber threats are appearing, the effective operational lifetime of many advanced technologies has decreased. For all of these reasons, the Department of Defense (DoD) must develop and field new EW and EW-Cyber capabilities faster, at much lower costs, to be broadly integrated and employed across the entire force structure.

The Joint Electronic Advanced Technology (JEAT) program was established to address these challenges through efforts designed to substantially accelerate the development and maturing of innovative technologies in order to: (1) address new EW and EW-Cyber warfighting challenges; and (2) provide new, leap-ahead EMS

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603618D8Z / *Joint Electronic Advanced Technology*

warfighting capabilities to ensure U.S. warfighters will always have decisive EW and EW-Cyber overmatch capabilities. The JEAT program specifically focuses on EW and EW-Cyber-related technologies that fall outside the Services' purviews or are developed synergistically with a transition to the Services post maturation.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	18.164	19.218	20.141	-	20.141
Current President's Budget	17.710	24.155	19.793	-	19.793
Total Adjustments	-0.454	4.937	-0.348	-	-0.348
• Congressional General Reductions	-	-0.063			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	5.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	-0.454	-	-0.348	-	-0.348

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2022	FY 2023
Project: 245: *EW Enterprise Exploration and Innovation*		
Congressional Add: *Photonically Distributed Antenna System*	-	5.000
Congressional Add Subtotals for Project: 245	-	5.000
Congressional Add Totals for all Projects	-	5.000

Change Summary Explanation

FY 2024 minimal decrease due to programmatic adjustments.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603618D8Z / *Joint Electronic Advanced Technology*	Project (Number/Name) 245 / *EW Enterprise Exploration and Innovation*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
245: *EW Enterprise Exploration and Innovation*	14.773	17.710	24.155	19.793	-	19.793	20.350	20.808	21.243	21.707	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Electromagnetic Warfare Enterprise Exploration and Innovation (EW E&I) research efforts identify, explore, and accelerate the maturing and demonstration of new EW-related and EW-Cyber-related technologies. Technologies enabling and facilitating electromagnetic attack (EA), electromagnetic protection (EP), and electromagnetic support (ES) are covered, including technologies enabling "over-the-air" algorithmic warfare utilizing existing and new generations of EW, radio frequency (RF) and optical systems. To address increasingly sophisticated evolving threats, EW E&I efforts also seek to accelerate the development of non-traditional EMS sensing and ultra wideband approaches (greater than a decade of frequency) to enable continuous radiofrequency (RF) surveillance and distributed phase synchronous RF sensing. EW E&I research will explore technologies that will extend Department EMS capabilities to complex and contested environments and will provide sensing stand-off and EA capabilities against emerging threats. Distributed multi-domain sensing concepts will leverage advanced analysis and robust data fusion in order to accurately depict complex and dynamic EMS environments. EW E&I research products are explored and developed in state-of-the-art laboratories and validated side-by-side with numerous competing technologies and systems from the Services, industry, academia, and National laboratories in live/virtual/constructive (LVC) experimentation environments and in complex field experimentation events under real-world conditions. This approach significantly accelerates the identification and development of the most effective EW technologies while concurrently reducing developmental costs.

Significant advances in all areas impacting EW have resulted in new generations of threats that are challenging the U.S.'s traditional dominance in EW. EW E&I efforts address these challenges and also develop new technologies to ensure that U.S. warfighters maintain decisive overmatch offensive and defensive EW capabilities. EW E&I efforts specifically focus on areas where Service investments are lagging to accelerate the development and transition of multi-Service, multi-mission EW technologies.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: EW Enterprise Exploration and Innovation (EW E&I)	17.710	19.155	19.793
Description: Current EW E&I research thrusts include Passive Sensor Detection and Defeat (PSDD), Platform Self-Protection (PS-P), EW Technology Enablers (EW Tech), EW-Cyber Interface (EWCI), and EW Collaboration and Cognizance (EW C&C). Passive Sensor Detection and Defeat (PSDD): Modern integrated air defense systems (IADS) employ a variety of radar sensing technologies to detect, target and engage adversary aircraft. While classic IADS radars emitted radiofrequency radiation and collected the radiation that was reflected off targets within their field of view with the same aperture, computational advances have enabled passive (non-emitting) radar radiation receivers to capture and process the radar radiation reflected off targeted systems that was emitted by other emitters, including those of radars and other emitters of opportunity. Passive radar systems are			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603618D8Z / *Joint Electronic Advanced Technology*	**Project (Number/Name)** 245 / *EW Enterprise Exploration and Innovation*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
thus capable of providing targeting solutions to engagement assets (missiles, aircraft, directed energy, etc.) even though they do not emit radar radiation. This makes these systems a much more complex threat to U.S. offensive systems because traditional EW countermeasures such as jamming cannot be employed against these passive radars since they are largely undetected by our radar warning systems. This leaves U.S. aircraft confronted by IADS containing passive sensors vulnerable to unforeseen attacks. PSDD research identifies, explores and accelerates the maturing and demonstration of new technologies to provide defensive capabilities against passive detection/tracking/engagement sensor systems. Platform Self-Protection (PS-P): A wide variety of radiofrequency (RF) and electro-optical (EO) technologies are employed by modern militaries to detect, track, and engage attacking military systems. RF sensor systems including IADS radars, radars on ships, aircraft, ground, and naval vessels, and seekers on ballistic, cruise, air-to-air, surface-to-air missile are used to detect and provide targeting and engagement solutions to counter adversaries' military systems. EO systems have been incorporated into missile seekers and are also associated with high energy laser engagement systems for the same reasons. To ensure successful U.S. military actions, technologies that protect U.S. platforms and facilities against these new generations of much more capable RF and EO detection/targeting/engagement sensors and seekers are essential. This thrust identifies, explores, and accelerates the maturing and demonstration of new technologies to counter adversaries' advanced RF and EO sensor and seeker threats. Electromagnetic Warfare Technology Enablers (EW Tech): Significant advances in materials, electronics (including photonics, plasmonics, spintronics, magnetronics, etc.), RF and communications sciences, optical and laser sciences, information and computational sciences, and quantum sciences are enabling new generations of extremely powerful applications in a wide variety of fields. For example, artificial intelligence and machine learning (AI/ML) technologies are beginning to impact electromagnetic spectrum (EMS) operations. The advantages that AI/ML approaches can provide are considerable, but multiple runs addressing the same scenarios often provide disparate results for both the same assets in the same scenarios and for different assets in different locations within the scenarios. Ascertaining the optimal employment tactics and strategies using AI/ML thus becomes difficult for offensive and defensive operations in both proactive and reactive EW modes. EW Tech research seeks to leverage the latest advances in all of these areas to enable commensurate advances in the EW and EW-Cyber warfighting capabilities. EW-Cyber Interface (EWCI): The ability to impact system logic using EW and other RF systems provides powerful new options for EW application. EWCI research efforts thus identify, explore, and accelerate the maturing and demonstration of new EW-Cyber-related technologies. Significant advances in the application of digital EW have resulted in new generations of threat systems that are challenging the United States' traditional dominance in these areas. EW E&I efforts address these threats and develop new technologies to ensure U.S. warfighters maintain decisive overmatch EW capabilities. EW Collaboration and Cognizance (EW C&C): EW C&C efforts focus on maintaining an awareness of global research and development (R&D) efforts impacting EMS, EW and EW-Cyber warfighting technologies; guiding, facilitating, ensuring the			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603618D8Z / *Joint Electronic Advanced Technology*	**Project (Number/Name)** 245 / *EW Enterprise Exploration and Innovation*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
maximum levels of developmental collaboration across DoD; providing Office of the Secretary of Defense (OSD) oversight of technology development efforts across the DoD EW and EW-Cyber developmental communities; and providing decisional insights to senior leaders and decision-makers so they can more effectively direct all Department EW and EW-Cyber technology development programs and processes.			
FY 2023 Plans: Passive Sensor Detection and Defeat (PSDD): • SILENT SWARM 23 (SS-23): Complete assessment and final reports for SS-22 and begin planning and development the SS-23 field experimentation venue. SS-23 will be conducted in 4Q FY 2023. • Characterization of Passive Systems (COPS) – Classified project in collaboration with PMR 51 and the FFRDCs. Electromagnetic Warfare Technology Enablers (EW Tech): • Magnetic Field Sensing (MFS): Assess the Josephson junction magnetic sensor to recreate the EMS from the magnetic field component thereby bypassing the need for an aperture enabling ultra wideband sensing. • Reconfigurable Intelligent Surfaces (RIS): Assess the feasibility of applying meta-surface materials to modify the radar scattering of surfaces for EW applications across multiple domains. • Dynamically Configurable Apertures (DCAs): Leverage the advances in additive manufacturing technology to dynamically adapt to changes in the EMS by dynamically controlling the size, frequency, gain and polarization of the RF front end and affiliated components. • Innovative Low-Cost Experimentation (LCE): Develop plans and conduct the second and third LCE event at the Playas, NM experimentation range. Continue leveraging EW capabilities in these events to explore CONOPS implications and wargaming applications. • Spectrum Access Sensor for Situational analysis (SASSY): Congestion within the EMS significantly impacts military operations in a variety of important ways. Most importantly, frequencies that provide significant amounts of militarily-valuable information are coincident with civilian-use frequencies. To utilize this important information without adversely affecting civilian operations is extremely important for operational situational analysis. This effort will begin exploring cognitive RF technologies to enable cognitive radar applications within congested EMS environment. Low-cost and expendable EA payloads for small UAS capable of loitering in an AOR and deliver effects quickly and with low risk to blue assets. • VIRTUAL STINGRAY 23 (VS-23): Building upon the results of VS-22, VS-23 will expand the numbers of users and capabilities involved and increase levels of anchoring of EW and EW enabled cyber effects in a secure virtual and constructive setting to real-world offensive EW and Cyber effects in a distributed and networked laboratory environments. EW-Cyber Interface (EWCI):			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603618D8Z / *Joint Electronic Advanced Technology*	**Project (Number/Name)** 245 / *EW Enterprise Exploration and Innovation*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
• Preventing Blue Force Fratricide (PBFF): Applying AI/ML algorithms to more accurately discriminate between blue and red systems in complex and contested EMS environments in real time. • Precision RF-enabled Access & Effects for the IoT Environment (PRAETOR): Advancement and refinement of initial capabilities developed in FY 2022 will continue, culminating in several real-world in-the-field assessments of PRAETOR effects and their efficacy. EW Collaboration and Coordination (EW C&C): • Continue FY 2022 OUSD(R&E) efforts to guide, shepherd, and oversee all EW and EW-Cyber technology development across the DoD.			
FY 2024 Plans: Passive Sensor Detection and Defeat (PSDD): • SILENT SWARM 23 (SS-23): Complete assessment and final reports for SS-22 and begin planning and development the SS-23 field experimentation venue. SS-23 will be conducted in 4Q FY 2023. • Characterization of Passive Systems (COPS) – Classified project in collaboration with PMR 51 and the FFRDCs. Electromagnetic Warfare Technology Enablers (EW Tech): • Magnetic Field Sensing (MFS): Assess the Josephson junction magnetic sensor to recreate the EMS from the magnetic field component thereby bypassing the need for an aperture enabling ultra wideband sensing. • Reconfigurable Intelligent Surfaces (RIS): Assess the feasibility of applying meta-surface materials to modify the radar scattering of surfaces for EW applications across multiple domains. • Dynamically Configurable Apertures (DCAs): Leverage the advances in additive manufacturing technology to dynamically adapt to changes in the EMS by dynamically controlling the size, frequency, gain and polarization of the RF front end and affiliated components. • Innovative Low-Cost Experimentation (LCE): Develop plans and conduct the second and third LCE event at the Playas, NM experimentation range. Continue leveraging EW capabilities in these events to explore CONOPS implications and wargaming applications. • Spectrum Access Sensor for Situational analysis (SASSY): Congestion within the EMS significantly impacts military operations in a variety of important ways. Most importantly, frequencies that provide significant amounts of militarily-valuable information are coincident with civilian-use frequencies. To utilize this important information without adversely affecting civilian operations is extremely important for operational situational analysis. This effort will begin exploring cognitive RF technologies to enable cognitive radar applications within congested EMS environment. Low-cost and expendable EA payloads for small UAS capable of loitering in an AOR and deliver effects quickly and with low risk to blue assets.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603618D8Z / *Joint Electronic Advanced Technology*	**Project (Number/Name)** 245 / *EW Enterprise Exploration and Innovation*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
• VIRTUAL STINGRAY 23 (VS-23): Building upon the results of VS-22, VS-23 will expand the numbers of users and capabilities involved and increase levels of anchoring of EW and EW enabled cyber effects in a secure virtual and constructive setting to real-world offensive EW and Cyber effects in a distributed and networked laboratory environments. EW-Cyber Interface (EWCI): • Preventing Blue Force Fratricide (PBFF): Applying AI/ML algorithms to more accurately discriminate between blue and red systems in complex and contested EMS environments in complex and contested EMS environments in real time. • Precision RF-enabled Access & Effects for the IoT Environment (PRAETOR): Advancement and refinement of initial capabilities developed in FY 2022 will continue, culminating in several real-world in-the-field assessments of PRAETOR effects and potential mission impacts. EW Collaboration and Coordination (EW C&C): • Continue FY 2022 OUSD(R&E) efforts to guide, shepherd, and oversee all EW and EW-Cyber Science and Technology research and development across the DoD. QSES: • Quantum Small Electromagnetic Sensors using superconducting quantum interference device (SQUID) sensor arrays to create small, high performance and flexible receive capabilities to enable evolved CONOPS and a more covert battlespace presence. CHEAP DATE: • Fire and forget EW submunition uses adversary RF for guidance and delivers EA or cyber effects over hours or days when within range. NARWHAL: • Expendable decoy hosted in a sonobuoy or air vehicle. Cognitive EA Cocktail HITL/SITL Experimentation: • Cognitive EA techniques capable of countering detection and track modes of operation of complex emitters using known and previously unseen waveforms. EM Skins for Fully Agile EMSO and Reconfigurable Intelligent Surfaces: • Dynamically reconfigurable reflective properties for vehicle surfaces to reduce or tailor RCS, beamform or enhance transmit or receive functions.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603618D8Z / *Joint Electronic Advanced Technology*	**Project (Number/Name)** 245 / *EW Enterprise Exploration and Innovation*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Multi-Domain Orchestrated Spectrum SA for EW&C: • System for distributed, low-cost and low SWaP EM sensors adaptable for integration across multiple domains and operable under adaptive control in a self-healing networked configuration. RF Spectrum Awareness Toolkit: • Provide high performance and high instantaneous bandwidth spectrum characterization capability that can be retrofitted into existing platforms or to support spectrum maneuverability in new EW systems to realize advantages in performance. Electromagnetic Maneuver Warfare Resource Allocation and Management (EMW RAM): • Autonomous resource management of manned and unmanned Air and Sea domain assets to provide jamming effectiveness projections and protected entity alignment cues. Distributed ES & EA with STORM on UAS: • Distributed and agile remote RF sensing to support battlespace awareness and timely decision making. Urban RF Emitter Location: • Emitter geolocation in urban environments using distributed RF sensors and existing data and computational resources. Silent Emitter Mapping: FY 2023 Plans: Passive Sensor Detection and Defeat (PSDD): • SILENT SWARM 23 (SS-23): Complete assessment and final reports for SS-22 and begin planning and development the SS-23 field experimentation venue. SS-23 will be conducted in 4Q FY 2023. • Characterization of Passive Systems (COPS) – Classified project in collaboration with PMR 51 and the FFRDCs. Electromagnetic Warfare Technology Enablers (EW Tech): • Magnetic Field Sensing (MFS): Assess the Josephson junction magnetic sensor to recreate the EMS from the magnetic field component thereby bypassing the need for an aperture enabling ultra wideband sensing. • Reconfigurable Intelligent Surfaces (RIS): Assess the feasibility of applying meta-surface materials to modify the radar scattering of surfaces for EW applications across multiple domains. • Dynamically Configurable Apertures (DCAs): Leverage the advances in additive manufacturing technology to dynamically adapt to changes in the EMS by dynamically controlling the size, frequency, gain and polarization of the RF front end and affiliated components.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603618D8Z / *Joint Electronic Advanced Technology*	**Project (Number/Name)** 245 / *EW Enterprise Exploration and Innovation*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
• Innovative Low-Cost Experimentation (LCE): Develop plans and conduct the second and third LCE event at the Playas, NM experimentation range. Continue leveraging EW capabilities in these events to explore CONOPS implications and wargaming applications. • Spectrum Access Sensor for Situational analYsis (SASSY): Congestion within the EMS significantly impacts military operations in a variety of important ways. Most importantly, frequencies that provide significant amounts of militarily-valuable information are coincident with civilian-use frequencies. To utilize this important information without adversely affecting civilian operations is extremely important for operational situational analysis. This effort will begin exploring cognitive RF technologies to enable cognitive radar applications within congested EMS environments. • Low-cost and expendable EA payloads for small UAS capable of loitering in an AOR and deliver effects quickly and with low risk to blue assets. • VIRTUAL STINGRAY 23 (VS-23): Building upon the results of VS-22, VS-23 will expand the numbers of users and capabilities involved and increase levels of anchoring of EW and EW enabled cyber effects in a secure virtual and constructive setting to real-world offensive EW and Cyber effects in a distributed and networked laboratory environments. EW-Cyber Interface (EWCI): • Preventing Blue Force Fratricide (PBFF): Applying AI/ML algorithms to more accurately discriminate between blue and red systems in complex and contested EMS environments in real time. • Precision RF-enabled Access & Effects for the IoT Environment (PRAETOR): Advancement and refinement of initial capabilities developed in FY 2022 will continue, culminating in several real-world in-the-field assessments of PRAETOR effects and potential mission impacts. EW Collaboration and Coordination (EW C&C): • Continue FY 2022 OUSD(R&E) efforts to guide, shepherd, and oversee all EW and EW-Cyber Science and Technology research and development across the DoD. QSES: • Quantum Small Electromagnetic Sensors using superconducting quantum interference device (SQUID) sensor arrays to create small, high performance and flexible receive capabilities to enable evolved CONOPS and a more covert battlespace presence. CHEAP DATE: • Fire and forget EW submunition uses adversary RF for guidance and delivers EA or cyber effects over hours or days when within range. NARWHAL:			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603618D8Z / *Joint Electronic Advanced Technology*	**Project (Number/Name)** 245 / *EW Enterprise Exploration and Innovation*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
• Expendable decoy hosted in a sonobuoy or air vehicle. Cognitive EA Cocktail HITL/SITL Experimentation: • Cognitive EA techniques capable of countering detection and track modes of operation of complex emitters using known and previously unseen waveforms. EM Skins for Fully Agile EMSO and Reconfigurable Intelligent Surfaces: • Dynamically reconfigurable reflective properties for vehicle surfaces to reduce or tailor RCS, beamform or enhance transmit or receive functions. Multi-Domain Orchestrated Spectrum SA for EW&C: • System for distributed, low-cost and low SWaP EM sensors adaptable for integration across multiple domains and operable under adaptive control in a self-healing networked configuration. RF Spectrum Awareness Toolkit: • Provide high performance and high instantaneous bandwidth spectrum characterization capability that can be retrofitted into existing platforms or to support spectrum maneuverability in new EW systems to realize advantages in performance. Electromagnetic Maneuver Warfare Resource Allocation and Management (EMW RAM): • Autonomous resource management of manned and unmanned Air and Sea domain assets to provide jamming effectiveness projections and protected entity alignment cues. Distributed ES & EA with STORM on UAS: • Distributed and agile remote RF sensing to support battlespace awareness and timely decision making. Urban RF Emitter Location: • Emitter geolocation in urban environments using distributed RF sensors and existing data and computational resources. Silent Emitter Mapping: • An Active/Passive RF technique to detect and identify adversary Radar and EW systems before they go active. Electronic GPS Anomaly Detection System: • Detect, characterize, locate, report and record signals that might deny, degrade of deceive GPS user equipment.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603618D8Z / *Joint Electronic Advanced Technology*	**Project (Number/Name)** 245 / *EW Enterprise Exploration and Innovation*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Northpole: • A high performance neural inference computing substrate to enable next generation AI, ML and autonomy applications supporting EW such as detection, classification, prediction, sensor fusion and scene analysis. PRISM: • Device-specific resource monitoring and battle damage assessment system for 5G to detect the effects of hostile EW against the 5G system in time to take mitigating measures. Full Spectra OASIS: • Providing an RF sensing component to the OASIS BLK 2 UV/LWIR EO/IR data collection and tracking test asset in order to provide a full spectrum sensor for SA within test environments and for surrogate characterization. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The decrease of $4.362 million between FY 2023 and FY 2024 is due to a one-time congressional add in FY 2023.			
Accomplishments/Planned Programs Subtotals	17.710	19.155	19.793

	FY 2022	FY 2023
Congressional Add: Photonically Distributed Antenna System	-	5.000
FY 2023 Plans: The $5M congressional plus-up will fund research within Distributed Antenna Systems and focus on: Aperture Building – A minimum of 3 RF photonic aperture will be built for both RX and TX based on technology available at start of effort. Develop Distributed Aperture Synthesis Models– Develop numerical models to predict performance of aperture synthesis for a range of configurations and potential applications. Evaluate Distributed Aperture Synthesis Techniques– Using laboratory hardware, experimentally validate fundamental aspects of the different aperture techniques. These results will be compared against modelled results to validate model performance. Aperture Synthesis Laboratory Measurements– Perform laboratory experiments to demonstrate and quantify the utility of synthesized apertures.		

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603618D8Z / *Joint Electronic Advanced Technology*	**Project (Number/Name)** 245 / *EW Enterprise Exploration and Innovation*

	FY 2022	FY 2023
Field Demonstration– Develop a field demonstration plan to prove the utility of the distributed aperture approach for the applications identified over the course of the effort. Program Documentation and Final Report– The results will be documented in a final presentation and report, detailing findings of the investigation and providing recommendations for further paths to transition technology.		
Congressional Adds Subtotals	-	5.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603648D8Z / *Joint Capability Technology Demonstration (JCTD)*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	1,221.594	99.341	-	-	-	-	-	0.000	-	-	Continuing	Continuing
648: *Joint Capability Technology Demonstration (JCTD)*	1,221.594	85.135	-	-	-	-	-	-	-	-	Continuing	Continuing
649: *Multi-Domain Demonstrations (MDD)*	0.000	14.206	-	-	-	-	-	-	-	-	Continuing	Continuing

Note

New Start (Y/N): No

The Joint Capability Technology Demonstration (JCTD) Program Element (PE) transitioned to PE 0603838D8Z Defense Innovation Acceleration (DIA).

A. Mission Description and Budget Item Justification

The mission of the Joint Capability Technology Demonstration (JCTD) Program Element, 0603648D8Z, is to address Combatant Command (CCMD) and Joint Warfighting operational gaps by executing prototypes, reducing technical risk, and conducting operational demonstrations to assess military utility against urgent/ emergent warfighter needs. This Congressionally-mandated program serves as one of the few avenues for CCMDs to address their most pressing priority capability gaps and requirements, which often result from inadequate Service Title-10 investment in joint interoperability that achieve improved mission outcomes.

The JCTD PE puts capabilities into the hands of the Joint Warfighter one to two years sooner than would have been accomplished by the Services alone. This is achieved using a CCMD sponsor for each project; leveraging service research and engineering laboratories, academia, and industry expertise; requiring partner funding; and executing the necessary steps for transition with service acquisition partners throughout the project lifecycle. This methodology results in a nearly 80% transition success rate, and solidifies the program's role as a technology catalyst, rapid capability provider, and transition-bridge between the USD(R&E) and the Under Secretary of Defense for Acquisition and Sustainment (USD(A&S)) offices.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603648D8Z *I Joint Capability Technology Demonstration (JCTD)*

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	102.345	114.100	121.077	-	121.077
Current President's Budget	99.341	0.000	0.000	-	0.000
Total Adjustments	-3.004	-114.100	-121.077	-	-121.077
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-2.988	-			
• DIA Re-alignment to 0603838D8Z	-	-114.100	-121.077	-	-121.077
• Program Adjustment	-0.016	-	-	-	-

Change Summary Explanation

FY 2023 and out-year funding in the Joint Capability Technology Demonstration (JCTD) Program Element (PE) transitioned to PE 0603838D8Z Defense Innovation Acceleration (DIA).

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603648D8Z / *Joint Capability Technology Demonstration (JCTD)*	Project (Number/Name) 648 / *Joint Capability Technology Demonstration (JCTD)*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
648: *Joint Capability Technology Demonstration (JCTD)*	1,221.594	85.135	-	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

JCTD project selection is driven by the ability to accelerate transition of new prototyped capabilities to the Joint Warfighter that have strong CCMD and Joint Staff interest; cost-share commitments from the Military Services and Defense Agencies; advanced technical readiness; and a well-defined and affordable transition path for long-term sustainment. Project proposals are selected following a deliberate process that leverages a wide-ranging stakeholder community that includes the CCMDs, Joint Staff, Service science and technology (S&T) communities, academia, industry, the Intelligence Community, and organizations within the Office of the Secretary of Defense. This selection process and the execution process previously described has resulted in a nearly 80% transition rate, which is defined as a project moving into a new or existing program of record or residual prototypes utilized by the CCMDs and Joint Warfighter for immediate operational use. The final objective for the JCTD program is to maintain the United States' technological superiority across the range of military operations while reducing the cost of operations, facilitating joint interoperability, and allowing for the rapid insertion of new capabilities.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Collaborative Naval Information Warfare Systems Command Cyber Operations (N-Cyber) ***Description:*** N-Cyber is a FY 2022 new-start JCTD. The N-Cyber JCTD is an offensive capability that will enable warfighters to create non-kinetic effects (NKE) on traditionally hard-to-affect adversary systems from air, land, or sea through the integration of space, cyber, and electronic warfare. In FY 2022, N-Cyber stood up the Integrated Management Team, signed an Implementation Directive, and executed Technical Demonstrations.	2.153	-	-
Title: Signal of Opportunity Receiver (SORcer) Enable Ionospheric Modeling (SEIM) ***Description:*** SEIM is a FY 2022 new-start JCTD. By fielding SORcers systems in forward locations, SEIM will deliver necessary high frequency (HF) propagation data to enable operational awareness of the electromagnetic operating environment (EMOE). Artificial Intelligence (AI) and Deep Neural Network (DNN) techniques will be utilized to enable autonomous use of SORcer systems to support better targeting and decision-making for the Joint Warfighter. In FY 2022, SEIM deployed SORcer systems in operationally-relevant locations, connected SORcer systems to specified networks to exfiltrate near-real-time observations to a centralized location for quality control and assimilation.	0.853	-	-
Title: Maritime Centric Skywave Over-the-Horizon Radar (MASOR) ***Description:*** Previously-funded JCTD. MASOR will create a maritime-dedicated wide-area surveillance over-the-horizon radar (OTHR) system that significantly improves maritime detect-and-track capabilities while also maintaining current air operation	1.000	-	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
capabilities. MASOR's wide-area ground/maritime detection and monitoring capability will degrade the adversary's ability to remain undetected. Transition of this JCTD will be through ROTHR program office as they continue to operate the improved system. JIATF-S JOC will receive the tracks. This JCTD will complete in FY 2022 and transition to the U.S. Navy's Relocatable OTHR (ROTHR) program office and feed tracks into Joint Interagency Task Force - South (JIATF-S)'s Joint Operations.			
Title: Resilient Expeditionary Agile Littoral Logistics (REALL) ***Description:*** Previously-funded JCTD. REALL supports the Contested Logistics mission priority area and the National Defense Strategy's modernization priority on forward force maneuver and posture resilience. REALL will demonstrate capabilities to enable a distributed network of fuel distribution and logistics nodes in support of emerging operational concepts. These systems will operate within the arc of enemy fires with significantly less risk than traditional naval platforms due to their distributed nature. In FY 2022, REALL will finalize the concept of operations and complete a Military Utility Assessment. The JCTD will complete in FY 2023 and transition the platform, vertical takeoff and lift (VTOL) kit, and fuel subsystem technical documentation to Naval Facilities Engineering Command (NAVFAC) Expeditionary Programs Office's Sealift program; Naval Beach Group inventories via NAVFAC Expeditionary Programs Office; and Office of the Chief of Naval Operations, Expeditionary Warfare (OPNAV N95) and Strategic Mobility and Combat Logistics (OPNAV N42).	3.000	-	-
Title: Automating Indications and Warnings (I&W) for Operational Awareness (REDLINE) ***Description:*** Previously-funded JCTD. REDLINE supports the National Defense Strategy's focus on military applications of machine learning to gain a competitive military advantage. REDLINE will leverage machine learning to provide CCMDs the ability to conduct automated order of battle in denied areas. In FY 2022, REDLINE continued to scale performance, conducted Operational Demonstrations, and completed its Military Utility Assessment. The JCTD will transition to the Defense Intelligence Agency (DIA)'s Foundational Intelligence Modernization effort as a program of record.	1.835	-	-
Title: Resilient Logistics ***Description:*** Previously-funded JCTD. Resilient Logistics supports the Contested Logistics mission priority area and the National Defense Strategy's focus on forward force maneuver and posture resilience. Resilient Logistics will provide kitted solutions to increase the survivability of expeditionary and permanent logistical support networks in Anti-Access/Area-Denial (A2/AD) environments. Upon completion of the JCTD, residual operational prototype kits will be available for immediate fielding. In FY 2022, the JCTD developed the concept of operations and tactics, techniques, and procedures for the kitted solution and conducted a comprehensive Military Utility Assessment (MUA) with operational units at an appropriate exercise venue. Resilient Logistics will complete in FY 2023.	2.000	-	-
Title: Analytic Threat Observation, Materialistic Identification, Classification, and Attribution (ATOMICA)	2.125	-	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Description: Previously-funded JCTD. ATOMICA supports the National Defense Strategy's focus on providing non-intrusive, real-time identification of threats to support the Joint Force's secure maneuverability through both land and sea. ATOMICA provides a portable, self-contained sensor system that will provide an unprecedented ability to materialistically determine the contents of an unknown object. The sensor will interrogate objects with a short standoff distance without touching, opening, or disturbing the targeted object. The ATOMICA sensor will be integrated onto various unmanned platforms, to include unmanned ground vehicles (UGV) and unmanned, remotely-operated vehicles (ROV) for both terrestrial and underwater environments. In FY 2022, ATOMICA developed a concept of operations (CONOPS) and tactics, techniques, and procedures (TTP) for fieldable/ operational prototypes. In FY 2023, the JCTD will conduct an Operational Demonstration/Military Utility Assessment and transition to a U.S. Navy Expeditionary Combat Branch (OPNAV N957) program of record for Maritime Expeditionary Standoff Response (MESR). The JCTD will complete in FY 2023.			
Title: Secure Tactical Advanced Mobile Power (STAMP)	2.635	-	-
Description: Previously-funded JCTD. STAMP supports the National Defense Strategy's mission priority of Contested Logistics. STAMP will integrate power generation, distribution, battery storage, metering, control systems, and on-board vehicle power from mobile tactical platforms into an AC/DC micro-grid to enhance resiliency, mobility, and flexibility of tactical units to execute distributed cross domain maneuvers in multi-domain operations. In FY 2022, STAMP conducted an Operational Demonstration for a micro-grid, with mobile tactical charging and energy storage integration; transition integration; and safety confirmation for the Family of Medium Tactical Vehicles (FMTV) micro-grid system. STAMP will transition components and other hardware to programs of record for Power Distribution Illumination System, Electrical Power Distribution and Illumination Equipment (PDISE), and FMTV. Operational prototypes will be delivered to Program Management (PM) office Terminal High Altitude Area Defense (THAAD) and PM Mission Command. The JCTD will complete in FY 2023.			
Title: Autonomous Maritime Patrol Craft (AMPA)	1.900	-	-
Description: Previously-funded JCTD. AMPA is developing an unmanned militarized version of the world's largest solar aircraft, the Solar Impulse. The resulting Skydweller aircraft will be designed to stay airborne for more than 90 days with excess electrical power available to simultaneously operate a suite of sensors, communications, navigation, and electronic warfare (EW) sub-systems. This technological leap will allow a single Skydweller aircraft to more effectively perform the mission of numerous manned and unmanned Intelligence, Surveillance, and Reconnaissance (ISR)-configurable assets, eliminate risk to human pilots, and provide a level of persistence not available anywhere else in the military inventory. In FY 2022, AMPA plans to complete a seven-day, sustained flight of the Skydweller aircraft as an Operational Demonstration of advanced fly-by-wire technology, autonomous flight control system, and vehicle management systems.			
Title: Automated Construction of Expeditionary Structure (ACES)	1.365	-	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Description: Previously-funded JCTD. ACES provides Combatant Commands (CCMD) the capability to quickly provide mobility and force protection for deployed Joint Warfighters. Military combat engineer units lack the capability to enable rapid construction, route repair, and gap crossing to establish and sustain lines of communications. ACES will provide an automated 3D printer to construct gap crossings, obstacles, and force protection positions using locally available concrete and other materials at a pace that adversaries cannot match. In FY 2022, ACES conducted a limited Military Utility Assessment (MUA) and delivered prototypes in theater to support Joint Warfighter battlefield needs. Prototypes will transition to programs of record at U.S. Army Facilities Component Systems; U.S. Navy Engineering Expeditionary Warfare Center (EXWC); and U.S. Marine Corps Systems Command (MARCORSYSCOM). The JCTD will complete in FY 2023.			
Title: Prometheus Emerald ***Description:*** Previously-funded JCTD. Prometheus Emerald (PE) supports the National Defense Strategy by delivering a proof of concept Artificial Intelligence (AI) collection management and tasking capability to allow Military Intelligence personnel to automate AI workflows. In FY 2022, Prometheus Emerald developed models against specific threats and executed a Technical Demonstration of AI hardware and models. In FY 2023, Prometheus Emerald will conduct an Operational Demonstration and Military Utility Assessment. The JCTD will complete in late FY 2023 and transition to the Army Tactical Intelligence Targeting Access Node (TITAN) program of record.	2.576	-	-
Title: Pacific Ecosystem for Cyber (PEcoC) ***Description:*** Previously-funded JCTD. PEcoC supports the cybersecurity requirements identified in the FY 2021 National Defense Authorization Act and OUSD(R&E)'s cyber modernization priority. PEcoC provides an information advantage through application of integrated artificial intelligence (AI) and machine learning (ML) techniques that improves cyber-threat identification and response while integrating disparate national cybersecurity programs into the Pacific ecosystem. In FY 2022, PEcoC incorporated additional threat and malicious behavior into ML algorithms and software models while continuing development and deployment of deep packet inspection models that look for data exfiltration into DoD operational platforms. In FY 2023, PEcoC will conduct an Operational Demonstration/Military Utility Assessment in Naval Computer and Telecommunications Area Master Station (NCTAMS), Far East, and will deploy a classified prototype high-performance ML system to Naval Computer and Telecommunications Area Master Station (NCTAMS), Pacific. The JCTD will complete in early FY 2023.	2.913	-	-
Title: Passive Optical Spectrum Control and Exploitation (POSCE) ***Description:*** Previously-fund JCTD. POSCE uses innovative sensing methods intended to augment persistent Intelligence, Surveillance, and Reconnaissance (ISR) in maritime environments and along terrestrial chokepoints. Additionally, novel sensing provides penetrating ISR in response to operational challenges in anti-access/area-denial (A2/AD) environments.	2.820	-	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Reliable Transmission over HF (NORTH) ***Description:*** Previously-funded JCTD. NORTH focuses on Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) and Fully-networked Command, Control and Communications (FNC3) modernization. NORTH will integrate with the Navy's wideband high frequency (HF) mesh networking system and the Air Force's digital HF radios and repeaters to optimize joint information transport datalinks based on sense and respond (S&R) of the spectral environment. All three systems together provide an enterprise solution which will increase operational effectiveness of resilient C3 in anti-access/ area-denial (A2/AD) environments. In FY 2022, NORTH conducted a Technical Demonstration in simulated conditions which demonstrated an ad hoc HF mesh networking system that will enhance FNC3, including Resilient Command and Control (RC2) and Nuclear Command, Control, and Communications (NC3).	3.332	-	-
Title: Quicksink ***Description:*** Previously-funded JCTD. Quicksink is developing technologies to reduce the number of air assets required for anti-surface warfare (ASuW) operations by increasing ASuW weapon lethality and standoff while decreasing costs. The program is also using the Joint Direct Attack Munition as an inexpensive integration and testing platform for Quicksink technologies. In FY 2022, the program successfully demonstrated a seeker-less Quicksink munition against both stationary commercial and Naval vessels.	1.927	-	-
Title: Raging Parakeet (RP) ***Description:*** Previously-funded JCTD. Combatant Commands (CCMD) lack the ability to rapidly analyze vast amounts of Intelligence, Surveillance, and Reconnaissance (ISR) data to quickly locate hard-to-find targets with a high degree of accuracy. RP will utilize advanced Artificial Intelligence (AI)/Machine Learning (ML) algorithms and sensor fusion to decrease manpower requirements and simultaneously increase the accuracy of high-priority target identification. In FY 2022, the U.S. Air Force handed over technical lead to the Naval Research Laboratory (NRL).	6.497	-	-
Title: Stratospheric Capability Architecture Development (SCAD) ***Description:*** Previously-funded JCTD. SCAD supports the National Defense Strategy by delivering materiel solutions to the United States Army (USA) and United States Special Operations Command (USSOCOM) for acquisition and sustainment. SCAD will develop, demonstrate, and assess an unmanned aerial systems platform with stratospheric payloads that provide Ground Moving Target Indicator (GMTI) Synthetic Aperture Radar (SAR), Signals Intelligence (SIGINT), and communications relay capabilities. In FY 2022, SCAD developed a concept of operations and conducted Technical and Operational Demonstrations.	1.400	-	-
Title: Pathfinder	2.000	-	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Description: Pathfinder was a previously-funded JCTD. Pathfinder supports the National Defense Strategy by delivering U.S. Northern Command (USNORTHCOM) and North American Aerospace Defense Command (NORAD) a prototype Homeland Defense Data Ecosystem (HDDE) that fuses hundreds of terabytes of data and provides a synthesized analytical solution. In FY 2022, Pathfinder participated in several Global Information Dominance Exercises and conducted successful Operational Demonstrations. The JCTD completed in FY 2022 and is now integrated with USNORTHCOM capabilities.			
Title: Cybersecurity for Robotic and Autonomous Systems Hardening (CRASH) ***Description:*** Previously-funded JCTD. The Department of Defense (DoD)'s deployed Robotic Autonomous Systems (RAS) face pervasive threats to adversary hacking at multiple touch points that, if left unsecured, could potentially allow adversaries to manipulate DoD Forces without Joint Warfighter knowledge and create climates of permanent uncertainty and distrust within the Joint Warfighter community toward RAS assets. CRASH will tailor RAS software solutions to provide deep and layered cyber defenses against multi-vector cyberattacks from existing and emerging threats to allow completion of autonomous missions in contested battlefields. In FY 2022, CRASH executed a cyber-tabletop exercise and a Technical Demonstration of the current software development.	2.475	-	-
Title: Joint Targeting Support (JTS) ***Description:*** Previously-funded JCTD. JTS will reduce the sensor-to-shooter timeline and increase the rate of target identification and engagements by leveraging resources across services, agencies, and coalition partners. JTS will connect sensors, shooters and data across the Services to effectively support targeting cells at all echelons to provide capabilities in support of Joint All-Domain Command and Control (JADC2). JTS will automate Joint target development for deep fires missions by developing and integrating machine learning analytics with Joint- and Service-specific information systems and Intelligence, Surveillance, and Reconnaissance (ISR) networks. JTS will simultaneously build and refine numerous user- and machine-nominated target decks by employing distributed processing and fusion analytics and augmenting the Joint Automated Deep Operations Coordination System (JADOCS) to improve the target development process across echelons and services. In FY 2022, JTS further developed analytics, user interfaces, and exploitation and correlation of Joint forces data.	5.921	-	-
Title: Aerial Port of the Future (APoF) ***Description:*** Previously-funded JCTD. Aerial ports and air transportation expeditionary operations are constrained by poorly performing and unlinked Information Technology (IT) systems, outdated command, control, and communications (C3) networks, and physical handling of critical classes of supply. To solve these problems, APoF will develop, integrate, and test emerging capabilities at aerial ports by providing a logistics common operating picture for planning, processing, and managing Joint Force cargo; an integrated automated system to manage personnel, cargo, and munitions; and man/unmanned materiel handling equipment to rapidly load sustainment to global air mobility assets. In FY 2022, AP0F leveraged high-impact improvements to IT	2.257	-	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
infrastructure for tactical awareness of the aerial port, completed the spiral for IT infrastructure development, and started two new spirals: one for automated systems with portable computing and another for the integration of autonomy and machine learning with advanced data analytics.			
Title: Turul ***Description:*** Turul was a FY 2022 new-start JCTD. Turul will provide scalable, machine learning-enabled algorithms to find and fix fleeting targets to accelerate kill chain activities against time-sensitive targets. Information from these capabilities will provide situational awareness to Combatant Command (CCMD) operators and be used to tip and cue other sensor systems. Maritime moving target indicator (MMTI), ground moving target indicator (GMTI), and air moving target indicator (AMTI) information is needed by the CCMDs in quantities and timelines that are not currently being met by existing means. In FY 2022, Turul formed its Integrated Management team, signed an Implementation Directive, and conducted Technical Demonstrations.	1.200	-	-
Title: Surface-Launched Advanced Munition Datalink (SLAMD) ***Description:*** SLAMD was a FY 2022 new-start JCTD. The SLAMD JCTD is developing and integrating a tactical Projectile Data Link (PDL) into a gun-launched, maneuvering projectile to enable long-range precision fires in a GPS-denied environment. The data link will enable communications between the projectile and a ground-based tracking radar to enable mid-course corrections to the projectile's path. The data link is also an enabler for ground-to-round and round-to-round communications for tactical applications, such as swarming. In FY 2022, SLAMD completed System and Subsystem technical requirements generation, initial PDL design and development, PDL Interface Control Document (ICD) development, Radar Mode design, and assessment metrics development.	1.500	-	-
Title: High-Frequency Silent Transmission over Optimum Delivery of Expeditionary Situational Awareness Resilient Mesh (HF STORM) ***Description:*** Previously-funded JCTD. This JCTD refines the Department of Defense (DoD)'s Fully-networked Command, Control, and Communications (FNC3) and high frequency (HF) roadmaps to mature and layer several key technologies. HF STORM will develop and employ antenna arrays (communication hubs), covert mobile architectures, and software defined radio (SDR) capabilities. These developments combine to increase transmission directivity while minimizing detection susceptibility in tactical, relocatable, and expeditionary ground and aerial nodes that link with a large ground-based array to provide global and secure reach in a contested or denied environment. The integration of wideband SDRs with advanced waveforms enables robust and resilient beyond-line-of-sight (BLOS) communication links while decreasing an adversary's jamming ability. In FY 2022, HF STORM conduct a Technical Demonstration.	3.947	-	-
Title: Joint Undersea Surveillance and Targeting (JUST)	2.713	-	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Description: JUST was a FY 2022 new-start. JUST will deliver a new capability to monitor changes to the undersea battlespace and seabed infrastructure by demonstrating intelligent autonomous unmanned undersea vehicle (UUV)-enabled target recognition and change detection capability enabling secure Joint Force offensive and defensive operations. Combatant Commands (CCMD) require JUST capabilities for force protection and operational plan execution. In FY 2022, JUST developed and tested automatic target recognition (ATR) and automatic change detection (ACD) capabilities and assessed surrogate UUVs for testing in an operationally-relevant environment.			
Title: Low-Cost Chip-Scale Atomic Clock (LC CSAC) ***Description:*** LC CSAC was a FY 2022 new-start. LC CSAC will develop smaller scale devices that can be produced at a higher quantity and a lower price point. LC CSAC is a pre-Engineering and Manufacturing Development (EMD) effort that will provide low-Size, Weight, Power, and Cost (SWaP-C) atomic clocks for GPS receivers and radios to operate smoothly through GPS-contested and GPS-denied environments. The JCTD will demonstrate LC CSAC integrated with representative U.S. Army systems operating under future threat environments. In FY 2022, LC CSAC verified that design simulations met cost and performance metrics.	0.970	-	-
Title: Autonomous Multi-Domain Launcher (AML) ***Description:*** AML was a FY 2022 new-start. AML will develop and demonstrate an unmanned, cab-less, highly mobile, C-130 transportable prototype Long Range Precision Fires (LRPF) launcher. The prototype launcher will be capable of leader-follower autonomy, drive-by-wire, and remote launcher turret and fire control operation. The prototype launcher will also be capable of handling/launching longer munitions (up to 20 feet in length) while remaining compatible with the current Multiple Launch Rocket System (MLRS) Family of Munitions (MFOM) (13 feet in length). Australia is collaborating on this JCTD project. In FY 2022, AML completed its Implementation Directive and Management Plan.	2.500	-	-
Title: Combatant Commander (CCMD) Support, Capability Transition and Strategic Project Operational Management ***Description:*** Continuously-funded effort. This effort is comprised of three programs that support the entire JCTD Program: (1) CCMD direct liaison support, (2) JCTD pre-transition, and (3) Program Integration Office (PIO) for execution of select, classified projects. (1) CCMD direct liaison support: The CCMDs are essential in specifying capability needs, project identification, demonstration venues, military utility assessment, and transition of JCTDs. The JCTD Program provides direct support to CCMDs, enabling them to provide an on-site JCTD operational manager. (2) JCTD pre-transition: In some cases, Service or Agency partner transition funding is unavailable for one to two years following the JCTD demonstration phase. In such cases, where there is a clear transition and the need to sustain the capability for a short time prior to availability of Service or Agency transition funds, JCTD pre-transition funds may be used to meet that need.	18.720	-	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
(3) PIO: Executes a select number of highly-classified projects in areas such as time sensitive targeting (TST), electronic miniaturization, electronic countermeasures, advanced mobile ad hoc network communications, space situational awareness intelligence surveillance and reconnaissance, sensor platforms and communications, and persistence surveillance.			
Title: Birdseye Yonder (BEYOND) ***Description:*** BEYOND is a FY 2023 new-start JCTD. BEYOND matures and integrates advanced, photonic-based radiofrequency (RF) sensors (referred to as "Wall Fly") that generate high-quality geolocation and signal intelligence of threats far beyond current capabilities. BEYOND matures and integrates sensors into existing EUCOM sensor networks and demonstrates signals intelligence (SIGINT) and high-quality passive geolocation far beyond current capabilities. The sensor technology is a 360-degree wideband passive geolocation, track, and target classification capability designed around a novel physically-assisted wideband correlator technology.	0.050	-	-
Title: Collaborative Artificial Intelligence (AI) for Predicting Enemy Course of Action (ECOA) (CAPE) ***Description:*** CAPE is a FY 2023 new-start JCTD. CAPE is an Artificial Intelligence (AI)-enabled decision support software for predicting enemy course of action (ECOA). CAPE introduces a unique Decision Centric Architecture (DCA) not currently found in fielded systems and advances symbolic plan recognition, semantic networks, and mixed-initiative reasoning that facilitate human-machine teaming while automating ignorance identification and request for information generation.	0.050	-	-
Title: Correlating Order-of-Battle (OB) Movement Patterns for Learned Event Exploitation (COMPLEX) ***Description:*** COMPLEX is a FY 2023 new-start JCTD. COMPLEX is Artificial Intelligence (AI) and Machine Learning (ML) software that improves our ability to predict our adversaries' movements and operational activities. COMPLEX will have two main impacts on the Joint Warfighter capability: increasing warning capability against foreign military actions and increasing knowledge of activity patterns within, across, and between foreign units.	0.050	-	-
Title: Crystal Vista (CV) ***Description:*** CV is a FY 2023 new-start JCTD. CV addresses a Joint operational need for a federated data platform. Our forces require secure, reliable access to data and applications anywhere on the planet in near-real-time to achieve freedom of action across the battlespace. CV will utilize existing infrastructure as well as novel satellite, cloud, and mesh networks to provide the Joint force with a platform that will augment and extend current investments while also driving the evolution, resilience, interoperability, and security of future DoD strategic investments such as the Joint Warfighting Cloud Capability. To this end, CV will advance quantum-resistant capabilities into CV while eliminating the cyber kill chains of adversaries targeting our fabric, eliminating insider threat, and delivering legally-compliant explainable Artificial Intelligence (AI) to achieve sustained advantage	0.001	-	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
for a range of missions including but not limited to: cyber mission force, intelligence operations, information operations, mission-critical priority assurance, and battlespace management.			
Title: Carbon Swift Security (CS2) ***Description:*** CS2 is a FY 2023 new-start JCTD. The Carbon Swift (CS) unmanned aerial vehicle (UAV) does not currently have an assured self-destruction capability and must be recovered after use. Recovery efforts put U.S. personnel at risk in contested environments and, if these efforts fail, the adversary may recover the UAV and reverse engineer its capabilities, eroding U.S. asymmetrical advantage. CS2 will deliver a self-destruction capability for the CS UAV without incurring weight or volume penalties. Vacuum thermal-forming of energetic materials (VTFEM), combined with novel nitrocellulose-based plastics, will enable high-throughput manufacturing of energetic components in bulk to meet future demands.	0.050	-	-
Title: HAYFINS (full name is classified) ***Description:*** HAYFINS is a FY 2023 new-start JCTD. HAYFINS is a ground-based system supporting Space and Autonomy modernization priorities by fusing protection technologies, Artificial Intelligence/Machine Learning (AI/ML), and legacy systems enabling freedom of maneuver in support of Multi-Domain Operations.	0.050	-	-
Title: Joint Radiant Touchstone (J-RTS) ***Description:*** J-RTS is a FY 2023 new-start JCTD. Joint Warfighters require a vulnerability assessment tool designed to enable warfighters with freedom of maneuver and freedom of action. The J-RTS tactical software tool will provide warfighters with freedom of maneuver, function as a key offensive warfare enabler, and provide awareness for disaggregated/disadvantaged users. J-RTS will scale into a Joint Force capability supporting warfighters across all theaters by sharing data as well as planning details once the tool is deployed to theater assets. Further technical details are classified.	0.050	-	-
Title: Low-Altitude Future Vertical Take-off and Landing (VTOL) Long-Range Attack Missile (LRAM) ***Description:*** LRAM is a FY 2023 new-start JCTD. The LRAM JCTD will build upon L3Harris' Red Wolf air-launched unmanned air vehicle (UAV). Specifically, the JCTD will develop a launcher and control interface for vertical takeoff and landing (VTOL) aircraft, kinetic payload, command and control (C2) architecture, and a seeker for autonomous over-the-horizon engagements. Most of the aforementioned will be extensible to other aircraft, to include unmanned aircraft. This weapon system concept will significantly extend the lethal range of VTOL-launched weapons. Moreover, outfitting the VTOL fleet of tactical aircraft (H-1, H-60 series, AH-64, and Joint Future Vertical Lift) with this weaponized UAV will dramatically increase the number of aircraft available for over-the-horizon strike.	0.050	-	-
Title: Rapid Large Area Clearance (RLAC)	0.050	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603648D8Z / *Joint Capability Technology Demonstration (JCTD)*	**Project (Number/Name)** 648 / *Joint Capability Technology Demonstration (JCTD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Description: RLAC is a FY 2023 new-start JCTD. RLAC will rapidly conduct large area clearance of ports and airfields from multiple explosive threats to enable access, maneuver and protection for multi-domain operations to ensure that critical air and sea ports of debarkation and ground lines of communication are tenable to support Joint Fires and Logistics in contested environments. Specifically, RLAC will develop and integrate autonomous small Unmanned Aerial Systems (sUAS) and Unmanned Ground Vehicles (UGV) equipped with automatic target recognition to rapidly survey, detect, identify, and map both surface and buried unexploded explosive ordnance (UXO), and then use lasers to neutralize submunitions at stand-off distances.			
Title: Sea Archer ***Description:*** Sea Archer is a FY 2023 new-start JCTD. Sea Archer will hold key fixed military systems at risk at the onset of conflict. Further details of the project are classified.	0.050	-	-
Title: Shadow Cat ***Description:*** Shadow Cat is a FY 2023 new-start JCTD. This project is part of the Fully-Networked Command, Control, and Communications (FNC3) problem-set. Further details and descriptions of this project are classified.	0.050	-	-
Title: Sky Mark - Next-Generation Ground Positioning System (GPS)-like Celestial Navigation (Sky Mark) ***Description:*** Sky Mark is a FY 2023 new-start JCTD. Sky Mark provides crucial navigation updates to enable GPS-like accuracy in contested environments and enables weapons effects on target in contested environments. By enabling GPS-like accuracy and freedom of navigation in spectrum-contested environments, Sky Mark gives the warfighter tactical and strategic advantage in hypersonic weapon application and ability to defeat the adversaries' defensive capabilities. Sky Mark is Alternative Position, Navigation, and Timing (APNT) instrument or automated celestial navigation providing GPS-like accuracy in a GPS-contested environment.	0.050	-	-
Title: Wide-Area Autonomous Maritime Target Detection and Classification (WAMTDC) ***Description:*** WAMTDC is a FY 2023 new-start JCTD. The WAMTDC JCTD will develop a low-space, -weight and -power (SWAP) maritime sensing and automated processing capability for demonstration aboard an unmanned aircraft. While initially integrated within a Group Two Stalker Unmanned Aerial System (UAS), this capability will be broadly applicable for multiple follow-on UAS and fixed-wing platforms. The sensor package will feature ViDAR (Visual Detection and Ranging) for maritime search and Artificial Intelligence/Machine Learning (AI/ML)-enabled object detection capability, coupled with AI/ML-enabled Electro-Optical/Infrared (EO/IR) object classification capability. The addition of ViDAR will enable the UAS to search an area 300 times larger than a traditional EO/IR sensor alone. The onboard ML-based target detection and classification will be underpinned by a capability for Agile Model Refinement that provides the flexibility to identify new vessel signatures while deployed. This on-board contact	0.050	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603648D8Z / *Joint Capability Technology Demonstration (JCTD)*	**Project (Number/Name)** 648 / *Joint Capability Technology Demonstration (JCTD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
classification will allow very low bandwidth contact reporting. This low-bandwidth contact reporting, when used in concert with an autonomous UAS, will be critical when operating unmanned systems in a contested electromagnetic and cyber environments.			
Accomplishments/Planned Programs Subtotals	85.135	-	-

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

Upon project closeout, a JCTD has three possibilities:

1) Transition as Capability Delivery (Operational Prototype)
-To a new or existing Program of Record
-As a residual leave behind for immediate operational use
-Or both

2) Transition as Capability Enabler (Developmental Prototype)
-Informs further acquisition programs and/or requirements development

3) No Transition
-Requirements change or no longer valid
-Did not meet deliverables as planned

The integrated management team on a JCTD includes an operational manager from a CCMD, a technical manager from service research and engineering labs, and a transition manager from a program executive office. This ensures that transition is planned for throughout the lifecycle of the project, and is a major reason for the nearly 80 percent JCTD transition rate.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603648D8Z / *Joint Capability Technology Demonstration (JCTD)*	Project (Number/Name) 649 / *Multi-Domain Demonstrations (MDD)*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
649: *Multi-Domain Demonstrations (MDD)*	0.000	14.206	-	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project addresses the need for distributed, rapidly-deployed capabilities that can provide persistent sensing to find, fix, and finish time-sensitive threats by integrating prototypes and experiments into a series of Joint, multi-domain operational experiments. Demonstrations focus on evaluating how the Joint Force can leverage modernization technologies, commercial space-based capability, and operationalization of the stratosphere to refine hypersonic and long-range fire kill chains and Long Range Precision Strike to counter time-sensitive targets. Integrating these prototype capabilities with major exercises enhances the operational military utility assessments in real-world, multi-domain venues and satisfies additional service requirements leading to transition of these capabilities. The project integrates coalition participation within the Pacific to enable coalition warfighting techniques across forces.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Multi-Domain Demonstrations (MDD)	14.206	-	-
Description: This project addresses the need for distributed, rapidly-deployed capabilities that can provide persistent sensing to Find, Fix, and Finish time-sensitive threats by integrating prototypes and experiments into a series of Joint, multi-domain operational demonstrations. Demonstrations focus on evaluating how the Joint Force can leverage operational prototypes, commercial space-based capability, and operationalization of the stratosphere to refine hypersonic and long-range fire kill chains to counter time-sensitive targets. Integrating these prototype capabilities with major exercises enhances the military utility assessments in real-world, multi-domain venues and satisfies additional service requirements leading to transition of these capabilities.			
Accomplishments/Planned Programs Subtotals	14.206	-	-

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

Upon project closeout, a JCTD has three possibilities:
1) Transition as Capability Delivery (Operational Prototype)
-To a new or existing Program of Record

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603648D8Z / *Joint Capability Technology Demonstration (JCTD)*	**Project (Number/Name)** 649 / *Multi-Domain Demonstrations (MDD)*

-As a residual leave behind for immediate operational use
-Or both

2) Transition as Capability Enabler (Developmental Prototype)
-Informs further acquisition programs and/or requirements development

3) No Transition
-Requirements change or no longer valid
-Did not meet deliverables as planned

The integrated management team on a JCTD includes an operational manager from a CCMD, a technical manager from service research and engineering labs, and a transition manager from a program executive office. This ensures that transition is planned for throughout the lifecycle of the project, and is a major reason for the nearly 80 percent JCTD transition rate.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603662D8Z / *Networked Communications Capability*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	5.692	2.919	3.125	11.197	-	11.197	5.276	6.356	7.427	8.503	Continuing	Continuing
663: *Network Communications Analysis*	5.692	2.919	3.125	11.197	-	11.197	5.276	6.356	7.427	8.503	Continuing	Continuing

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

This program supports the Departments initiatives to Build a Sustainable and Long-Term Advantage, and Build a Resilient Joint Force and Defense Ecosystem.

Fielded communications infrastructure for the Department of Defense (DoD) faces a variety of challenges including threats from electromagnetic, cyber, and kinetic sources among others. As more of this infrastructure becomes virtualized in cloud and embedded systems, the ability to rapidly protect and reconstitute this infrastructure is increasingly important, particularly in situations where both commercial and DoD infrastructures are used. The Network Communications Capability Program (NCCP) strives to enable such resilience with a strategy that leverages and develops rapidly reconfigurable and deployable solutions from the physical, to network, to applications layers of a communications stack. Such solutions will leverage software and hardware that are agile in their ability to be reconfigured and managed in contested environments both at the tactical edge and in the enterprise strategic contexts.

Most Department of Defense (DoD) missions are critically reliant on communications infrastructure, particularly in the context of command and control systems. The NCCP program strives to protect such critical missions at all layers of communications system functionality using a cost effective and automated approach for terrestrial, maritime, air, and space missions. Since most components of a communications system are increasingly being deployed using software, automated strategies of enabling physical layer, network layer, application layer interoperability, and rapid re-configurability are critical. Methods that dynamically allow multiple types of waveforms to be used in concert with multiple networking protocols, on hardware platforms that can handle a diverse set of protocols and capabilities are important. Because most of these capabilities will be delivered as communications services, the ability to analyze and rapidly reconstitute these services to manage the mission and inherent system complexities are critical, particularly when such missions are developed in large scale. Such complex system integration requires modern software and hardware practices and automated system repair capabilities to enable affordable, resilient operation in contested spectrum challenged DoD environments.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603662D8Z / *Networked Communications Capability*

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	2.975	3.168	3.253	-	3.253
Current President's Budget	2.919	3.125	11.197	-	11.197
Total Adjustments	-0.056	-0.043	7.944	-	7.944
• Congressional General Reductions	-	-0.043			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	-0.056	-	7.944	-	7.944

Change Summary Explanation

FY 2024 increase of $7.944 is comprised of a realignment of $0.071 million to support the Historically Black Colleges and Universities/Minority Serving Institutions program, which is a priority of the Under Secretary of Defense for Research and Engineering (USD(R&E)), and $0.003 million to support departmental priorities and increases of $8.000 million for select Networked Communications research, technologies, Integrated Broadcast System Demonstration, and innovation opportunities and $0.018 for an economic assumption adjustment..

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603662D8Z / *Networked Communications Capability*	Project (Number/Name) 663 / *Network Communications Analysis*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
663: *Network Communications Analysis*	5.692	2.919	3.125	11.197	-	11.197	5.276	6.356	7.427	8.503	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Threats to communications systems come from a combination of sources today from electromagnetic, cyber, and kinetic to name a few. Because DoD communication systems are highly distributed, the ability to rapidly model, measure, and manage these threats in the context of missions being conducted is critical. In order to accomplish this approach, a combination of new methods must be developed, including automated and flexible methods in continuous integration and delivery of communications software, virtualized and interoperable communications layers, which can rapidly shift between the DoD and commercial systems, detailed ability to model the interactions between these components, and flexible hardware solutions that can absorb a wide variety of communications protocols and techniques. Additionally, machine learning methods that enable rapid assessment and reconfiguration of communications infrastructure are of interest.

The Network Communications Capability Program (NCCP) will endeavor to accomplish the objectives for networking and communication through three areas of research. The first area is methods for interoperable composition of communications software stacks. Such methods will enable standard components from physical, networking, and applications layers to be dynamically composed, tested, and deployed to a wide variety of communications platforms across terrestrial, maritime, airborne, and space communications and networking applications. These components will be able to be modelled and composed using standard techniques that enable verification and validation of performance as well as resilience and affordable production through automation and machine learning.

The second area is development, augmentation, and leveraging of hardware communications platforms that allow a wide variety of networking and communications protocols. These platforms should be able to accommodate many types of missions and applications, information services for software defined networking and control plane management, and physical layer implementations with broadband high speed flexible physical layers that support wireless and optical solutions, both the DoD and commercial. Additionally, these hardware platforms should be able to accommodate measurement and assessment of the status of communication functions and mission performance.

The third area of the program enables modeling of communications systems and platforms that incorporate the ability to assess real time data from the communications system and compare it with regions of system performance with respect to latency and security of pre-determined system configurations. This area will make use of methods in model based systems engineering, as well as methods in verification and validation, and employ such techniques used in complex systems management including online models of systems performance.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Networked Communications Capability Program (NCCP)	2.919	3.125	11.197

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603662D8Z / *Networked Communications Capability*	**Project (Number/Name)** 663 / *Network Communications Analysis*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Description: NCCP is developing its research thrusts in three areas of interoperable automated software, flexible resilient, and virtualizable hardware, and modeling that allows real time system assessment and management. The program is collaborating with programs in the DoD services that employ these methods across a wide variety of systems, from tactical to strategic. Methods that enable technology developments to be deployed as information services which are resilient to threats from the electromagnetic spectrum as well as cyber, and kinetic sources among others will be investigated. ***FY 2023 Plans:*** Software Development: - Incorporate/demonstrate remaining planned and/or additional software elements as information services. - Show interaction between hardware and new software elements in the cloud environment. Hardware Development: - Pursue improved performance/resilience using commercial radio hardware implementations in preparation for FY 2023 Army field test. Modeling: - Utilize modeling results to support/target FY 2023 software and hardware improvements. ***FY 2024 Plans:*** Software Development: - Incorporate networking features at both enterprise and tactical edge layer Hardware Development: - Integrate software and firmware in high speed spatially diverse embedded device Modeling: - Model interactions between core network and edge networking interface ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2024 increase supports select Networked Communications research, technologies, Integrated Broadcast System Demonstration, and innovation opportunities.			
Accomplishments/Planned Programs Subtotals	2.919	3.125	11.197

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603662D8Z / *Networked Communications Capability*	**Project (Number/Name)** 663 / *Network Communications Analysis*

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

NCCP is working with the Navy, Army, and Air Force to integrate its components into existing communications infrastructure from tactical to strategic contexts. Flexible, reconfigurable, resilient communications infrastructure is critical to addressing existing threats to DoD communications systems while reducing cost and modernizing DoD's capability.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603680D8Z / *Defense Wide Manufacturing Science and Technology Program*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	-	251.105	747.442	252.965	-	252.965	163.036	156.663	161.328	157.451	Continuing	Continuing
680: *Manufacturing Science and Technology Program*	-	100.154	195.165	135.136	-	135.136	34.590	35.338	36.077	36.863	Continuing	Continuing
350: *Manufacturing Innovation Institutes*	-	146.958	542.098	112.728	-	112.728	123.348	116.224	120.044	115.267	Continuing	Continuing
351: *Manufacturing Education and Workforce Development*	-	3.993	10.179	5.101	-	5.101	5.098	5.101	5.207	5.321	Continuing	Continuing

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

This program supports the Department's initiatives to Build Sustainable and Long-Term Advantage, and Build a Resilient Joint Force Defense Ecosystem.

The Defense-wide Manufacturing Science and Technology (DMS&T) program is the joint, defense-wide component of the Department of Defense (DoD) Manufacturing Technology (ManTech) Program directed in Title 10 U.S.C. Section 2521. DMS&T addresses joint, cross-cutting, and high-risk/high payoff technologies; manufacturing challenges within the DoD critical technology areas; and many of the recommendations in the Executive Order Report “Assessing and Strengthening the Manufacturing and Defense Industrial Base and Supply Chain Resiliency of the United States” September 2018.

The DMS&T program objective is to increase the speed at which innovation, inventions, and scientific discoveries are turned into equipment and capabilities through advances in manufacturing technologies and processes. The DMS&T program created and is sustaining a manufacturing innovation ecosystem via activities within three Program Element (PE) Project Codes: 680 - Manufacturing Science and Technology Program (MSTP), 350 - DoD Manufacturing Innovation Institutes (MIIs), and 351 - Manufacturing Education and Workforce Development (M-EWD).

Project Code 680, Manufacturing Science and Technology Program (MSTP):
MSTP projects focus on cross-cutting defense manufacturing advancements and stimulates early development of manufacturing processes and enterprise business practices.

Project Code 350, DoD MIIs:
This project supports nine DoD-led MIIs within the national Manufacturing USA network, in accordance with mission requirements. MII technology domain focus areas are: (1) additive manufacturing; (2) digital manufacturing, design, and manufacturing cybersecurity; (3) lightweight materials; (4) integrated photonics; (5) flexible hybrid electronics; (6) smart fibers and textiles; (7) advanced tissue biofabrication; (8) advanced robotics for manufacturing; and (9) bioindustrial manufacturing. Each MII

is a public/private partnership with members from industry, academia, and federal and state governments that together mature manufacturing processes, build out a supporting ecosystem, and provide manufacturing education and workforce development. The consortia match DoD funding at a one to one ratio (or greater). They include small and medium as well as large manufacturers and state-of-the-art pilot facilities.

Project Code 351, Manufacturing Education and Workforce Development (M-EWD):
M-EWD provides strategic leadership of advanced manufacturing talent development within the Defense Industrial Base (DIB) with three mission objectives: (1) invest in strategic education and workforce development capabilities, (2) expand the talent acquisition pool to promote diversity equity and inclusion (DEI), (3) modernize manufacturing EWD by driving action within DIB-critical regional economies with a focus on Career & Technical Education (CTE).

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	255.244	256.142	248.589	-	248.589
Current President's Budget	251.105	747.442	252.965	-	252.965
Total Adjustments	-4.139	491.300	4.376	-	4.376
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	491.300			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-4.100	-			
• Program Adjustments	-0.039	-	4.376	-	4.376

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2022	FY 2023
Project: 680: *Manufacturing Science and Technology Program*		
Congressional Add: *Advanced Composites for Hypersonics Aided by Digital Engineering (MACH-ADE)*	0.000	5.000
Congressional Add: *Automated Manufacturing Technologies for Very High Temperature Composites*	0.000	5.000
Congressional Add: *Custom Electrolytes for Military Lithium-Ion Batteries*	0.000	10.000
Congressional Add: *Engineered Resilient Systems*	0.000	10.000
Congressional Add: *Microelectromechanical Systems (MEMS) Mirror-Based LiDAR Sensor*	0.000	3.000
Congressional Add: *Advanced Materials and Materials Manufacturing Processes*	6.000	6.000
Congressional Add: *High Temperature Composite Material Manufacturing*	3.000	10.000
Congressional Add: *Large Scale Manufacturing (formerly High Performance Computing (HPC) Enabled Advanced Manufacturing)*	25.000	25.000

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603680D8Z *I Defense Wide Manufacturing Science and Technology Program*

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2022	FY 2023
Congressional Add: *Automation Engineering Technology Program*	1.981	0.000
Congressional Add: *Difficult to Copy Manufacturing*	7.000	0.000
Congressional Add: *Carbon Composites for Hypersonics*	3.000	0.000
Congressional Add: *Virtual Reality-Enabled Smart Installation Experimentation*	5.000	0.000
Congressional Add: *Natural Gas Pipeline Pilot Study*	5.000	0.000
Congressional Add Subtotals for Project: 680	55.981	74.000
Project: 350: *Manufacturing Innovation Institutes*		
Congressional Add: *Direct Ink Writing of Advanced Thermoset Materials*	0.000	5.000
Congressional Add: *Additive Manufacturing Sustainability*	0.000	10.000
Congressional Add: *Flexible Hybrid Electronics*	0.000	6.000
Congressional Add: *Scalable Comprehensive Workforce Readiness Initiatives in Bioindustrial Manufacturing*	0.000	5.000
Congressional Add: *Bioindustrial Manufacturing Institutes*	0.000	300.000
Congressional Add: *Bioindustrial Manufacturing Matrix Development*	0.000	7.000
Congressional Add: *Multifunctional Bioindustrial Database Capability*	0.000	9.600
Congressional Add: *Operational Technology (OT) and Internet of Things (IoT) Asset Identification and Management*	0.000	5.000
Congressional Add: *Cybersecurity Maturity Model Certification (CMMC) Compliance for Cybersecurity in Manufacturing*	0.000	6.000
Congressional Add: *Supply Chain Adaptation of Artificial Intelligence (AI) and Robotics*	0.000	12.500
Congressional Add: *Difficult to Copy Manufacturing*	0.000	7.000
Congressional Add: *Next Generation Textiles (formerly "Domestic Textile Manufacturing")*	7.500	10.000
Congressional Add: *Data Analytics and Visualization System*	12.000	12.000
Congressional Add: *Hypersonics Enabling Manufacturing*	10.000	12.000
Congressional Add: *Additive Manufacturing Training (formerly El Paso Makes Contract Support for El Paso Manufacturers)*	0.964	5.200
Congressional Add: *Advanced Robotics and Automation Training*	2.000	0.000
Congressional Add: *Cybersecurity Manufacturing Innovation Park*	1.000	0.000
Congressional Add: *Certification Based Workforce Training Programs for Manufacturing (Jobs of the Future)*	6.200	0.000
Congressional Add: *Program Increase*	9.000	0.000

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603680D8Z *I Defense Wide Manufacturing Science and Technology Program*

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2022	FY 2023
Congressional Add: *Advanced Manufacturing*	2.000	0.000
Congressional Add: *Silicon Based Lasers*	10.000	0.000
Congressional Add: *Hypersonics and Thermal Management*	5.000	0.000
Congressional Add Subtotals for Project: 350	65.664	412.300
Project: 351: *Manufacturing Education and Workforce Development*		
Congressional Add: *Manufacturing Industrial 4.0 Training Program*	0.000	5.000
Congressional Add Subtotals for Project: 351	0.000	5.000
Congressional Add Totals for all Projects	121.645	491.300

Change Summary Explanation

The FY 2024 increase of $4.376 million is comprised of a realignment of $5.410 million to support the Historically Black Colleges and Universities/Minority Serving Institutions program, which is a priority of the Under Secretary of Defense for Research and Engineering (USD(R&E)), $3.220 million to support departmental priorities, and increases of $9.750 million to explore alternatives to traditional casting and forging manufacturing processes, $1.900 million to expand additive manufacturing for logistics, and an economic assumption increase of $1.356 million.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603680D8Z / *Defense Wide Manufacturing Science and Technology Program*	Project (Number/Name) 680 / *Manufacturing Science and Technology Program*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
680: *Manufacturing Science and Technology Program*	-	100.154	195.165	135.136	-	135.136	34.590	35.338	36.077	36.863	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Office of the Secretary Defense (OSD) Manufacturing Science and Technology Program (MSTP) concentrates on cross-cutting defense manufacturing needs that are beyond the ability of a single service to address. The MSTP invests in broad technology initiatives within Advanced Electronics and Optics, Advanced Materials and Composites, Advanced and Emerging Manufacturing Processes, and Advanced Energetics Manufacturing.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Advanced Electronics and Optics	11.750	11.341	10.650
Description: Advanced Electronics and Optics is a series of efforts addressing advanced manufacturing technologies for a wide range of applications such as sensors, radars, power generation, switches, and optics for defense applications. Focal points are productivity and efficiency gains in the defense manufacturing base to accelerate delivery of technical capabilities to impact current warfighting operations, and manufacturing technologies to reduce the cost, acquisition time and risk to our major defense acquisition programs. Future efforts will focus on advances in fuel cells, lasers, enhanced acuity micro-displays, and transparent ceramics for opto-mechanical and armor applications. ***FY 2023 Plans:*** Fund Year 3 of 4 for Improved Photovoltaic Power for Space Applications, Year 2 of 3 for High Power Magnetron and Advanced High Yield Infrared Focal Plane Arrays, and Year 2 of 5 for Transmit/Receive Integrated System On a Chip (TRISoC) project. Initiate foundational assessment of Defense Advanced Battery Supply Chain. Utilize the annual project call to select and initiate projects that support the National Defense Strategy and DoD critical technology areas. ***FY 2024 Plans:*** Fund Year 4 of 4 for Improved Photovoltaic Power for Space Applications, Year 3 of 3 for High Power Magnetron and Advanced High Yield Infrared Focal Plane Arrays, and Year 3 of 5 for TRISoC project. Utilize the annual project call to select and initiate projects that support the National Defense Strategy and DoD critical technology areas. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The decrease of $0.691 million between FY 2023 and FY 2024 reflects a minor re-phasing of Advanced Electronics and Optics projects.			
Title: Advanced Materials and Composites	15.755	99.112	114.227

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603680D8Z / *Defense Wide Manufacturing Science and Technology Program*	**Project (Number/Name)** 680 / *Manufacturing Science and Technology Program*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Description: Advanced Materials and Composites is a series of efforts addressing advanced manufacturing technologies for a wide range of materials such as composites, metals, ceramics, nanomaterials, and metamaterials. Through productivity and efficiency gains, these manufacturing technologies will accelerate delivery of technical capabilities to impact current warfighting operations, while reducing the cost, acquisition time and risk of our major defense acquisition programs. Advanced materials manufacturing technologies undergoing development include materials for ballistic survivability and ballistic protection, survivability and rapid fabrication of structural components. ***FY 2023 Plans:*** Fund final year of the Manufacturing of Carbon-Carbon Composites for Hypersonic Applications (MOC3HA) initiative, Year 2 of 5 for Self-Damping Structural Materials, and Year 3 of 4 for Advanced Aeroshell Technology. Initiate non-recurring engineering (NRE) Research Development Test & Evaluation (RDT&E) in conjunction with existing propulsion Industrial Base, DoD Additive Manufacturing Working Groups, and Manufacturing Innovation Institutes to extrapolate hypersonics lessons-learned and scale to relevant hypersonic cruise missile (HCM) (e.g., Scramjet) propulsion production. Coupon production, Design of Experiments, and Integration activities will prove out design parameters and build techniques for reduced-complexity and improved performance Scramjet combustor componentry. This effort will set the stage for Year 2 scramjet RDT&E in FY 2024 to install and provide for the maintenance of large-format printers to meet capacity requirements. Utilize the annual project call to select and initiate projects that support the National Defense Strategy and DoD critical technology areas. ***FY 2024 Plans:*** Fund Year 3 of 5 for Self-Damping Structural Materials and Year 4 of 4 for Advanced Aeroshell Technology. Continue NRE RDT&E with existing propulsion Industrial Base, DoD Additive Manufacturing Working Groups, and MIIs to extrapolate hypersonics lessons-learned and scale to relevant HCM propulsion production. Extend coupon production, design of experiments, and integration activities for promising design parameters and build techniques for less complex but improved performance Scramjet combustor componentry. Fund Year 2 scramjet RDT&E to install and provide for the maintenance of large-format printers to meet capacity requirements. Utilize the annual project call to select and initiate projects that support the National Defense Strategy and DoD critical technology areas. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The increase of $15.115 million completes initial assessment and strategy development for the hypersonics industrial base. Funding will also provide for more manufacturing design and build projects for HCM and scramjet propulsion component production in conjunction with projects in Program Elements (PE) 0605518N (Conventional Prompt Strike (Navy)), 0607210D8Z (Industrial Base Analysis and Sustainment Support), 0603680F (Manufacturing Technology Program (Air Force)), and			

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Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603680D8Z / *Defense Wide Manufacturing Science and Technology Program*	**Project (Number/Name)** 680 / *Manufacturing Science and Technology Program*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
0902199D8Z (Title III/Defense Production Act Purchases) to reduce the cost of hypersonics weapons materials and production in ongoing development programs.			
Title: Advanced and Emerging Manufacturing Processes ***Description:*** Advanced and Emerging Manufacturing addresses advanced manufacturing technologies and business practices for defense applications. Key focus areas include direct digital (or additive) manufacturing, advanced manufacturing enterprise, machining, robotics, assembly, and joining. Projects selected will accelerate delivery of technical capabilities to impact current warfighting operations while reducing cost, acquisition time, and risk of major defense acquisition programs. ***FY 2023 Plans:*** Fund final year of Deformable Mirrors for High Energy Lasers and Year 2 of 5 for Direct-Write Manufacturing for Conformal Antennas. Utilize the annual project call to select and initiate projects that support the National Defense Strategy and DoD critical technology areas. ***FY 2024 Plans:*** Fund Year 3 of 5 for Direct-Write Manufacturing for Conformal Antennas. Utilize the annual project call to select and initiate projects that support the National Defense Strategy and DoD critical technology areas. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The decrease of $0.314 million between FY 2023 and FY 2024 reflects a minor re-phasing of Advanced and Emerging Manufacturing Processes projects.	9.550	6.481	6.167
Title: Advanced Energetics Manufacturing ***Description:*** Advanced Energetics Manufacturing develops improved manufacturing capabilities for safer, low cost, high quality production of existing and newly developed ingredients and composites used in energetic materials production. Develops techniques such as additive manufacturing, microfluidics, continuous processing, resonant acoustic mixing, robotics, etc. for production of critical energetics and supporting ingredients to ensure Department access to these materials and enable development of new, highly advanced energetic systems for improved range and performance. ***FY 2023 Plans:*** Fund final year of DBX-1 project. Utilize the annual project call to select and initiate projects that support the National Defense Strategy and DoD critical technology areas. ***FY 2024 Plans:***	7.118	4.231	4.092

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Identify advanced manufacturing RDT&E solutions for energetics community manufacturing challenges informed by DBX-1 project outcomes. Utilize the annual project call to select and initiate projects that support the National Defense Strategy and DoD critical technology areas. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The decrease of $0.139 million between FY 2023 and FY 2024 reflects a minor re-phasing of Advanced Energetics Manufacturing projects.			
Accomplishments/Planned Programs Subtotals	44.173	121.165	135.136

	FY 2022	FY 2023
Congressional Add: Advanced Composites for Hypersonics Aided by Digital Engineering (MACH-ADE) ***FY 2022 Accomplishments:*** N/A ***FY 2023 Plans:*** Execution plan is being formulated in tandem with other hypersonic investments.	0.000	5.000
Congressional Add: Automated Manufacturing Technologies for Very High Temperature Composites ***FY 2022 Accomplishments:*** N/A ***FY 2023 Plans:*** Execution plan is being formulated in tandem with other hypersonic investments.	0.000	5.000
Congressional Add: Custom Electrolytes for Military Lithium-Ion Batteries ***FY 2022 Accomplishments:*** N/A ***FY 2023 Plans:*** Support the development of domestic manufacturing for Lithium-Ion battery electrolytes to remove reliance on foreign sources.	0.000	10.000
Congressional Add: Engineered Resilient Systems ***FY 2022 Accomplishments:*** N/A ***FY 2023 Plans:*** Execution strategy is being formulated.	0.000	10.000
Congressional Add: Microelectromechanical Systems (MEMS) Mirror-Based LiDAR Sensor ***FY 2022 Accomplishments:*** N/A ***FY 2023 Plans:*** Execution plan is being formulated with support from Army Research Lab.	0.000	3.000
Congressional Add: Advanced Materials and Materials Manufacturing Processes	6.000	6.000

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	FY 2022	FY 2023
FY 2022 Accomplishments: Cold spray efforts awarded with industry partners and the LIFT Manufacturing Innovation Institute in late FY 2022. Execution has recently started. ***FY 2023 Plans:*** Continue efforts initiated in FY 2022 and work through development and implementation of Cold Spray technologies within the Department of Defense.		
Congressional Add: High Temperature Composite Material Manufacturing ***FY 2022 Accomplishments:*** Initiated development of thermal processing to yield necessary mechanical properties at operating temperatures. Additional work to provide C-C and C-SiC feedstock materials to specific manufacturing trials. ***FY 2023 Plans:*** Execution plan is being formulated in tandem with other hypersonic investments.	3.000	10.000
Congressional Add: Large Scale Manufacturing (formerly High Performance Computing (HPC) Enabled Advanced Manufacturing) ***FY 2022 Accomplishments:*** Funding was provided to the University of Maine to couple high performance computational modeling and simulation with in-situ sensing to enhance understanding of factors that impact quality throughout the Large-Scale Additive Manufacturing print lifecycle. Focus is on pre-design modeling, materials and their expected effects, anticipated output performance and form, print processes and execution variables, along with the collection of destructive and non-destructive testing results of printed outputs through the use of a data storage framework for analysis and documentation of prototype development. Applied cybersecurity architectures that mimic an operational environment. ***FY 2023 Plans:*** Execution strategy is being formulated, but initial plan is to continue efforts already underway with previous year funding. Effort being performed with support from Army ERDC and University of Maine.	25.000	25.000
Congressional Add: Automation Engineering Technology Program ***FY 2022 Accomplishments:*** Funding was provided to the Kansas City Kansas Community College (KCKCC) for the purchase of state-of-the-art equipment for its new Automation Engineering Technology Program. This equipment will allow KCKCC students/graduates to train on real-life automation equipment that is currently used in the industry. ***FY 2023 Plans:*** N/A (Not funded in FY 2023)	1.981	0.000
Congressional Add: Difficult to Copy Manufacturing ***FY 2022 Accomplishments:*** This add funded key projects, including: (1) National Defense Authorization Act (NDAA) Section 354 effort to Assess the Digital Optimization of Marine Corps Logistics Base (MCLB) Albany &	7.000	0.000

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	FY 2022	FY 2023
Watervliet Arsenal (WVA) manufacturing processes; (2) developed a Joint Additive Manufacturing Materials and Process (JAMMP) Workbench as a top additive priority; (3) initiated three stages of a Remote Automated Animal Protein Production processes for BioFabUSA including Prototype Demonstration, Market Analysis for Reagent Characterization, and System Design; and (4) provided seed funding for a multi-MII Phase 1 Other Transaction-Prototype project to bring multiple disciplines to specific manufacturing challenges. ***FY 2023 Plans:*** Project moved to P350 for FY 2023 execution. Strategy is being formulated.		
Congressional Add: Carbon Composites for Hypersonics ***FY 2022 Accomplishments:*** Supported automation of manufacturing of 2D and 3D Carbon-Carbon composites and accelerated processing of Carbon-Carbon materials. ***FY 2023 Plans:*** N/A (Not funded in FY 2023)	3.000	0.000
Congressional Add: Virtual Reality-Enabled Smart Installation Experimentation ***FY 2022 Accomplishments:*** Funding was provided to the University of Tulsa to conduct R&D to advance resilience by developing a digital modeling framework including virtual reality that focuses on cyber threats, incidence response, and smart installation operation efficiency. The objective is to gain an increased understanding of security threats, their mitigation, and the potential for propagation throughout the enterprise. ***FY 2023 Plans:*** N/A (Not funded in FY 2023)	5.000	0.000
Congressional Add: Natural Gas Pipeline Pilot Study ***FY 2022 Accomplishments:*** Funding was provided to the University of Tulsa to create a pilot natural gas infrastructure facility that can be used to explore physical and operational aspects of natural gas gathering, transmission, and distribution systems. The project will collect and examine the operational technology data generated by the process control system, study the effects of cyber-attacks (by exposing the control networks to the internet in a manner that eliminates the risk of damage to the production facility), and support development of cost-based analysis tools to determine appropriate network defense mechanisms. ***FY 2023 Plans:*** N/A (Not funded in FY 2023)	5.000	0.000
Congressional Adds Subtotals	55.981	74.000

C. Other Program Funding Summary ($ in Millions)

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
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C. Other Program Funding Summary ($ in Millions)

Remarks

N/A

D. Acquisition Strategy

ManTech projects are awarded competitively through the DoD Service Laboratories. Approximately 1/3 of the total active topics are awarded to new initiatives annually.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense											Date: March 2023	
Appropriation/Budget Activity 0400 / 3					R-1 Program Element (Number/Name) PE 0603680D8Z / *Defense Wide Manufacturing Science and Technology Program*				Project (Number/Name) 350 / *Manufacturing Innovation Institutes*			
COST ($ in Millions)	**Prior Years**	**FY 2022**	**FY 2023**	**FY 2024 Base**	**FY 2024 OCO**	**FY 2024 Total**	**FY 2025**	**FY 2026**	**FY 2027**	**FY 2028**	**Cost To Complete**	**Total Cost**
350: *Manufacturing Innovation Institutes*	-	146.958	542.098	112.728	-	112.728	123.348	116.224	120.044	115.267	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Department of Defense (DoD) supports nine Manufacturing Innovation Institutes (MIIs), public/private partnerships that address both commercial and defense manufacturing needs within specific, defense-relevant technology areas. MIIs receive active participation and support from the military departments and defense agencies and their members. The MIIs' flexible business models and strong focus on enabling highly collaborative research and development (R&D) are catalyzing important new organizational relationships across government, industry, and academia. MIIs bring together both traditional defense and non-traditional sectors to accelerate key innovation cycles, expand U.S. industrial capability, and assist in creating resilient supply chains that will support innovative defense products.

DoD's nine MIIs are: (1) America Makes (for additive manufacturing); (2) MxD (Manufacturing times Digital, for digital manufacturing, design and cybersecurity); (3) LIFT (Lightweight Innovations For Tomorrow, for innovative processes to lightweight materials); (4) AIM Photonics (American Institute for Manufacturing Integrated Photonics, for photonic device manufacturing and packaging); (5) NextFlex (for flexible hybrid electronics manufacturing); (6) AFFOA (Advanced Functional Fabrics of America, for smart fibers and textiles); (7) BioFabUSA (for regenerative tissue manufacturing); (8) ARM (Advanced Robotics Manufacturing, for smart collaborative robotics for manufacturing); and (9) BioMADE (for biomanufacturing of non-medical materials and products).

MII funding is focused on:
• Conducting pre-competitive applied research and development projects to reduce the cost, time, and technical uncertainty related to new manufacturing technologies and to improve existing technologies, processes, and products.
• Developing and implementing education, training, and workforce recruitment courses, materials, and programs.
• Developing innovative methodologies and practices for supply chain integration and introduction of new technologies into supply chains.
• Engaging with small and mid-sized manufacturers, including women and minority-owned manufacturing enterprises, and larger-sized manufacturing firms.

Each MII has a different model, with the following core tenets:
• Each MII is a public/private partnership with representatives from industry, academia, state and local governments, and the DoD that co-invest in world-leading technologies and capabilities.
• Each MII provides facilities to allow collaborative, precompetitive development of promising technologies and to promote the creation of stable and sustainable innovation ecosystems for advanced manufacturing.
• The partnership forming the MII must commit non-federal resources that equal or exceed the federal commitment.
• Each institute participates in the national Manufacturing USA network.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603680D8Z / *Defense Wide Manufacturing Science and Technology Program*	**Project (Number/Name)** 350 / *Manufacturing Innovation Institutes*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: America Makes (Additive Manufacturing)	5.114	26.616	20.004
Description: America Makes' mission is to accelerate the adoption of additive manufacturing (AM) in the United States industrial base. Additive manufacturing (i.e., 3D printing) is a process of joining materials to make objects from 3D model data, usually layer upon layer, as opposed to subtractive manufacturing methodologies such as traditional machining. Additive manufacturing benefits the DoD by enabling lifecycle cost savings and enhanced capabilities including: distributing supply chains to enable the right part in the right place at the right time; improving mission readiness by producing work aids for DoD depots; replacing long-lead time and out of production spares, and enhancing lethality through production of lighter weight and higher performing parts than could otherwise be achieved with traditional manufacturing. ***FY 2023 Plans:*** America Makes will continue to execute its mission by strategically advancing the development of AM design, material, process, and value chain technology, will secure human capital to deploy additive manufacturing, and will expand and support the AM ecosystem through standards development and targeted networking opportunities. Key new initiatives include a project for sustainable AM to mitigate climate change by improving engine thermal management, eliminating toxic, long-lead, and expensive materials like Beryllium in the production of optical components, or exploring novel application of AM technologies; Diversity, Equity, and Inclusion (DEI) in the AM workforce; and orientation of institute activity to increase support to Space, Power, and Energy sector stakeholder needs. Advance AM for castings by creating a castings roadmap and executing a certification-focused direct to metal AM for casting replacement project, studying effects of hybrid manufacturing adoption on casting capacity and cost, and demonstrating AM as an alternative to casting select parts. Explore AM for forging applications by creating a forgings roadmap, collecting data for AM state of practice, and maturing AM processes as an alternative to forging select parts. ***FY 2024 Plans:*** Expand application of additive manufacturing methods and standards to address critical defense advanced manufacturing requirements and expand the additive manufacturing workforce. Leverage lessons learned from the FY 2023 castings and forgings efforts. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The decrease of $6.612 million between FY 2023 and FY 2024 is the result of a one-time increase in FY 2023 for castings and forgings research not continued in FY 2024.			
Title: MxD – Manufacturing times Digital (Digital Manufacturing, Design and Cybersecurity)	5.938	10.783	8.623
Description: MxD focuses on implementation of the Digital Thread; the unencumbered flow of data across the lifecycle of a manufactured product encompassing data from design, production, supply, sourcing, inventory, assembly, quality, maintenance, and sustainment. It includes analysis of data to reduce the time and cost of bringing new products to market. MxD eliminates			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
barriers between design, manufacturing, and sustainment by using both product data and process data in a way that is seamless and transparent. ***FY 2023 Plans:*** MxD will conduct proposal calls approximately every other month resulting in five new projects with a planned value of $10.000 million including cost share. MxD will conduct proposal workshops for each call and award projects in the technology thrust areas identified in the 2021-2023 Strategic Investment Plan. MxD plans to announce the commercialization of new digital manufacturing and design technologies and industry capabilities. MxD will significantly scale up commercialization, skill improvement, and workforce development efforts and expand DEI via research projects and relationships with other government agencies. ***FY 2024 Plans:*** Continue projects to support the adoption and application of advanced digital and cybersecurity manufacturing solutions across the defense industrial base and grow the digital manufacturing workforce. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The decrease of $2.160 million between FY 2023 and FY 2024 reflects the re-phasing of manufacturing digital thread and cyber protection projects at the MxD MII.			
Title: LIFT – Lightweight Innovations for Tomorrow (Lightweight Innovations – materials and processes) ***Description:*** Advanced lightweight material can retain properties comparable to heavier, traditional materials, and can enable weight reduction in a variety of components and products with significant energy savings and increased payloads. Scale-up research across multiple areas to accelerate market expansion by applying an integrated materials and manufacturing approach, will address a lack of design guides and certifications as well as affordability and scale-up challenges. The goal is to catalyze the development of an advanced lightweight material U.S. supplier base and to enable DoD to realize greater speed and agility of manned, unmanned, and Warfighter systems as well as benefits for commercial applications. ***FY 2023 Plans:*** LIFT will continue its focus on advanced R&D/insertion of materials and manufacturing technologies, growing capability within the structural manufacturing ecosystem, and education and workforce development. Efforts will support defense, commercial, and dual-use, priorities. Specific technology activities include hypersonic materials/manufacturing; lightweighting of defense and commercial systems/ components; advanced materials development; advanced fabrication and manufacturing methods such as cold spray and large-scale, wire-assisted additive manufacturing; and integrated computational materials engineering. LIFT will maintain and operate its Learning/Talent Development Lab, which includes benchtop equipment for training in key manufacturing	6.242	11.139	8.942

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
competencies. LIFT will continue workforce development projects, expanding Diversity, Equity and Inclusion (DEI) while targeting K-12, university students, current workforce, and separating military personnel. ***FY 2024 Plans:*** Continue advanced materials and materials manufacturing R&D and materials workforce development. Support defense, commercial, and dual-use technology development via specific activities including hypersonic materials manufacturing, lightweighting of defense and commercial systems/components, advanced materials development, and advanced fabrication and manufacturing methods. Sustain LIFT's Learning/Talent Development Lab, expand DEI, and continue workforce development projects while targeting K-12, university students, current workforce, and separating military personnel. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The decrease of $2.197 million between FY 2023 and FY 2024 reflects the re-phasing of innovative materials and Integrated Computational Materials Engineering (ICME) research projects at the LIFT MII.			
Title: AIM – American Institute for Manufacturing Photonics (Integrated Photonics Device Manufacturing and Packaging)	11.472	20.818	17.858
Description: Integrated photonics manufacturing advances the promise of unprecedented interconnection between electronics and photonics that will deliver world-class performance in speed, density, and power consumption. Photonics provides differentiating benefits for defense applications such as high-speed signal processing; electronic warfare; position, navigation, and timing; information transport and computation; sensing; imaging; and targeting. AIM Photonics has established an end-to-end U.S. 'ecosystem' for advancing domestic integrated photonics manufacturing, including access to a responsive integrated photonics fabrication foundry. AIM Photonics provides the world's only 300 mm silicon photonics multi-project wafer service, state-of-the-art photonics-electronics integrated design tools, and a highly advanced packaging, assembly, and testing user facility. ***FY 2023 Plans:*** AIM will continue to offer its core capabilities including silicon photonics multi-project wafer runs. These runs are enabling AIM Photonics to grow the U.S.-based integrated photonic circuit ecosystem and simultaneously offer a low risk opportunity to train new designers (which speaks to educating new talent). AIM will also continue to grow its packaging capabilities in the Rochester, NY-based test, assembly, and packaging facility and will offer services that include attaching optical fibers to their integrated photonic circuits. AIM will continue to improve integrated photonic circuit components and the process design kit that enables a diversified set of would-be users to rapidly adopt new components offering improved and/or different performance. This work will also target providing a packaging design kit to enable designers to develop prototype systems within this MII and reduce overall prototyping costs while cutting development times. AIM will expand Diversity, Equity and Inclusion (DEI) in its manufacturing workforce development efforts. An Integrated Photonic Circuits climate change mitigation project will improve silicon photonics packaging, develop and demonstrate efficient digital transceivers for communications applications to pave the way to reduce			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603680D8Z / *Defense Wide Manufacturing Science and Technology Program*	**Project (Number/Name)** 350 / *Manufacturing Innovation Institutes*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
input-output power consumption in data centers by approximately 30%, and develop and demonstrate highly efficient optical switches for data communications applications to reduce power consumption in data centers by as much as 50% by reducing system idle time and mitigating system architecture inefficiencies. ***FY 2024 Plans:*** Continue to advance integrated photonics manufacturing R&D, microelectronics packaging solutions, and application design opportunities for the integrated photonics workforce. AIM will offer core capabilities including silicon photonics multi-project wafer runs, train new designers while seeking greater DEI, leverage the New York TAP facility, and extend photonics based climate change projects to strengthen the integrated photonic circuit ecosystem and workforce. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The decrease of $2.960 million between FY 2023 and FY 2024 reflects the re-phasing of test, assembly, and packaging activities and silicon photonics multi-project wafer runs at the AIM Photonics MII.			
Title: NextFlex Manufacturing Innovation Institute (Flexible Hybrid Electronics Manufacturing) ***Description:*** Flexible hybrid electronics manufacturing involves highly tailorable devices on non-traditional, compliant substrates that combine thinned components manufactured from traditional processes with components added via “printing” processes. NextFlex invests in prototyping and scale-up of manufacturing processes for high speed pick-and-place, printed circuits, and hybrid fabrication to enable defense and commercial applications in wearable electronics, unattended sensors, integrated array antennas, medical devices, and soft robotics devices. NextFlex is also committed to continuous improvement in SWAPC (Size, Weight And Power plus Cost) for electronic systems. ***FY 2023 Plans:*** NextFlex will continue expanding the U.S. hybrid electronics manufacturing industrial base executing 14 ecosystem-funded projects with an increased focus on reliability and yield enhanced manufacturing. NextFlex will update its manufacturing and technical roadmaps based on reliability performance of manufacturing processes leading to commercial standards. The program will deliver DoD-relevant prototypes such as large area electronics on UAVs, wearable sensor for organic industrial base, and integrated manufacturing robotic sensors for sustainment manufacturing. The workforce development programs will expand Diversity, Equity and Inclusion (DEI) as they continue their six regional FlexFactor education programs and expand Flex Pro, the professional training program, to involve 300 engineers. NextFlex is pursuing environmentally sustainable FHE device development and a project to develop a cold chain monitor as a demonstrator focused on climate change and environmental sustainability. The technology could support environmentally-friendly production and monitoring of shipping packages. ***FY 2024 Plans:*** Continue to advance manufacturing methods for flexible hybrid electronics to address defense critical technology areas and provide solutions to help grow the microelectronics workforce. NextFlex will adapt its roadmaps to improve manufacturing process	5.214	11.705	9.659

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603680D8Z / *Defense Wide Manufacturing Science and Technology Program*	**Project (Number/Name)** 350 / *Manufacturing Innovation Institutes*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
reliability and performance standards, deliver DoD-relevant prototypes, expand FlexFactor education programs while leveraging DEI, and continue pursuit of sustainable FHE to mitigate climate change. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The decrease of $2.046 million between FY 2023 and FY 2024 reflects the re-phasing of research consistent with a new roadmap for flexible hybrid electronics research at the NextFlex MII.			
Title: Advanced Functional Fabrics of America (Smart Fibers and Textiles) (AFFOA) ***Description:*** AFFOA accelerates transformation of the manufacture of traditional fibers, yarns, and textiles into highly sophisticated, integrated, and networked devices and systems. It is helping to convert the domestic textile industry into one differentiated by Intellectual Property (IP) and value-added technology. AFFOA mission outcomes will lead to highly functional fabrics that provide valuable services: fabrics that see, hear, sense, communicate, store and convert energy, regulate temperature, monitor health, and change color. AFFOA is translating these outcomes into new and improved textiles that benefit the warfighter as well as the commercial consumer. ***FY 2023 Plans:*** AFFOA will advance R&D efforts focused on integrating member and/or DoD technologies into functional prototypes for dual use DoD and commercial applications, with project calls focused on manufacturing and commercialization. AFFOA will expand it innovation and manufacturing ecosystem to enable small companies, DoD labs, and Defense Industrial Base partners increased access to AFFOA's organic fabric prototyping and advanced textile system integration capabilities. It will cultivate membership supply chains to support the DoD capability needs and critical technology areas. Education and Workforce Development (EWD) efforts will expand Diversity, Equity and Inclusion (DEI) and include developing strategic workforce development training, internships, and other activities with domestic universities and regional vocational training centers. To mitigate climate change, AFFOA will explore and select clothing and textile fibers (organic and synthetic) that meet military uniform performance criteria and can be disposed of or recycled without negative ecological impacts, such as clogging waterways, contaminating soil, or polluting the air. ***FY 2024 Plans:*** Continue to improve manufacturing methods for highly functional fabrics that benefit the warfighter and expand training opportunities for an advanced fiber and textile manufacturing workforce. AFFOA will continue to enable DoD and DIB partners increased access to AFFOA's organic fabric prototyping and advanced textile system integration capabilities; cultivate membership supply chains to support DoD capability needs; develop strategic university education, internships, and regional vocational training while leveraging DEI; and conduct select clothing and textile fiber projects to mitigate climate change. ***FY 2023 to FY 2024 Increase/Decrease Statement:***	3.514	8.877	7.074

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
The decrease of $1.803 million between FY 2023 and FY 2024 reflects the re-phasing of research into highly functional fabrics development at the AFFOA MII.			
Title: BioFabUSA Manufacturing Innovation Institute (regenerative tissue manufacturing) ***Description:*** BioFabUSA advances state-of-the-art human tissue manufacturing innovations in cell and biomaterial processing, bioprinting, automation, and non-destructive testing technologies. BioFabUSA is establishing a collaboration to mature tissue-related technology across manufacturing readiness levels (MRL) 4-7, enabling post-delivery assurance of tissue identity, viability, function, and efficacy. This MII is assembling a diverse and currently fragmented collection of industry practices and institutional knowledge across many disciplines (e.g., cell biology, bioengineering, materials science, analytical chemistry, robotics, and quality assurance). ***FY 2023 Plans:*** BioFabUSA will focus on expanding manufacturing process development of institute member-derived tissue engineered medical products. BioFabUSA will integrate additional sensor and automation technologies into current versions of the manufacturing platform. BioFabUSA will fund technology projects, therapeutic development projects, and education and workforce development (EWD) projects that expand DEI in the biomanufacturing workforce. BioFabUSA will roll out pilot-phase EWD certification and credentialing programs regionally and nationally. ***FY 2024 Plans:*** Continue to improve manufacturing methods for tissue engineered medical products and expand certification and credentialing programs for the biomanufacturing workforce. BioFabUSA will add sensor and automation technologies to improve the manufacturing platform and fund technology, therapeutic development, and education and workforce development (EWD) projects. BioFabUSA will leverage DEI to expand the biomanufacturing workforce and accelerate emerging EWD certification and credentialing programs. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The decrease of $0.915 million between FY 2023 and FY 2024 reflects funding for completion of the final year of the establishment cooperative agreement and transition to a lower threshold funding level in FY 2024 to maintain the Department's strategic partnership with BioFabUSA.	16.300	10.992	10.077
Title: Advanced Robotics Manufacturing (Smart Collaborative Robotics for Manufacturing) ***Description:*** Improve U.S. manufacturing competitiveness through advancements in the smart collaborative robotics field. Technologies developed via Advanced Robotics Manufacturing (ARM) support advanced robotics capabilities to address DoD requirements and improve U.S. manufacturer competitiveness with robotics. ARM is focusing on technologies enabling human robot interaction, and perfecting robotic adaption, learning, manipulation, autonomy, mobility, and perception.	10.500	5.259	8.991

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
FY 2023 Plans: ARM will continue technical project-level investments to advanced industrial robotic technologies for the development of novel automated manufacturing capabilities. Specific technical areas will include intelligent robotics, human-robot interaction, autonomous operation, dexterous manipulation, and rapid system development/configurability. Other investments will produce education and workforce initiatives to develop robotic competencies, credentialing, apprenticeships, and a nationwide training identification toolset while seeking to expand Diversity, Equity and Inclusion (DEI) in the robotics manufacturing workforce. Target transitions are for OUSD(R&E) S&T priorities, Service-level Organic Industrial Base, and the related Defense Industrial Base. ***FY 2024 Plans:*** Continue R&D investments in advanced robotics manufacturing that support defense critical technology areas and develop a competent robotics workforce. ARM will invest in technical projects to improve automated manufacturing capabilities and facilitate adoption by the organic and industrial base. AIM will also develop robotic competencies, credentialing, apprenticeships, and tools for the robotics manufacturing workforce while seeking to expand DEI. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The increase of $3.732 million between FY 2023 and FY 2024 completes the DoD's funding commitment for the final year of the establishment cooperative agreement and funds additional technical and workforce development projects for robotics manufacturing.			
Title: BioMADE Manufacturing Innovation Institute	17.000	23.609	21.500
Description: The BioMADE MII promises to deliver a new class of manufacturing with domestic capabilities to manufacture critical resources with increased supply chain security. Bioindustrial manufacturing also has the potential to create entirely new classes of products with primary defense applications, such as chemicals and materials with advanced properties for use in austere environments. Bioindustrial manufacturing addresses defense priorities and offers commercial potential for innovations in food, agriculture, fuels, industrial chemicals, and other consumer products that will create new opportunities for U.S. manufacturers. ***FY 2023 Plans:*** BioMADE intends to spur biomanufacturing innovation by investing in technical project calls to reduce barriers to scale-up and commercialization of bio-manufactured products, accelerate technology deployment, investigate novel downstream processing techniques, and de-risk the process of bringing new products to market. BioMADE will accelerate the DoD biotechnology critical technology areas by promoting biotechnology innovation and securing the domestic bioindustrial base. BioMADE will conduct a university design challenge for distributed manufacturing enabled by modular bioindustrial and reusable (MEMBR) assets. Education and workforce development project calls will build awareness of bioindustrial manufacturing careers and address workforce gaps through innovative educational strategies that increase DEI to expand the workforce. Safety, security, sustainability, and social responsibility (4S) programs will guide bioethics, biosecurity, biosafety, and related topics. BioMADE			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
will continue its technology development program to establish secure domestic supply chains and novel material capabilities including, but not limited to, the domestic production of latex rubber, manufacturing of acrylic acid from waste products, and the development of new downstream processing capabilities. BioMADE will conduct an open project call to positively impact climate change through de-risking innovative green bioindustrial techniques and food security. ***FY 2024 Plans:*** Increase bioindustrial technical project calls to overcome scale-up, commercialization, and deployment challenges for bio-manufactured products. Continue maturing defense applicable biomanufactured products which could align with future distributed manufacturing enabled by modular bioindustrial and reusable (MEMBR) assets to prepare for the construction and operation of regional facilities to demonstrate bioindustrial solutions for defense critical products. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The decrease of $2.109 million between FY 2023 and FY 2024 is the result of a one-time add in FY 2023 in the amount of $1.391 million not carried forward into FY 2024 and an increase of $3.500 million for climate/green technology manufacturing projects.			
Accomplishments/Planned Programs Subtotals	81.294	129.798	112.728

	FY 2022	FY 2023
Congressional Add: Direct Ink Writing of Advanced Thermoset Materials	0.000	5.000
FY 2022 Accomplishments: N/A ***FY 2023 Plans:*** America Makes partner JuggerBot 3D LLC, located in Youngstown Ohio, has developed an innovative industrial 3D printing solution with proprietary programming that incorporates a state-of-the-art ink extrusion method known as Direct Ink Write. This technology is uniquely capable of processing advanced thermoset materials like epoxies, polyurethanes, polyesters, silicones, and can vary the printed part composition to suit the functional need of the design (e.g., softer sealing material on a hard cover). The program to be executed via the America Makes MII will focus on achieving an efficient and stable production with thermoset materials and equipment at scale, integrating automation to mitigate operator interference and enable smart manufacturing. By optimizing the process and materials for Direct Ink Write 3D printing, the project will facilitate a more streamlined process for transferring technology and knowledge to commercial users.		
Congressional Add: Additive Manufacturing Sustainability	0.000	10.000
FY 2022 Accomplishments: N/A ***FY 2023 Plans:*** The additive manufacturing ecosystem enabled by the America Makes Manufacturing Innovation Institute (MII) will lead a multi-phased effort to develop statistically relevant materials data sets for the		

	FY 2022	FY 2023
top three materials which exhibit the greatest impact for aerospace, automotive, defense, energy and medical sectors. In addition, this ecosystem will address additive manufacturing process repeatability and product transferability leveraging a parallel multi-pronged approach.		
Congressional Add: Flexible Hybrid Electronics ***FY 2022 Accomplishments:*** N/A ***FY 2023 Plans:*** The NextFlex Manufacturing Innovation Institute (MII) will execute additional projects to enhance technology at the intersection of flexible hybrid electronics (FHE), semiconductor packaging, and electronics assembly. The projects will include increased support for the NextFlex Regional Nodes (including in New York and Massachusetts). NextFlex will share results and manufacturing know-how with the U.S. FHE ecosystem through its consortium activities, including transitioning manufacturing processes from developers and the NextFlex Technology Hub to U.S. manufacturers. To support workforce development, NextFlex will build FHE curriculum modules and execute hands-on workshops (in collaboration with university partners) targeted at training incumbent workers to accelerate adoption and deployment of the technology.	0.000	6.000
Congressional Add: Scalable Comprehensive Workforce Readiness Initiatives in Bioindustrial Manufacturing ***FY 2022 Accomplishments:*** N/A ***FY 2023 Plans:*** Address the skilled technical labor required for a growing biomanufacturing industrial base by using a modular and scalable approach executable across multiple regions. It includes: (1) Design, development, and expansion of skilled technical workforce training programs in biomass, upstream, and downstream bioprocessing. These will capitalize on existing instructional facilities, resources, and capabilities of BioMADE members in target regions to enhance existing programs in upstream and downstream bioprocessing. Support instructional content creation, reagents, supplies, teaching, and support staff to create and assess instruction for technical education and programming in bioindustrial manufacturing. (2) Soldier to Scientist: Develop instructional modules covering bioprocessing topics such as extraction, fermentation, upstream, downstream, and instrumentation. (3) Community-to-Career tiered-mentoring in science and technology (S&T) for a resilient and sustainable workforce in bioindustrial manufacturing. Build a network of community-based organizations, educators, scientists, industry representatives, and other subject matter experts to guide science and technology-interested students towards careers in the bioindustrial manufacturing sector. Includes regional partners from the Engineering Biology Research Consortium and other stakeholders actively engaged in cross-disciplinary science, technology, engineering, and mathematics (STEM) education and mentoring. (4) Professional Development biomanufacturing training programs for workforce educators, incumbent, and adult learners. These efforts support equipment acquisition for training educators (train-the-trainer) for incumbent and	0.000	5.000

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	FY 2022	FY 2023
adult learners. Instruction in the biomanufacturing lab will offer hands-on training and real-world exposure to operational procedures and technical skills development through retraining, retooling, and upskilling.		
Congressional Add: Bioindustrial Manufacturing Institutes ***FY 2022 Accomplishments:*** N/A ***FY 2023 Plans:*** The BioMADE Manufacturing Innovation Institute (MII) will initiate the development of a network of pilot-scale industrial biomanufacturing facilities to conduct research and development to improve the ability of the industrial base to assess, validate, and scale new, innovative bioindustrial manufacturing processes for the production of chemicals, materials, and other products necessary to support national security or secure fragile supply chains, thereby implementing Section 215 of the NDAA for FY 2023. Conduct an industry analysis to refine specific biomanufacturing infrastructure gaps (e.g., fermentation capacity, feedstock development, and downstream processing). Concurrently, establish multiple pilot-scale industrial biomanufacturing facilities across the United States to begin to resolve critical infrastructure shortages and to facilitate the transition from laboratory scale research to pilot-scale production of biomanufactured materials. Facilities will be available to the Department and the nation's bioindustrial manufacturing network – industry partners, their suppliers/customers, and the academic community – all with an eye towards hardening the defense industrial base, and further, catalyzing innovation and investment in this sector of the economy.	0.000	300.000
Congressional Add: Bioindustrial Manufacturing Matrix Development ***FY 2022 Accomplishments:*** N/A ***FY 2023 Plans:*** Develop and pilot a bioindustrial product supply chain database and analysis system to enable BioMADE and its members to fully leverage domestic supply chains. The system portal will enable ad-hoc searches of a database representing the current and relevant capabilities, projects, and partners of all BioMADE members across local, state, and national scales. By enhancing the visibility of key capabilities within the ecosystem, the portal will facilitate collaborations between BioMADE members to strengthen bioindustrial manufacturing innovation and workforce development. Once BioMADE firmly establishes its value, this multi-sourced pilot portal can be enhanced with additional features including resiliency gap identification, cybersecurity self-assessment, compliance tracking, and customized opportunity identification. Subsequently it could be expanded to the other eight DoD Manufacturing Innovation Institutes.	0.000	7.000
Congressional Add: Multifunctional Bioindustrial Database Capability	0.000	9.600

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	FY 2022	FY 2023
FY 2022 Accomplishments: N/A ***FY 2023 Plans:*** Establish a secure, digital ecosystem for collaborative data exchange across the bioindustrial manufacturing community (industry, research and development labs, and DoD). The system will feature a flexible data core specialized to address the diverse data sharing, analysis, and search needs of the bioindustrial manufacturing community. Core database capabilities are (1) Secure data exchange (between industry, academia, and military service labs), (2) data warehousing (including chemical, biological, process data, and associated metadata), and (3) advanced analytics (artificial intelligence (AI) and machine learning (ML)), omics, biological and biomanufacturing models, techno-economic analysis, asset tracking, unit operation analysis, etc.). Phase 1 includes a functional data store with a secure application programming interface (API) to serve the diversity of data exchange and data storage needs expressed by the bioindustrial manufacturing community. Phase 2 establishes compute pipelines, automated data ingestion, user web interfaces, and analytical algorithms to produce a fully-featured data exchange solution for the industry. This enables International Organization for Standardization (ISO)-27001 certification to help foster adoption, and supports DoD and Service laboratory requirements for quality assured and sustainable access to a bioindustrial manufacturing ecosystem with capabilities to support critical national security needs.		
Congressional Add: Operational Technology (OT) and Internet of Things (IoT) Asset Identification and Management ***FY 2022 Accomplishments:*** N/A ***FY 2023 Plans:*** Operational Technology (OT) and Internet of Things (IoT) devices lack sufficiently rich fingerprint databases that can be used to support asset identification and management. While large databases exist to identify operating systems and even enumerate services running over Transmission Control Protocol/ Internet Protocol. (TCP/IP), a common communications protocol, they do not offer the level of granularity needed to identify OT/IoT devices that may be running partial implementations of a TCP/IP stack or not even running an operating system. As OT and IoT environments proliferate, these assets may create a significant vulnerability to broader cyber attacks. The University of Tulsa, in cooperation with the Army Engineer Research and Development Center (ERDC), will develop a new hydro-electric testbed connected to the existing scaled electric power substation located the University of Tulsa's Critical Infrastructure Protection Lab to evaluate tools for asset identification in a combined electric power generation (new hydro-electric testbed) and distribution network (substation) environment over a wide range of use-cases. The project will investigate methods to detect,	0.000	5.000

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	FY 2022	FY 2023
identify, and inventory components and services in a networked system and evaluate existing databases (e.g., nmap) to determine their accuracy in fingerprinting OT/IoT devices.		
Congressional Add: Cybersecurity Maturity Model Certification (CMMC) Compliance for Cybersecurity in Manufacturing ***FY 2022 Accomplishments:*** N/A ***FY 2023 Plans:*** MxD, as the DoD-designated National Center for Cybersecurity in Manufacturing (NCCM), will create impactful, easy-to-acquire CMMC compliance resources to help small and medium-sized manufacturers (SMMs) achieve appropriate CMMC status, evaluate their current cyber posture by identifying opportunities to improve cyber hygiene, and provide appropriate tools to react to additional requirements from DoD and the Cyber Accreditation Body (formerly the CMMC-AB). MxD will provide a suite of resources for free to Small and Medium Manufacturers (SMMs) and Small and Medium Enterprises (SMEs) to help them comprehensively achieve and maintain all levels of CMMC compliance. MxD will work with the DoD, Department of Homeland Security, and Department of Commerce help SMMs and SMEs across the nation's industrial base to navigate cybersecurity compliance requirements.	0.000	6.000
Congressional Add: Supply Chain Adaptation of Artificial Intelligence (AI) and Robotics ***FY 2022 Accomplishments:*** N/A ***FY 2023 Plans:*** Advanced Robotics for Manufacturing (ARM) Manufacturing Innovation Institute (MII), ARM members, and Carnegie Mellon University (CMU) will develop a new, core competency for identifying and extracting key data sets and developing in-depth, high quality, relevant abstractions of data across multiple robotics platforms that can be used as a service to advance the intelligence of machines. They will establish a Learning Laboratory in the Hazelwood Green Mill 19 facility operated by the CMU Manufacturing Futures Institute (MFI) and ARM. Catalyst Connection will work with project partners to establish the business model, equipment list, training programs, and communications and recruitment strategies for Small and Medium Manufacturers (SMMs) and their workers to take advantage of and utilize the learning lab. MFI and ARM will purchase and install equipment, hire staff to operate the learning laboratory, and provide trainers and related support.	0.000	12.500
Congressional Add: Difficult to Copy Manufacturing	0.000	7.000

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	FY 2022	FY 2023
FY 2022 Accomplishments: Project moved from P680 to P350 for FY 2023 execution. See P680 for FY 2022 accomplishments. ***FY 2023 Plans:*** Execution strategy is being formulated.		
Congressional Add: Next Generation Textiles (formerly "Domestic Textile Manufacturing") ***FY 2022 Accomplishments:*** The "Establishing the Textile Industry of the Future" (ETIF) FY 2022 project will advance the Advanced Functional Fabrics of America (AFFOA) Manufacturing Innovation Institute (MII) technology roadmap by addressing key infrastructure gaps in soft-system integration, flexible power and data, fiber and textile devices, and design rules for soft systems. The project will design and prototype a means of integrating electrodes into stretchable fibers and fabrics that would reduce the weight burden on the warfighter by integrating power, data, and sensor capabilities into the textiles that would also be rugged enough to survive use in the field. The next step in this phase is to develop and qualify equipment critical for the processing of advanced silica material to increase efficiency and reduce the cost of fire-retardant materials for the U.S. Navy. ***FY 2023 Plans:*** During the second year of the ETIF project, in FY 2023 AFFOA will prototype and field test fabric shelter systems and a warfighter ensemble kit with fabric-integrated power, data, and environmental sensors with demonstrated low radio frequency (RF) signatures. Members of the AFFOA ecosystem will prototype and field test underwater tether systems with embedded sensors (temperature, pressure, salinity) for improved undersea situational awareness in support of critical Navy missions. The third ETIF project activity for FY23 will identify the technical specification of other high-temperature materials applications, such as hypersonics, to access further cost savings and utility of silica fabric technology.	7.500	10.000
Congressional Add: Data Analytics and Visualization System ***FY 2022 Accomplishments:*** The Engineer Research and Development Center (ERDC) Vicksburg in partnership with Mississippi State University (MSU) is conducting projects on cybersecurity and additive manufacturing. Provided funding to Mississippi State University to execute research required to increase the maturity levels of additive manufacturing (AM) engineering models and software algorithms to add confidence in AM's ability to quickly manufacture quality critical parts at remote locations. Includes an end-to-end methodology to showcase novel capabilities obtained by integrating advanced monitoring, artificial intelligence (AI)/ machine learning (ML) analysis techniques and Finite Element Analysis (FEA) model execution, specifically to provide assurance that AM parts manufactured in austere environments could meet quality and reliability requirements. The effort includes development of an end-to-end integrated solution providing capabilities to manage, analyze, and visualize exceptionally large datasets. This would be a framework to digest large amounts of diverse data types ranging from data collected by arrays of different sensors, images from thermo-cameras, and object	12.000	12.000

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	FY 2022	FY 2023
models generated by 3-D scanners to allow stakeholders to visualize data as part of a digital thread and use that data set to optimize decision making. ***FY 2023 Plans:*** The execution strategy is being formulated and will expand on FY 2022 project goals.		
Congressional Add: Hypersonics Enabling Manufacturing	10.000	12.000
FY 2022 Accomplishments: America Makes seeks to advance the technology/manufacturing readiness level (TRL/MRL) of advanced manufacturing technologies to enable precise spatial control of material, material composition, and functionality as structures are created layer-by-layer to provide fully customizable, high value products via additive manufacturing methods that address design challenges of hypersonic flight, accelerate acquisition time, and reduce cost relative to conventional manufacturing methods. The project will conduct research on critical high temperature flight vehicle components by providing ground testing and evaluation (GT&E) campaigns tailored to specific focus areas. Task 1 will continue to advance the TRL/MRL for state of the art additively manufactured copper alloy rocket engine components. Task 2 will demonstrate technical solutions for thermally-managed, shape-stable leading edge designs under extreme heat loads. Task 3 will identify and evaluate intumescent coatings that can provide a thermal protection barrier to advanced composite materials. Task 4 will design, develop, and test lattice materials potentially suitable to replace and enhance incumbent thermal insulators. Task 5 identifies domestic replacement materials, such as structural or ablative insulators, with performance properties comparable to or exceeding rayon based high temperature composites to improve coemption in the solid rocket motors sector. Task 6 will continue to develop a universal process-structure database for refractory alloys under additive manufacturing conditions for hypersonic nozzle materials. Task 7 seeks to measurably improve the performance of additively manufactured nickel superalloy components. ***FY 2023 Plans:*** Advanced Manufacturing and Applied Research Innovation Institute (AMARII) plans to advance enabling technologies for hypersonic activities by providing prototype development of various elements required for hypersonic missions by establishing a prototyping facility for hypersonic applications. This facility would concentrate on developing and testing new enabling technologies for various elements of a hypersonic vehicle. The proposed effort would also seek to expand curriculum for undergraduate and postgraduate courses for hypersonic-related technologies. AMARII has assembled the National Center for Defense Manufacturing and Machining (NCDMM)/America Makes; the National Additive Manufacturing Innovation Institute; Youngstown State University (YSU) for additive manufacturing assistance and potential support of educational aspects; Ursa Major Technologies, the developer of an additively manufactured rocket engine that has already been successfully implemented on the X-60A hypersonic test vehicle; NASA Glenn, to provide wind tunnel capabilities; and University of Texas at El Paso (UTEP), to provide expertise in additive manufacturing of refractory materials and research efforts in other material systems. The Army's Long Range		

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	FY 2022	FY 2023
Precision Fires group will support in an advisory capacity and as a transition partner. They have recommended that future research topics include thermal management solutions for high-speed trajectories, affordable high temperature capable structural materials, modeling of material solutions in demanding environments and highly integrated, conformal sensor systems. The Army has also requested the program investigate potential additional topics including material modeling, analysis for air-breathing missile systems, ultra-high temperature insulation materials, affordable ceramic matrix composites (CMCs), joining of CMC structures with functionally graded refractory high entropy alloys, complex thermal management solutions, printable electronics and radio frequency structures for highly integrated array sensor systems, reconfigurable antennas enabling multi-frequency operation, and Carbon/Silicon-Carbide (C/SiC) pre-impregnated (pre-preg) material development.		
Congressional Add: Additive Manufacturing Training (formerly El Paso Makes Contract Support for El Paso Manufacturers) ***FY 2022 Accomplishments:*** The Innovation Network for Manufacturers, El Paso Chamber, and National Center for Defense Manufacturing and Machining (NCDMM) are partnered in the development of defense-related business within the El Paso business community. Schmitt Consulting Group (SCG) will evaluate companies in the El Paso Manufacturing base for market readiness and process maturity. In consultation with the America Makes regional affiliate, El Paso Makes, SCG will provide companies in the El Paso Makes ecosystem with support, processes, and tools for manufacturers to do business with the DoD, including training on best business practices, to prepare them to identify, compete, and win opportunities in the Huntsville DoD and aerospace market as sub-tier suppliers to OEMs, other defense manufacturers, and the Defense Logistics Agency (DLA) via the DLA Internet Bid Board System (DIBBS). ***FY 2023 Plans:*** Driving Research, Innovation, and Value through Education in Additive Manufacturing (DRIVE AM) Youngstown, a partnership between the Youngstown State University (YSU), the University of Texas at El Paso (UTEP), Open Additive, LLC and the Youngstown Business Incubator (YBI), will be an extension of an established UTEP program created and implemented to produce a superior AM-educated military, domestic manufacturing workforce, and defense supply chain. DRIVE AM training offerings have varying levels of proficiency, each targeting soldiers, technicians, operators, engineers, Department of Defense (DoD) support personnel, personnel transitioning from the military, or veterans that are in active roles in the military or DoD, or in support of DoD through the defense manufacturing supply chain. DRIVE AM courses to be delivered under this project include: Introduction to Industrial Additive Manufacturing, Introduction to Additive Manufacturing Workflow, Laser Powder Bed Fusion Foundation, and Material Extrusion Foundation.	0.964	5.200
Congressional Add: Advanced Robotics and Automation Training	2.000	0.000

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	FY 2022	FY 2023
FY 2022 Accomplishments: Advanced Robotics for Manufacturing (ARM) Manufacturing Innovation Institute (MII) initiated development of a national, comprehensive, publicly accessible online repository of Robotics and Automation training programs (launched as www.roboticscareer.org). This website seeks to become the National model for robotics training, standards, and core competencies, serving as an employer placement repository covering every state and territory in the nation. This ongoing effort is developing the needed, robotics-ready workforce by identifying and standardizing required competencies and skills, promoting and enhancing educational resources, and sharing available jobs in a comprehensive, easily accessible manner. The ARM system will dynamically analyze and upgrade the required skill competencies via an online platform addressing the field of robotics, automation, and Artificial Intelligence (AI). It will incorporate the ARM MII's Endorsement Program to facilitate work with training entities to improve and upgrade their programs and equipment, including rural or underserved programs, by leveraging ARM's world-class consortium. ***FY 2023 Plans:*** N/A (Not funded in FY23)		
Congressional Add: Cybersecurity Manufacturing Innovation Park	1.000	0.000
FY 2022 Accomplishments: The Department of Energy's Cybersecurity Manufacturing Innovation Institute (CyManII) has been awarded $1M for Period 1 2022-2023 to support training and education initiatives to support the mission of upskilling and reskilling workers in cybersecurity and cybersecurity awareness through development and use of the Cybersecurity Manufacturing Innovation Park. CyManII is conducting skills and readiness assessments to determine individualized training needs for Small to Medium Manufacturers (SMM). They are working with specific training partners to create varying levels of training from basic cyber hygiene to advanced/progressive hygiene. They have initiated training for University of Texas (UT) system students, and will increase their physical footprint to provide live, instructor led training via a "TxMx Hub Training Center" in San Antonio that will provide classroom, hands-on training, and a Mobile Training Vehicle to provide training and training resources to underserved geographic locations. ***FY 2023 Plans:*** N/A (Not funded in FY 2023)		
Congressional Add: Certification Based Workforce Training Programs for Manufacturing (Jobs of the Future)	6.200	0.000
FY 2022 Accomplishments: Manufacturing x Digital (MxD) Manufacturing Innovation Institute (MII) is initiating MxD Learn CAPITAL to develop certification-based training in digital manufacturing and cybersecurity for manufacturing to strengthen the defense industrial base. The six phase project will: (1) identify and engage relevant stakeholders, including target populations, subject matter experts, industry and academia; (2) create a Workforce Development Advisory Committee composed of manufacturing workforce thought leaders from key industry, academic, and government partners to drive execution of the MxD Learn CAPITAL strategy and		

	FY 2022	FY 2023
outcomes; (3) identify and prioritize the most in-demand skills by engaging MxD's partner network; (4) outline Career Pathways for curriculum development by enumerating the set of competencies, and generate a union of these competencies across roles of interest through a rigorous review process to ensure industry-validation; (5) develop industry-backed courses from outlined career pathways that integrate one or more industry-recognized and/or academic credentials determined to bring the highest value to both employers and workers in the career pathway; and (6) port courses onto the video teleconference (VTC) platform to optimize virtual content delivery and reach a diverse and geographically dispersed audience. ***FY 2023 Plans:*** N/A (Not funded in FY 2023)		
Congressional Add: Program Increase ***FY 2022 Accomplishments:*** This add funded key projects, including: (1) Manufacturing Innovation Institute (MII) Network investment projects for contested logistics, robotics and fabrics manufacturing, and qualification/ certification for fabric device process design kits); (2) establishment of a Lightweight Innovations for Tomorrow (LIFT) MII affiliate in Puerto Rico; and (3) a series of manufacturing education and workforce development projects including stakeholder awareness building and communications, Workforce Readiness Level framework and mapping to Technology Readiness Levels (TRLs)/Manufacturing Readiness Levels (MRLs), an additive manufacturing incumbent workforce micro-learning pilot, and a workforce building effort with LIFT in the Detroit Region. The general program increase also funded the DoD strategic investment to the full threshold requirement and provided MII and Cyber program support to the Office of the Secretary of Defense. ***FY 2023 Plans:*** N/A (Not funded in FY 2023)	9.000	0.000
Congressional Add: Advanced Manufacturing ***FY 2022 Accomplishments:*** America Makes and the University of Texas at El Paso (UTEP) provide advanced manufacturing training focused on additive manufacturing (AM) via the Driving Research, Innovation, and Value through Education in Additive Manufacturing (DRIVE AM) program. DRIVE AM trains active duty, transitioning Soldiers, and DoD personnel to: (1) best utilize AM to support maintenance and sustainment activities, and (2) leverage AM to maintain superiority within DoD operations and technologies and the defense industry supply chain. DRIVE AM also includes a Science, Technology, Engineering, and Mathematics (STEM) K-PhD pipeline program to sustain workforce needs and an AM business creation ecosystem to support the defense supply chain. The DRIVE AM team is also working with existing AM companies and defense supply chain to help keep up with emerging technology, maintain economic competitiveness, and expand the technical workforce. The planned DRIVE AM Phase 3 effort will enable partners to: (1) continue insertion of the DRIVE AM Foundation program throughout DoD and expand virtual asynchronous content; (2) focus on development of the DRIVE	2.000	0.000

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603680D8Z / *Defense Wide Manufacturing Science and Technology Program*	**Project (Number/Name)** 350 / *Manufacturing Innovation Institutes*

	FY 2022	FY 2023
AM Knowledge Base; (3) continue developing awareness throughout DoD on UTEP's unique approach in using a specific laser powder bed fusion (LPBF) qualification test artifact for deepening understanding throughout the LPBF workflow to benefit DoD; and (4) advance the DRIVE AM STEM K-PhD pipeline and economic development initiatives. ***FY 2023 Plans:*** N/A (Not funded in FY 2023)		
Congressional Add: Silicon Based Lasers ***FY 2022 Accomplishments:*** This project incorporates integrated Silicon-based Lasers to dramatically improve the performance and reliability of photonic integrated circuits while significantly reducing size, weight, and power consumption. This add will be obligated in FY 2023 to build on an FY 2020 investment used to initiate two projects focused on providing access to on-chip laser sources for users of AIM Photonics' multi-project wafer (MPW) offerings. AIM Photonics has successfully demonstrated the viability of growing quantum-dot lasers directly on AIM's silicon photonics platform. Work is directed to optimizing integration approaches and obtaining solutions that offer high yields by (1) developing a manufacturable solution that can be scaled up to be cost effective for AIM MPW users; and (2) bonding existing lasers (which offers the freedom to select different wavelengths and/or laser types) onto AIM's MPW platform via specialized trenches while minimizing the optical loss encountered through this approach. DoD platforms and commercial applications will benefit from higher bandwidth, faster data transmission, lower energy loss, lower weight, and less costly optical methods which integrated photonic circuits can enable when intimately integrated with a laser source. ***FY 2023 Plans:*** N/A (Not funded in FY 2023)	10.000	0.000
Congressional Add: Hypersonics and Thermal Management ***FY 2022 Accomplishments:*** This add continues an FY 2021 add by the same name which saw the commissioning of an additive manufacturing printer for this application and ongoing modeling, printing, and testing of multiple alloys. The FY 2022 funds will be obligated via a grant in FY 2023 under the Science and Technology for Advanced Manufacturing Projects (STAMP) BAA by the Office of Naval Research (ONR). The objective is to progress the technology readiness level/manufacturing readiness level of metallic materials and associated manufacturing processes used in the high-temperature thermal application in hypersonic vehicles, which includes material property assessment, alloy development, and multi-layered material optimization. The project will focus on developing integrated computational materials engineering (ICME) models for functionally graded materials systems allowing for agile and fast deployment in various component geometries and uses. ***FY 2023 Plans:*** N/A (Not funded in FY 2023)	5.000	0.000
Congressional Adds Subtotals	65.664	412.300

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603680D8Z / *Defense Wide Manufacturing Science and Technology Program*	**Project (Number/Name)** 350 / *Manufacturing Innovation Institutes*

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

Each Manufacturing USA institute is established through a competitive selection process. The executing military department or agency, in close and continuous coordination with Office of the Under Secretary of Defense for Research and Engineering Manufacturing Technology Office (ManTech), publishes a formal solicitation (funding opportunity announcement) for proposals describing the scope of required activities and extensive proposal evaluation criteria. Non-Profit Organizations (including universities) are eligible to bid, and each bidder forms a broad consortium of industry and academic partners. The executing military department or agency, in close coordination with the Office of the Secretary of Defense (OSD), uses a team of government experts to evaluate each proposal against the evaluation criteria and selects a winning consortium. The final terms of the cooperative agreement/technology investment agreement between the selectee and the federal government are then negotiated and the Cooperative Agreement (CA) or Technology Investment Agreement (TIA) is signed. Throughout and after completion of this process, the federal government makes clear that members of non-selected teams are encouraged to join the selected consortium as conditions permit.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603680D8Z / *Defense Wide Manufacturing Science and Technology Program*	Project (Number/Name) 351 / *Manufacturing Education and Workforce Development*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
351: *Manufacturing Education and Workforce Development*	-	3.993	10.179	5.101	-	5.101	5.098	5.101	5.207	5.321	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Office of the Secretary Defense (OSD) promotes equity and inclusion in manufacturing careers, drives regional action to modernize manufacturing Career & Technical Education (CTE) for the U.S. industrial base, invests in strategic education and workforce development capabilities, and expands strategic leadership of advanced manufacturing human capital development.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Manufacturing Education and Workforce Development	3.993	5.179	5.101

Description: The Manufacturing Education and Workforce Development (M-EWD) program builds on activities from FY 2019-2021 resourced by Project 350 and congressional interest items including the Manufacturing Engineering Program. Key M-EWD accomplishments include development of a strategic framework for DoD leadership of advanced manufacturing talent development, eight MII-led regional initiatives informed by labor market data profiles of regional economies, start of a pilot effort to develop an automated real-time labor market data portal, and launch of ManufacturingWorkforce.org, a dual-use digital learning platform with advanced manufacturing course offerings.

FY 2023 Plans:

The M-EWD program will sponsor a project to expand the pool of talent and promote equity and inclusion in manufacturing careers by building upon Minority-Serving Institution (MSI) and Historically Black Colleges and Universities (HBCU) partnerships developed beginning in FY 2021. A second key effort will be a pilot project to build regional economic and talent development alliances. The program will also continue to sustain and enhance the Open edX digital learning platform for industry and DoD personnel, as well as the labor market data portal projects.

FY 2024 Plans:

Support development of whole-of-government EWD solutions applicable to the defense advanced manufacturing workforce. Expand Diversity, Equity, and Inclusion (DEI) in the manufacturing workforce by developing and adapting tailored curricula to expand participation opportunities and increasing the availability of instructional platforms and materials.

FY 2023 to FY 2024 Increase/Decrease Statement:

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603680D8Z / *Defense Wide Manufacturing Science and Technology Program*	**Project (Number/Name)** 351 / *Manufacturing Education and Workforce Development*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
The decrease of $0.078 million between FY 2023 and FY 2024 reflects a minor re-phasing of manufacturing education platform content development.			
Accomplishments/Planned Programs Subtotals	3.993	5.179	5.101

	FY 2022	FY 2023
Congressional Add: Manufacturing Industrial 4.0 Training Program	0.000	5.000
FY 2022 Accomplishments: N/A		
FY 2023 Plans: This Community Project Funding (CPF) add is for the University of Maine (UMaine) Advanced Manufacturing Center to establish three Manufacturing Training Innovation Centers (MTICs) at Orono, Brunswick, & South Portland, Maine. The proposed MTICs will coordinate efforts and leverage existing UMaine Advanced Manufacturing Center and Southern Maine Community College resources to help Maine businesses utilize emerging technologies such as additive manufacturing and artificial intelligence (AI). The execution plan is being formulated.		
Congressional Adds Subtotals	0.000	5.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603716D8Z / *Strategic Environmental Research and Development Program (SERDP)*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	643.402	89.518	88.411	60.387	-	60.387	62.046	61.031	62.311	63.622	-	-
470: *Strategic Environmental Research and Development Program (SERDP)*	643.402	89.128	88.411	60.387	-	60.387	62.046	61.031	62.311	63.622	-	-
472: *Strategic Environmental Research and Development Program (SERDP)*	-	0.390	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

This program supports the Department's initiatives to Defend the Homeland, Build Sustainable and Long-Term Advantage, and Taking Care of People.

The Strategic Environmental Research and Development Program's (SERDP) mission is to improve DoD readiness and environmental performance by providing new scientific knowledge and developing cost-effective technologies. The SERDP does this by addressing high-priority DoD environmental technology requirements such as addressing polyfluoroalkyl substance (PFAS) contamination, developing fluorine-free fire suppression formulations, and improving corrosion resistance for weapons systems and platforms. Technologies developed by SERDP enhance military operations, improve military systems' effectiveness, enhance military training/readiness, sustain DoD‘s training and test ranges and installation infrastructure, and help ensure the safety and welfare of military personnel and their dependents. The keys to the growing list of SERDP technological successes are the ability to respond aggressively and proactively to priority defense environmental needs; the pursuit of world-class technical excellence; and an emphasis on continuous technology transfer.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603716D8Z *I Strategic Environmental Research and Development Program (SERDP)*

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	91.571	58.411	60.047	-	60.047
Current President's Budget	89.518	88.411	60.387	-	60.387
Total Adjustments	-2.053	30.000	0.340	-	0.340
• Congressional General Reductions	-0.292	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	30.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.761	-			
• Program Adjustments	-	-	0.340	-	0.340

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2022	FY 2023
Project: 470: *Strategic Environmental Research and Development Program (SERDP)*		
Congressional Add: *PFAS remediation and disposal technology and program increase*	-	15.000
Congressional Add: *AFFF replacement, disposal, and cleanup technology*	-	15.000
Congressional Add Subtotals for Project: 470	-	30.000
Congressional Add Totals for all Projects	-	30.000

Change Summary Explanation

FY 2024 minimal increase for programmatic, cost related, and inflationary adjustments.
FY 2023 Congressional Adds: ($15M) Program increase· PFAS remediation and disposal technology and ($15M) Program increase - AFFF replacement, disposal, and cleanup technology.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603716D8Z / *Strategic Environmental Research and Development Program (SERDP)*	Project (Number/Name) 470 / *Strategic Environmental Research and Development Program (SERDP)*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
470: *Strategic Environmental Research and Development Program (SERDP)*	643.402	89.128	88.411	60.387	-	60.387	62.046	61.031	62.311	63.622	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The SERDP`s mission is to improve DoD mission readiness and environmental performance by providing new scientific knowledge and developing cost-effective technologies. SERDP does this by addressing high-priority DoD environmental technology requirements such as addressing polyfluoroalkyl substance (PFAS) contamination, developing fluorine-free fire suppression formulations, and improving corrosion resistance for weapons systems and platforms. Technologies developed by SERDP enhance military operations, improve military systems' effectiveness, enhance military training/readiness, sustain DoD‘s training and test ranges and installation infrastructure, and help ensure the safety and welfare of military personnel and their dependents. The keys to growing list of SERDP technological successes are the ability to respond aggressively and proactively to priority defense environmental needs; the pursuit of world-class technical excellence; and an emphasis on continuous technology transfer.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Environmental Restoration (ER)	24.203	17.526	16.869
Description: Investments in Environmental Restoration reduce the DoD’s environmental cleanup liability (currently greater than $30B) by developing technologies for the cost-effective detection, characterization, containment, and remediation of contamination in soil, sediments, and water.			
FY 2023 Plans: Development of PFAS destruction technologies, both thermal and non-thermal, will continue. Studies of the ecological impacts of PFAS mixtures initiated in FY 2022 will continue. Increased emphasis on technologies for in situ destruction of PFAS and AFFF residue that avoid the expense of pump and treat methods.			
FY 2024 Plans: New projects will be initiated to transform polyfluoroalkyl substances found in soil and groundwater at AFFF-impacted sites, improve management of stormwater impacts at Department of Defense facilities, improve understanding of concrete and asphalt impacted by historical release of AFFF, and improved understanding of minor components of common groundwater contaminant mixtures. Development of PFAS destruction technologies, both thermal and non-thermal, will continue. Studies will continue on the			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603716D8Z / *Strategic Environmental Research and Development Program (SERDP)*	**Project (Number/Name)** 470 / *Strategic Environmental Research and Development Program (SERDP)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
ecological impacts of PFAS mixtures and technology development for in situ destruction of PFAS and AFFF residue that avoid the expense of pump and treat methods. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The FY 2023 to FY 2024 decrease is reflective of the Congressional adds of FY 2023. The baseline increase is the result of planned program growth in support for technologies for PFAS remediation, emphasis on issues related to PFAS contamination at DoD installations, and Congressional support PFAS remediation and disposal technology.			
Title: Munitions Response (MR) ***Description:*** Munitions Response develops detection, classification, and remediation technologies for Unexploded Ordnance (UXO) to address the significant DoD liability in the Military Munitions Response Program. Investments are also made to improve active range clearance and to reduce generation of UXO during live fire testing and training operations. ***FY 2023 Plans:*** Continued testing of both acoustic and electromagnetic sensor systems developed over the past three years at standard test sites. These tests will guide continued development of the systems tested as well as point the way to technology gaps to be addressed in coming years. ***FY 2024 Plans:*** New projects will be initiated to detect, localize, classify, and remediate military munitions underwater. Development of PFAS destruction technologies, both thermal and non-thermal, will continue. Studies will conclude on the development of acoustic and electromagnetic sensor systems. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The FY 2023 to FY 2024 increase is the result of planned program growth to support the continued development of methods and algorithms to efficiently reduce the output of low-frequency sonar systems to actionable information for site managers.	8.362	5.027	5.730
Title: Resource Conservation and Resilience (RC) ***Description:*** Resource Conservation and Resilience develops the science and technologies required to sustain training and testing ranges. This includes management strategies and tools to enable installation staff to carry out their duties more effectively and development of data and models to enable base planners to increase resilience of their facilities. ***FY 2023 Plans:***	33.938	20.403	23.279

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603716D8Z / *Strategic Environmental Research and Development Program (SERDP)*	**Project (Number/Name)** 470 / *Strategic Environmental Research and Development Program (SERDP)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
New projects will be initiated to develop models to aid installation planning staff cope with the rapidly changing threats associated with climate variability. Continued emphasis on the impacts of saltwater intrusion on installation infrastructure. ***FY 2024 Plans:*** New projects will be initiated to advance the understanding and methods of wildland fire management and DoD-relevant threatened, endangered, and at-risk species responses to multiple stressors. Studies will continue to develop models for threats associated with climate variability and the impacts on installation salt-water intrusion. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The FY 2023 to FY 2024 increase is the result of planned growth related to installation and training ground resilience in. Additional support of climate adaptation enhancements that will be used for additional projects focusing on climate sustainability of installation infrastructure.			
Title: Weapons Systems and Platforms (WP) ***Description:*** Weapons Systems and Platforms develops technologies and materials that reduce the waste and emissions associated with the manufacturing, maintenance, and use of DoD weapons systems and platforms to reduce future environmental liabilities and their associated costs and impacts. ***FY 2023 Plans:*** Continued efforts on understanding the interactions of fuel molecules with a foam blanket with the goal of developing firefighting foams with improved performance against gasoline fires and in the presence of saltwater. Expanded effort on the development of chromium-free treatments and processes for use in DoD depots and repair facilities. Predictive corrosion models will mature and be ready for transition to demonstration/validation. Increased emphasis on AFFF replacement and disposal in accordance with Congressional direction. ***FY 2024 Plans:*** New studies will be initiated to assess the performance of PFAS-free firefighting formulations, improve fire testing and training methodologies for firefighting formulations, develop sustainable methods for energetic materials production, and develop advanced military coating systems with reduced environmental impact. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The FY 2023 to FY 2024 decrease is reflective of the Congressional adds of FY 2023. The baseline increase is the result of planned program growth to continue the advancement of research into PFAS-free firefighting technologies.	22.625	15.455	14.509
Accomplishments/Planned Programs Subtotals	89.128	58.411	60.387

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603716D8Z / *Strategic Environmental Research and Development Program (SERDP)*	**Project (Number/Name)** 470 / *Strategic Environmental Research and Development Program (SERDP)*

	FY 2022	FY 2023
Congressional Add: PFAS remediation and disposal technology and program increase	-	15.000
FY 2023 Plans: PFAS remediation and disposal technology and ($15M) Program increase - AFFF replacement, disposal, and cleanup technology. Development of PFAS destruction technologies, both thermal and non-thermal, will continue. Studies of the ecological impacts of PFAS mixtures initiated in FY 2022 will continue. Increased emphasis on technologies for in situ destruction of PFAS and AFFF residue that avoid the expense of pump and treat methods.		
Congressional Add: AFFF replacement, disposal, and cleanup technology	-	15.000
FY 2023 Plans: Continued efforts on understanding the interactions of fuel molecules with a foam blanket with the goal of developing firefighting foams with improved performance against gasoline fires and in the presence of saltwater. Expanded effort on the development of chromium-free treatments and processes for use in DoD depots and repair facilities. Predictive corrosion models will mature and be ready for transition to demonstration/ validation. Increased emphasis on AFFF replacement and disposal in accordance with Congressional direction.		
Congressional Adds Subtotals	-	30.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603716D8Z / *Strategic Environmental Research and Development Program (SERDP)*	Project (Number/Name) 472 / *Strategic Environmental Research and Development Program (SERDP)*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
472: *Strategic Environmental Research and Development Program (SERDP)*	-	0.390	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The SERDP`s mission is to improve DoD mission readiness and environmental performance by providing new scientific knowledge and developing cost-effective technologies. SERDP does this by addressing high-priority DoD environmental technology requirements such as addressing polyfluoroalkyl substance (PFAS) contamination, developing fluorine-free fire suppression formulations, and improving corrosion resistance for weapons systems and platforms. Technologies developed by SERDP enhance military operations, improve military systems' effectiveness, enhance military training/readiness, sustain DoD‘s training and test ranges and installation infrastructure, and help ensure the safety and welfare of military personnel and their dependents. The keys to growing list of SERDP technological successes are the ability to respond aggressively and proactively to priority defense environmental needs; the pursuit of world-class technical excellence; and an emphasis on continuous technology transfer.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Validation of PFAS Measurement Methods	0.390	-	-
Description: SERDP is sponsoring the validation of the novel PFAS measurement method for complex water matrices (e.g., wastewater, surface water, groundwater), solids (e.g., soil, sediment), tissues, biosolids, and landfill leachates. In FY21, IDA calculated summary statistics from the data generated in the single laboratory validation (SLV) study, systematically compiled the statistics and data into specified tables to support subsequent analysis in the first step in the validation process for the novel PFAS method. In FY22, IDA will assist SERDP with a multi-laboratory validation (MLV) study of the PFAS method in the second validation step.			
Accomplishments/Planned Programs Subtotals	0.390	-	-

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603727D8Z / *Joint Warfighting Program (JWP)*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	57.133	2.078	2.411	2.749	-	2.749	2.830	2.889	2.950	3.011	-	-
727: *Joint Warfighting*	57.133	2.078	2.411	2.749	-	2.749	2.830	2.889	2.950	3.011	-	-

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

This program supports the Department's initiatives to Deter Aggression, Defend the Homeland, and Build Sustainable and Long-Term Advantage.

The Joint Warfighting Program (JWP) supports the Assistant Secretary of Defense for Acquisition (ASD(A))'s responsibilities for acquisition and portfolio management. The JWP underwrites analyses, studies, performs limited scope experiments, wargaming, and partnerships that define joint capability gaps and develops credible requirements for follow-on acquisition efforts. These analyses and assessments deliver independent perspectives on potential remedies to align acquisition investments and solutions for joint capability gaps created by future warfighting environments and emerging threats. The JWP supports mission engineering integration management, as well as other high priority emerging issues requiring independent analysis to inform acquisition decisions that impact National Security.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	2.157	2.411	2.486	-	2.486
Current President's Budget	2.078	2.411	2.749	-	2.749
Total Adjustments	-0.079	0.000	0.263	-	0.263
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.079	-			
• Program Adjustments	-	-	0.263	-	0.263

Change Summary Explanation

FY 2024 minimal funding increase due to programmatic changes.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603727D8Z / *Joint Warfighting Program (JWP)*	Project (Number/Name) 727 / *Joint Warfighting*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
727: *Joint Warfighting*	57.133	2.078	2.411	2.749	-	2.749	2.830	2.889	2.950	3.011	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Joint Warfighting Program (JWP) supports the Assistant Secretary of Defense for Acquisition (ASD(A))'s responsibilities for acquisition and portfolio management. The JWP underwrites analyses, studies, performs limited scope experiments, wargaming, and partnerships that define joint capability gaps and develops credible requirements for follow-on acquisition efforts. These analyses and assessments deliver independent perspectives on potential remedies to align acquisition investments and solutions for joint capability gaps created by future warfighting environments and emerging threats. The JWP supports mission engineering integration management, as well as other high priority emerging issues requiring independent analysis to inform acquisition decisions that impact National Security.

Anticipated Impact:
Provides analytical support for acquisition efforts for ASD(A) staff elements and joint customers. It promotes analyses and assessments for acquisition insights and decisions focused on capability development serving the needs of joint forces and the warfighter.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Acquisition Analysis for Joint Capability Requirements	2.078	2.411	2.749
Description: Mission Engineering & Integration (FY 2022 Accomplishments): - Developed a re-usable Digital Engineering environment and methodology for key mission threads to support future Mission Engineering pilots, studies, and acquisition analyses, which includes: - Guidance on common, open standard tools and frameworks for conducting Mission Engineering analyses (e.g. Mission Thread development) and modeling). - Standardized training materials for Acquisition Professionals to improve implementation of Mission Engineering efforts into acquisition portfolio management. - Rubric for evaluating sufficiency/maturity of Mission Engineering products for Acquisition. United States Space Force (USSF) Command and Control (C2) Independent Review (FY 2022 Accomplishments):			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603727D8Z / *Joint Warfighting Program (JWP)*	**Project (Number/Name)** 727 / *Joint Warfighting*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
- Assessed the status of execution phase activities and challenges in costing an agile software program, flexibility and extensibility of the technical architecture, software development control processes, and sufficiency of mechanisms used to map requirements and monitor execution progress to product roadmaps. Small Satellite Coordination (FY 2022 Accomplishments): -Developed an investment strategy and reports on development and implementation of small satellite technologies, specifically lunar navigation, and the impact of laws, regulations, policies, and instructions that either inhibit or promotion small satellite sustainability in space. RIZER Assessment (FY 2022 Accomplishments): - Identified any cybersecurity vulnerabilities or gaps in the operational effectiveness of using RIZER software on the latest versions of Da Jiang Innovations (DJI) systems. Anticipated Impact: Provides analytical support for acquisition efforts for ASD(A) staff elements and joint customers. It promotes analyses and assessments for acquisition insights and decisions focused on capability development serving the needs of joint forces and the warfighter. ***FY 2023 Plans:*** Continued acquisition analysis through a portfolio management lens to address the critical joint warfighting mission areas critical to national defense. Major focus areas will support the following projects: Mission Engineering and Integration Mission Thread Pathfinder Analysis: Develop and pilot a Digital Engineering environment a re-usable Digital Engineering environment and methodology for these mission threads to help automate, simplify, and integrate Mission Engineering. Mission Engineering and Integration: Enable Department of Defense to effectively implement enterprise Capability Portfolio Management to align strategic efforts and optimize capability investments across the Department. Follow-on USSF C2 Review: Assess the status of execution phase activities and challenges in costing an agile software program, flexibility and extensibility of the technical architecture, software development control processes, and sufficiency of mechanisms used to map requirements and monitor execution progress to product roadmaps.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603727D8Z / *Joint Warfighting Program (JWP)*	**Project (Number/Name)** 727 / *Joint Warfighting*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Acquisition Intelligence: develop and streamline Acquisition Intelligence policy, guidance and training to improve the integration of intelligence into acquisition, ensuring threat informed acquisition: - Facilitate innovative, tailored and decision quality intelligence - Facilitate the integration of intel into acquisition portfolio management - Enable the acquisition intel workforce in providing more effective data driven intelligence - Enable the continued professionalization of the acquisition intelligence workforce ***FY 2024 Plans:*** Continued acquisition analysis through a portfolio management lens to address the critical joint warfighting mission areas critical to national defense. Major focus areas will support the following projects: Mission Engineering and Integration Mission Thread Pathfinder Analysis: Continue development of a Digital Engineering environment a re-usable Digital Engineering environment and methodology for these mission threads to help automate, simplify, and integrate Mission Engineering. Mission Engineering and Integration: Continued effort for the Department of Defense to effectively implement enterprise Capability Portfolio Management to align strategic efforts and optimize capability investments across the Department. Follow-on USSF C2 Review: Continue assessment of the status of execution phase activities and challenges in costing an agile software program, flexibility and extensibility of the technical architecture, software development control processes, and sufficiency of mechanisms used to map requirements and monitor execution progress to product roadmaps. Acquisition Intelligence: continue the development and streamline Acquisition Intel policy, guidance & training to improve the integration of intel into acquisition, ensuring threat informed acquisition: - Facilitating innovative, tailored & decision quality intelligence - Facilitating the integration of intel into acquisition portfolio management - Enabling the acquisition intel workforce in providing more effective data driven intel - Enabling the continued professionalization of the acquisition intel workforce ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2024 minimal funding increase reflects programmatic changes.			
Accomplishments/Planned Programs Subtotals	2.078	2.411	2.749

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603727D8Z / *Joint Warfighting Program (JWP)*	**Project (Number/Name)** 727 / *Joint Warfighting*

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603769D8Z / *Advanced Distributed Learning*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	63.430	5.911	0.201	0.000	-	0.000	0.000	0.000	0.000	0.000	-	-
776: *Advance Distributed Learning (ADL)*	63.430	5.911	0.201	0.000	-	0.000	0.000	0.000	0.000	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

New Start (Y/N): No

Based on a Memorandum of Agreement between OUSD(P&R) and DHRA, the Advanced Distributed Learning (ADL) program is transferred to DHRA for oversight responsibilities from P&R to DHRA effective FY 2024. This agreement transfers funds encompassing Operation and Maintenance (O&M), Defense-Wide and Research, Development, Test and Evaluation (RDT&E) appropriations.

A. Mission Description and Budget Item Justification

This program supports the Department's initiative for Taking Care of People.

Advanced Distributed Learning (ADL) program is helping DoD evolve its distributed learning systems (e.g., online courses, smartphone-based learning, and DoD-wide enterprise systems for training and education). These improvements benefit DoD in several ways: (1) EFFICIENCY: Increase business systems' efficiency, saving time and resources, by eliminating duplications and developing shared services for digital learning technology and data. (2) EFFECTIVENESS: Improve the quality and efficiency of training/education delivery via online systems by developing modern technologies, integrated data systems, and associated learning science, ultimately impacting personnel readiness.

This program was originally established in response to Section 378 of Public Law 105-261, the National Defense Authorization Act for FY 1999. Other authorities were later provided through, for example, the Defense Planning Guidance. The ADL program directly supports all DoD Components, and as a leader in the field of distributed learning technologies, also coordinates with other Federal agencies, Allies, and Partners. This leads to the program's third benefit: (3) INTEROPERABILITY: It strengthens interagency, interorganizational, and multinational interoperability by developing shared distributed learning capabilities and policy and through leadership in DoD, Federal, and Coalition communities of practice.

The program's work falls into three interrelated categories: (A) Modernization, (B) Documentation, and (C) Coordination. The "modernization" work involves Advanced Technology Development (RDT&E subfield Advanced Technology Development 6.3) in technical areas such as e-learning, mobile learning, IT/data interoperability, learner data modeling and analytics, and associated learning science. These efforts inform the program's "documentation" work, including the authoring and upkeep of technical guidance and policy documents, such as DoD Instruction 1322.26 ("Distributed Learning") and software/data interoperability specifications. Finally, the documentation work drives "coordination" efforts, which consist of implementation support and interagency, interorganizational, and international (e.g., NATO) coordination.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603769D8Z / *Advanced Distributed Learning*

This program's modernization investments are vetted through the Defense ADL Advisory Committee, a working group of military personnel and DoD/Federal civilians who formally represent their organizations' distributed learning interests. These requirements are also aligned to DoD/Federal strategic direction, such as the DoD Digital Modernization Strategy, DoD and Federal Data Strategies, and Personnel and Readiness Strategy for 2030. They are also considered against emerging industry trends and technologies.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	6.056	0.201	0.000	-	0.000
Current President's Budget	5.911	0.201	0.000	-	0.000
Total Adjustments	-0.145	0.000	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.145	-			

Change Summary Explanation

Based on a Memorandum of Agreement between OUSD(P&R) and DHRA, the Advanced Distributed Learning (ADL) program is transferred to DHRA for oversight responsibilities from P&R to DHRA effective FY 2024. This agreement transfers funds encompassing Operation and Maintenance (O&M), Defense-Wide and Research, Development, Test and Evaluation (RDT&E) appropriations.

C. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Advance Distributed Learning (ADL)	5.911	0.201	-
Description: Advance Distributed Learning (ADL) program serves as the innovation hub for distributed learning across DoD and other government agencies. The ADL program supports DoD-wide initiatives for innovation, modernization, and advancement of online and mobile electronic training capabilities as well as associated enterprise-wide software/data services. Activities include advanced technology design and development, demonstrations, assessments, and associated policy stewardship. Results improve efficiencies and reduce costs, in part, by reducing time spent in face-to-face instruction, allowing more time for practical application and repetition, increasing interoperability (which enables discovery, retrieval, and reuse of distributed learning content), and researching and prototyping methods of distributed learning with superior motivational and learning outcomes.			
FY 2023 Plans:			

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603769D8Z *I Advanced Distributed Learning*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Based on a Memorandum of Agreement between OUSD(P&R) and DHRA, the Advanced Distributed Learning (ADL) program is transferred to DHRA for oversight responsibilities from P&R to DHRA. This agreement transfers funds encompassing Operation and Maintenance (O&M), Defense-Wide and Research, Development, Test and Evaluation (RDT&E) appropriations. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Based on a Memorandum of Agreement between OUSD(P&R) and DHRA, the Advanced Distributed Learning (ADL) program is transferred to DHRA for oversight responsibilities from P&R to DHRA effective FY 2024. This agreement transfers funds encompassing Operation and Maintenance (O&M), Defense-Wide and Research, Development, Test and Evaluation (RDT&E) appropriations.			
Accomplishments/Planned Programs Subtotals	5.911	0.201	-

D. Other Program Funding Summary ($ in Millions)

N/A

Remarks

E. Acquisition Strategy

N/A

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603781D8Z / *Software Engineering Institute (SEI)*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	-	14.127	12.306	16.699	-	16.699	17.119	17.525	17.890	18.281	Continuing	Continuing
781: *Software Engineering Institute (SEI)*	-	14.127	12.306	16.699	-	16.699	17.119	17.525	17.890	18.281	Continuing	Continuing

Note

New Start (Y/N): No

This Software Engineering Institute (SEI) Advanced Technology Development Program Element (PE) applies the software and computer science concepts developed under the 0602751D8Z PE to research, develop, and rapidly transition state-of-the-art software technology, tools, development environments, and best practices to improve the engineering, management, fielding, evolution, acquisition, and sustainment of software-intensive Department of Defense (DoD) systems.

A. Mission Description and Budget Item Justification

This program supports the Departments initiatives to Build a Sustainable and Long-Term Advantage, and Build a Resilient Joint Force and Defense Ecosystem.

Software is more pervasive than ever, and computer programs are growing in size and complexity. Designing, managing, and securing integrated, complex, and large-scale mission-critical systems are abilities that the Department of Defense (DoD) and the Defense Industrial Base (DIB) have not yet mastered. Reliance on software-intensive mobile and net-based products and systems has increased (e.g., Joint Tactical Radio System, USS ZUMWALT (DDG-1000), Joint Strike Fighter, F-22, and Army Modernization). As stated in the February 2018 Defense Science Board Report, “Design and Acquisition of Software for Defense Systems,” software is a crucial and growing part of weapons systems and the national security mission, and the DoD must address its ability to build and sustain software continuously and indefinitely. With growing global parity in software engineering, the DoD must maintain leadership to ensure a competitive advantage.

The Software Engineering Institute (SEI) Federally Funded Research and Development Center (FFRDC) was established in 1984 as an integral part of the DoD’s initiative to identify, evaluate, and transition software engineering technologies and practices. The mission of the SEI is to provide the DoD with technical leadership and innovation through research and development to advance the practice of software engineering and technology. The SEI works across government, industry, and academia to improve the state of software engineering from the technical, acquisition, and management perspectives. The SEI engages in research and development of critical software technologies and tools and collaborates with the larger software engineering research community. It facilitates rapid transition of software engineering technologies into practice and evaluates emerging software engineering technologies to determine their potential for improving software-intensive DoD systems. Since its inception, the SEI has helped to transform the fields of software engineering and acquisition, network security, real-time systems, software architectures, and software-engineering process management.

The SEI Program Element (PE) addresses the critical need to research, develop, and rapidly transition state-of-the-art software technology, tools, development environments, and best practices to improve the engineering, management, fielding, evolution, acquisition, and sustainment of software-intensive DoD systems. The

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603781D8Z *I Software Engineering Institute (SEI)*

research conducted by this PE directly benefits the technical domains, such as Command, Control, Communications, Computers, and Intelligence (C4I), Autonomy and Artificial Intelligence (AI), Cyber, and Engineered Resilient Systems.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	14.631	13.417	16.993	-	16.993
Current President's Budget	14.127	12.306	16.699	-	16.699
Total Adjustments	-0.504	-1.111	-0.294	-	-0.294
• Congressional General Reductions	-	-1.111			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.502	-			
• Program Adjustments	-0.002	-	-0.294	-	-0.294

Change Summary Explanation

FY 2024 reduction of $0.294 million is comprised of a realignment of $0.370 million to support the Historically Black Colleges and Universities/Minority Serving Institutions program, which is a priority of the Under Secretary of Defense for Research and Engineering (USD(R&E)), $0.018 million to support departmental priorities and an economic assumption increase of $0.094 million.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603781D8Z / *Software Engineering Institute (SEI)*	Project (Number/Name) 781 / *Software Engineering Institute (SEI)*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
781: *Software Engineering Institute (SEI)*	-	14.127	12.306	16.699	-	16.699	17.119	17.525	17.890	18.281	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project focuses on two main research thrusts with known military applications: (1) Software Engineering, Systems Verification and Validation, and Mission Assurance (formerly Mission Assurance); and (2) Information Assurance.

Software Engineering Institute (SEI) research focuses on the most significant and pervasive software challenges within the Department of Defense (DoD), such as the scalability and reliability of software assurance, supply chain risk management, validation of and trust in autonomous systems, human-computer and human-technology teaming and interaction, computing and communication at the tactical edge, and efficiency and performance of acquisition strategies and software development appropriate for a contested cyber environment.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: SEI Advanced Technology Development in the Area of Software Engineering, Systems Verification and Validation, and Mission Assurance	10.340	8.509	14.902
Description: This research seeks to mature and rapidly prototype techniques to verify methods for identifying requirements, systems of systems architectures, and virtual integration of components. Furthermore, research in this area will pursue rapid prototyping and transitioning of capabilities that verify requirements for software assurance, analysis/control of unverified code and automated repair of damaged code. Software production and code analysis methods developed through this program will also improve the ability to predict how complex software systems, including AI-enabled systems, will behave in untested environments. Increasingly, large numbers of lines of code and the addition of machine-learning techniques will require a commensurate increase in sophisticated verification and validation mechanisms. ***FY 2023 Plans:*** Develop new techniques to allow feedback between deployed software, software modeled through model-based systems engineering, and deployed systems. This approach can be automated using machine learning methods that enable comparison of online information systems performance with modeled systems performance in a variety of mission and application contexts. The intent of this approach in the applied areas is to implement as an information service for DoD platforms to utilize. ***FY 2024 Plans:*** Integrate techniques in system measurement, software development and operations, and model based systems engineering for an automated assessment, modeling, and software deployment process. Focus on strategies for resilience and mission			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603781D8Z / *Software Engineering Institute (SEI)*	**Project (Number/Name)** 781 / *Software Engineering Institute (SEI)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
assurance in large complex infrastructures and develop prototype systems that can be transitioned and tested into DoD applications from cloud to embedded systems. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The increase of $6.393 between FY 2023 and FY 2024 reflects additional investment in developing system measurement techniques, along with system prototypes.			
Title: SEI Advanced Technology Development in the Area of Information Assurance ***Description:*** Powerful machine learning algorithms can be subverted by malicious manipulation or falsification of data collected through normal channels. Algorithms must be trusted and effective in the presence of adversaries. This thrust seeks to defend against and minimize the impacts of information falsification attacks. ***FY 2023 Plans:*** Enable verification and validation of systems at the embedded level through graph based models of embedded systems performance and integration of large collections of such embedded systems on complex command and control applications. The intent of this approach in the applied areas is to implement as an information service for DoD platforms to utilize. ***FY 2024 Plans:*** Enable combined risk analysis between software, machine learning, and cyber security to enable assessment and management of automated systems. These risk metrics will be introduced to a variety of DoD applications from system assessment, to enterprise cloud analytics, and legacy embedded systems.	1.787	1.797	1.797
Title: Artificial Intelligence Engineering Initiatives ***Description:*** Artificial Intelligence (AI) engineering is an emergent discipline focused on developing tools, systems, and processes to enable the application of AI in real-world contexts. The rise in availability of computing power and massive datasets have led to the creation of new AI, models, and algorithms encompassing thousands of variables and capable of making rapid and impactful decisions. Too often, though, these capabilities work only in controlled environments and are difficult to replicate, verify, and validate in the real world. The need for an engineering discipline to guide the development and deployment of AI capabilities is urgent. AI engineering aims to provide a framework and tools to proactively design AI systems to function in environments characterized by high degrees of complexity, ambiguity, and dynamism; and aims to equip practitioners to develop systems across the enterprise-to-edge spectrum, to anticipate requirements in changing operational environments and conditions, and to ensure human needs are translated into understandable, ethical, and thus trustworthy AI. ***FY 2023 Plans:***	2.000	2.000	-

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603781D8Z / *Software Engineering Institute (SEI)*	**Project (Number/Name)** 781 / *Software Engineering Institute (SEI)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Enable the ability for a wide variety of researchers from DoD Research Laboratories to Federally Funded Research and Development Centers to access methods in distributed cloud and High Performance Computing Environments that enable risk analysis in machine learning and distributed computing infrastructure. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The decrease of $2.000 between FY 2023 and FY 2024 is the result of the completion of the Artificial Intelligence Engineering Initiatives effort.			
Accomplishments/Planned Programs Subtotals	14.127	12.306	16.699

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
• BA 2, RDT&E, PE # 0602751D8Z: *Software Engineering Institute Applied Research*	9.245	10.153	11.168	-	11.168	11.401	11.665	11.909	12.168	Continuing	Continuing

Remarks

D. Acquisition Strategy

N/A

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603838D8Z / *Defense Innovation Acceleration (DIA)*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	-	-	293.504	257.110	-	257.110	265.225	249.315	254.531	260.077	Continuing	Continuing
730: *Concepts and Capabilities*	-	-	213.504	182.289	-	182.289	187.973	176.561	180.201	184.068	Continuing	Continuing
731: *Innovation and Modernization*	-	-	80.000	74.821	-	74.821	77.252	72.754	74.330	76.009	Continuing	Continuing

Note

In FY 2023, Congress consolidated existing prototyping program elements (PEs) into one PE, Defense Innovation Acceleration (DIA) 0603838D8Z. The Defense Modernization and Prototyping (DM&P) 0603338D8Z, the Joint Capability Technology Demonstration (JCTD) 0603648D8Z, and certain prototyping activities from the Technology Innovation program 0603375D8Z were combined to create DIA. The new integrated DIA PE provides a streamlined approach and bolsters innovation by focusing on prototyping of critical capabilities that directly support warfighter needs .

A. Mission Description and Budget Item Justification

This program supports the Department's initiatives to Build a Sustainable and Long-Term Advantage, and Build a resilient Joint Force and Defense Ecosystem.

The DIA PE accelerates innovative capability prototypes (TRL 5-7) that address cross-Service/cross-domain military needs in the 24-to-36-month timeframe. Prototype projects are identified through an ideation process that involves Defense-wide participation and detailed physics-based mission analysis to identify impactful capability requirements. Operational and strategic capability gaps are identified through Joint Warfighting Concept aligned mission analysis. DIA focuses on providing prototype systems in support of multi-component experimentation, informing programs of record and validating requirements. DIA prototypes will be evaluated in operationally relevant demonstrations in conjunction with the Office of the Under Secretary of Defense for Research and Engineering (OUSD(R&E)) Mission Capabilities' (MC) experimentation events. DIA will also harness small business and non-traditional performer innovation that creates prototypes to address DoD's modernization challenges.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603838D8Z / *Defense Innovation Acceleration (DIA)*

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	0.000	0.000	0.000	-	0.000
Current President's Budget	0.000	293.504	257.110	-	257.110
Total Adjustments	0.000	293.504	257.110	-	257.110
• Congressional General Reductions	-	-20.187			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	23.000			
• Congressional Directed Transfers	-	290.691			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustment	-	-	-4.521	-	-4.521
• Re-alignment from DM&P 0603338D8Z, JCTD 0603648D8Z	-	-	261.631	-	261.631

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2022	FY 2023
Project: 730: *Concepts and Capabilities*		
Congressional Add: *High-Altitude Optical Reconnaissance Unit and Sensor (HORUS)*	-	20.000
Congressional Add: *Open-Source Intelligence (OSI)*	-	3.000
Congressional Add Subtotals for Project: 730	-	23.000
Congressional Add Totals for all Projects	-	23.000

Change Summary Explanation

In FY 2023, Congress consolidated existing prototyping program elements into one program element 0603838D8Z. $290.691 million reflects the transfer of the Defense Modernization and Prototyping (DM&P) 0603338D8Z, the Joint Capability Technology Demonstration (JCTD) 0603648D8Z, and certain prototyping activities from the Technology Innovation program 0603375D8Z.

FY 2024 includes funding re-alignment from DM&P and JCTD and a program adjustment reduction of $5.693 million to support the Historically Black Colleges and Universities/Minority Serving Institutions program, which is a priority of the Under Secretary of Defense for Research and Engineering (USD(R&E)), $0.273 million to support departmental priorities, and $1.445 million increase for an economic assumption inflation.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603838D8Z / *Defense Innovation Acceleration (DIA)*	Project (Number/Name) 730 / *Concepts and Capabilities*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
730: *Concepts and Capabilities*	-	-	213.504	182.289	-	182.289	187.973	176.561	180.201	184.068	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Concepts & Capabilities (C&C) focuses on executing advanced operational prototypes with the joint Services and CCMDs. C&C validates warfighting concepts and accelerates new capabilities faster than the traditional defense acquisition process. The uniqueness of C&C is in the joint collaboration and the funding flexibility of theTitle-10 investment. C&C emphasizes delivering major system components and/or single fieldable systems for joint warfighting application, while informing Service programs of record. The delivery of these operational prototypes are typically within 24 to 36 months.

C&C drives prototyping investments to address the joint warfighter's most pressing operational capability gaps and accelerates new capability development in conjunction with the joint Services and Combatant Commands (CCMD). Based on established needs, C&C sponsors joint efforts to mature operational prototypes through approved developmental portfolios. OUSD(R&E) portfolio managers provide government oversight and execute collective development with operational leads from the Service and CCMDs; pool technical resources from the Service research, engineering laboratories, program executive offices; leverage academia and industry expertise as needed; require Service cost-sharing partnerships; and execute the necessary planning steps for future transition early within the developmental life cycle. This execution strategy represents a time-proven catalyst for collaborative development and accelerates delivery of operational prototypes to the joint warfighter. In FY 2023, several previously approved efforts transferred from the Joint Capability Technology Demonstration (JCTD) program to the new Defense Innovation Acceleration (DIA) program, as they continue to boost innovation and increase military competitive advantage in the Indo-Pacific area of operations.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Stratospheric Capability Architecture Development (SCAD)	-	3.600	-
Description: Previously approved and funded JCTD project; now aligned under C&C. SCAD supports the National Defense Strategy by delivering materiel solutions to the United States Army (USA) and United States Special Operations Command (USSOCOM) for acquisition and sustainment. SCAD develops, demonstrates, and assesses an unmanned aerial systems platform with stratospheric payloads that provide ground moving target indicator synthetic aperture radar, signals intelligence, and communications relay capabilities. In FY 2022, SCAD developed a concept of operations and conducted technical and operational demonstrations. ***FY 2023 Plans:*** SCAD plans to execute its military utility assessment and transition to the U.S. Army and USSOCOM. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** This C&C project completes in FY 2023.			
Title: Passive Optical Spectrum Control and Exploitation (POSCE)	-	4.650	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Description: Previously approved and funded JCTD project; now aligned under C&C. POSCE uses innovative sensing methods intended to augment persistent intelligence, surveillance, and reconnaissance (ISR) in maritime environments and along terrestrial chokepoints. Additionally, novel sensing provides penetrating ISR in response to operational challenges in anti-access/area-denial environments. ***FY 2023 Plans:*** POSCE plans to conduct technical demonstrations, an operational demonstration/ military utility assessment, and transition the prototypes to Services operating in the U.S. Central Command (USCENTCOM), U.S. Indo-Pacific Command (USINDOPACOM), and U.S. European Command (USEUCOM) areas of responsibility to acquire mission data and demonstrate mission relevance. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The C&C project completes in FY 2023.			
Title: Joint Targeting Support (JTS)	-	5.655	-
Description: Description: Previously approved and funded JCTD project; now aligned under C&C. JTS will reduce the sensor-to-shooter timeline and increase the rate of target identification and engagements by leveraging resources across services, agencies, and coalition partners. JTS will connect sensors, shooters and data across the Services to effectively support targeting cells at all echelons to provide capabilities in support of Joint All- Domain Command and Control (JADC2). JTS will automate Joint target development for deep fires missions by developing and integrating machine learning analytics with Joint- and Service-specific information systems and Intelligence, Surveillance, and Reconnaissance (ISR) networks. JTS will simultaneously build and refine numerous user- and machine-nominated target decks by employing distributed processing and fusion analytics and augmenting the Joint Automated Deep Operations Coordination System (JADOCS) to improve the target development process across echelons and services. In FY 2022, JTS further developed analytics, user interfaces, and exploitation and correlation of Joint forces data. ***FY 2023 Plans:*** In FY 2023, JTS plans to deliver a fully functioning visualization system, conduct a military utility assessment, and complete transition. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The C&C project completes in FY 2023.			
Title: Raging Parakeet (RP)	-	5.750	-
Description: Previously approved and funded JCTD project; now aligned under C&C. Combatant Commands (CCMD) lack the ability to rapidly analyze vast amounts of Intelligence, Surveillance, and Reconnaissance (ISR) data to quickly locate hard-to-find			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
targets with a high degree of accuracy. RP utilizes advanced artificial intelligence, machine learning algorithms, and sensor fusion to decrease manpower requirements and simultaneously increase the accuracy of high-priority target identification. In FY 2022, the U.S. Air Force handed over technical lead to the Naval Research Laboratory (NRL). ***FY 2023 Plans:*** The C&C project plans to gather needed data sets, develops an initial set of algorithms, establishes open architecture standards, completes standards development, develops a prototype processor based on the project's standards, creates fusion and cross-cueing algorithms, performs integration of the payload into the host aircraft, and performs a technical demonstration. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The C&C project completes in FY 2024.			
Title: Reliable Transmission over HF (NORTH) ***Description:*** Previously funded JCTD project; now aligned under C&C. NORTH focuses on command, control, communications, computers, intelligence, surveillance, and reconnaissance and fully-networked command, control and communications (FNC3) modernization. NORTH integrates the Navy's wideband high frequency (HF) mesh networking system and the Air Force's digital HF radios and repeaters to optimize joint information transport datalinks based on sense and respond (S&R) of the spectral environment. All three systems combined provide an enterprise solution that increases operational effectiveness of resilient command, controls and communication in anti-access/ area-denial environments. In FY 2022, NORTH conducted a technical demonstration in simulated conditions that demonstrated an ad hoc HF mesh networking system enhancing FNC3, including resilient command and control (RC2) and nuclear command, control, and communications. ***FY 2023 Plans:*** In FY 2023, NORTH plans to develop and integrate roll-on/roll-off equipment suites on joint Service fixed and mobile platforms and demonstrate the RC2 capability in contested environments. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The C&C project completes in FY 2023.	-	3.816	-
Title: Grandstand ***Description:*** GRANDSTAND leverages recent technological advancements to provide indication and warning (I&W) to U.S. Indo-Pacific Command (INDOPACOM) Commanders and U.S Forces in a timely manner in FY2024. Additional information at higher classifications. ***FY 2023 Plans:***	-	5.500	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Develop and laboratory demonstrate persistent access to threat C5ISRT, demonstrate indication and warning capabilities, reduce latency preparatory to FY2024 near real time data processing capabilities, and identify platform capabilities to access peer competitor C5ISRT. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The C&C project completes in FY 2023.			
Title: IRON QUEST ***Description:*** IRON QUEST leverages recent technological advancements to provide indication and warning (I&W) to U.S. Indo-Pacific Command (INDOPACOM) Commanders and U.S Forces. Additional information at higher classification ***FY 2023 Plans:*** Conduct threat analysis, testing, and operational demonstration in fiscal year 2023 and submit to Deputy's Management Action Group (DMAG). ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The C&C project completes in FY 2023.	-	4.500	-
Title: BRUTUS ***Description:*** BRUTUS leverages recent technological advancements to provide indication and warning (I&W) and to disrupt adversarial command, control, computing, communications, cyber, intelligence, surveillance, reconnaissance and targeting (C5ISRT) capabilities. This solution supports Joint Force freedom of maneuver at all echelons. ***FY 2023 Plans:*** Produce, test, and demonstrate prototype system in an operationally relevant scenario. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The C&C project completes in FY 2023.	-	10.000	-
Title: Scout ***Description:*** This project will build attributable, long-distance, autonomous low-profile vehicles to accomplish a variety of missions. The platform will minimize detection from a variety of sensors through the use of low observable attributes. ***FY 2023 Plans:***	-	3.900	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
In FY 2023, Scout will implement hardware and software updates, while producing other key deliverables for the creation of a prototype. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Scout is planned to complete in FY 2023.			
Title: LUCAS ***Description:*** LUCAS is an cost-effective unmanned prototype in development for deployment at scale. Additional information is classified. ***FY 2023 Plans:*** Additional information is classified. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Lucas is planned to complete in FY 2023.	-	4.500	-
Title: Payload Prototypng to Support Stratospheric Experimentation ***Description:*** The Stratospheric Experimentation effort includes the development and prototyping of stratospheric payloads that can operate on a variety of high-altitude platforms. ***FY 2023 Plans:*** Develop prototype payloads to be used with stratospheric experimentation. Complete reports and work with Service leads for ultimate transition. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** This project will complete in FY 2023.	-	4.400	-
Title: Prototyping Development Efforts to Fill Identified Gaps ***Description:*** A number of projects were identified for some accelerated development in order to participate in future Rapid Defense Experimentation Reserve activities. These include Cyber Shield Coalition, Familiar Relative, Denied Area Operations, LTAMDS-V acceleration, Pacific Ecosystem for Cyber (PEcoC) Acceleration, and decoy prototypes. ***FY 2023 Plans:*** Initiate prototype development in order to participate in future experimentation venues. Additional information can be provided in a classified brief. ***FY 2023 to FY 2024 Increase/Decrease Statement:***	0.000	19.000	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
This effort completes in FY 2023.			
Title: Samurai ***Description:*** Samurai demonstrates an architecture for the Joint Force that will leverage intelligence information at the tactical edge. ***FY 2023 Plans:*** Develop prototypes, integrate with the Joint Force, and plan for demonstration and experimentation. ***FY 2024 Plans:*** Finalize planning and integration. Demonstrate and experiment with the capability, and transition to acquisition. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Not Applicable	-	8.000	8.000
Title: LOGAN ***Description:*** Project information at higher classification ***FY 2023 Plans:*** Additional information is classified. ***FY 2024 Plans:*** Additional information is classified. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Not Applicable	-	7.000	7.000
Title: Collaborative Naval Information Warfare Systems Command Cyber Operations (N-Cyber) ***Description:*** Previously approved and funded JCTD project; now aligned under C&C. The N-Cyber C&C project is an offensive capability that enables warfighters to create non-kinetic effects (NKE) on traditionally hard-to-affect adversary systems from air, land, or sea through the integration of space, cyber, and electronic warfare. ***FY 2023 Plans:*** In FY 2023, N-Cyber plans to integrate and assess the capability against a test electronic warfare system through a technical demonstration. ***FY 2024 Plans:***	-	3.047	3.200

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
In FY 2024, N-Cyber plans to conduct operational demonstrations and a military utility assessment in an operationally-relevant environment. Transition is expected to be led by the 16th Air Force and executed through the Air Force Life Cycle Management Center (AFLCMC). ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Increased funding is to deliver the capability with concept of operations, tactics, techniques, and procedures; and, to cover additional transition costs post demo and/or assessment. The C&C project completes in FY 2024.			
Title: Signal of Opportunity Receiver (SORcer) Enable Ionospheric Modeling (SEIM) ***Description:*** Previously approved and funded JCTD project; now aligned under C&C. By fielding SORcer systems in forward operating locations, SEIM delivers necessary high frequency (HF) propagation data to enable operational awareness of the electromagnetic operating environment. Artificial intelligence (AI) and deep neural network (DNN) techniques are utilized to enable autonomous use of SORcer systems to support better targeting and decision-making for the joint warfighter. In FY 2022, SEIM deployed SORcer systems in operationally-relevant locations, connected SORcer systems to specified networks to exfiltrate near-real-time observations to a centralized location for quality control and assimilation. ***FY 2023 Plans:*** In FY 2023, SEIM plans to develop an AI DNN capable of using multiple SORcer data streams to produce data files appropriate for assimilation and demonstrate the production and delivery of a real-time regional ionospheric model via technical demonstrations. ***FY 2024 Plans:*** In FY 2024, SEIM plans to conduct an operational demonstration/military utility assessment. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Increased funding is to deliver capability with concept of operations, tactics, techniques, and procedures; and, to cover additional transition costs post demo and/or assessment. The C&C project completes in FY 2024.	-	2.982	3.080
Title: Quicksink ***Description:*** Previously approved and funded JCTD project; now aligned under C&C. Quicksink is developing technologies to reduce the number of air assets required for anti-surface warfare (ASuW) operations by increasing ASuW weapon lethality and standoff while decreasing costs. The program is also using the joint direct attack munition as an inexpensive integration and testing platform for Quicksink technologies. In FY 2022, the program successfully demonstrated Quicksink munition against stationary maritime targets.	-	6.995	5.893

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
FY 2023 Plans: Complete laboratory and flight testing and guidance unit. ***FY 2024 Plans:*** Conduct an all-up-round (AUR) operational demonstration/military utility assessment against a target hulk. The inclusion of the seeker and guidance package within the AUR is an enabler to long-range, launch-and-leave ASuW capability. The C&C project completes in FY 2024, with transition to the Air Force Life Cycle Management Center, the explosive fill and fuzing components transitioning to Naval Surface Warfare Center (NSWC) Indian Head, and the case design transitioning to the U.S. Navy Mine Warfare program. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The FY 2024 funding reduction is due to planned schedule changes. The C&C project completes in FY 2024.			
Title: Turul ***Description:*** Previously approved and funded JCTD project; now aligned under C&C. Turul provides scalable, machine learning-enabled algorithms to find and fix fleeting targets to accelerate kill chain activities against time-sensitive targets. Information from these capabilities provides situational awareness to Combatant Command (CCMD) operators and can be used to tip and cue other sensor systems. ***FY 2023 Plans:*** In FY 2023, Turul plans to execute multiple technical demonstrations and an operational demonstration ***FY 2024 Plans:*** In FY 2024, Turul plans to execute its military utility assessment and transition to a program of record under the U.S. Space Force's Space Systems Command. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The C&C project completes in late FY 2024.	-	2.700	3.400
Title: Surface-Launched Advanced Munition Datalink (SLAMD) ***Description:*** Previously approved and funded JCTD Project; now aligned under C&C. The SLAMD C&C develops and integrates a tactical projectile data link (PDL) into a gun-launched, maneuvering projectile to enable long-range precision fires in a GPS-denied environment. The data link is also an enabler for ground-to-round and round-to-round communications for tactical applications, such as swarming. In FY 2022, SLAMD completed system and subsystem technical requirements generation, initial PDL design and development, PDL interface control document (ICD) development, radar mode design, and assessment metrics development.	-	3.793	4.900

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
FY 2023 Plans: Conduct PDL integration into projectile airframe for initial technical demonstration. Complete PDL-to-Radar integration activities, finalize the ICD, and demonstrate Radar-to-PDL communications in a lab environment. Develop test documentation and analysis on performance expectations ***FY 2024 Plans:*** Complete the risk management framework process and obtain an authority to operate, conduct final technical demonstration, flight operational demonstration/military utility assessment. The SLAMD PDL design and ICD plans to transition to Program Executive Office (PEO) Missiles and Space and Joint Program Executive Office (JPEO) Armaments and Ammunition. The C&C project completes in FY 2024. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Increased funding delivers capability with concept of operations, tactics, techniques, and procedures; and, to cover additional transition costs post demo and/or assessment. The C&C project completes in FY 2024.			
Title: High-Frequency Silent Transmission over Optimum Delivery of Expeditionary Situational Awareness Resilient Mesh (HF STORM) ***Description:*** Previously approved and funded JCTD project; now aligned under C&C. As a result of technical changes, this project's name changed from "High-Frequency Silent Transmission over Optimum Delivery of Expeditionary Situational Awareness Resilient Mesh" to "High-Frequency Silent Transmission over Resilient Mesh." This project refines the Department of Defense (DoD)'s Fully-networked Command, Control, and Communications (FNC3) and high frequency (HF) roadmaps to mature and layer several key technologies. These developments combine to increase transmission directivity while minimizing detection susceptibility in tactical, relocatable, and expeditionary ground and aerial nodes that link with a large ground-based array to provide global and secure reach in a contested or denied environment. In FY 2022, HF STORM conducted a technical demonstration. ***FY 2023 Plans:*** HF STORM plans to receive Interim Authority to Test (IATT), conduct Test Readiness Review (TRR), integrate feedback from operational community associated with ongoing test and refinement and conduct a second technology demonstration with fully integrated architecture. ***FY 2024 Plans:*** The C&C project plans to perform an operational demonstration and military utility assessment and transition the fieldable prototype for integration into current and next generation programs. ***FY 2023 to FY 2024 Increase/Decrease Statement:***	-	5.300	6.145

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Increased funding is to deliver capability with concept of operations, tactics, techniques, and procedures; and, to cover additional transition costs post demo and/or assessment. The C&C project completes in FY 2024.			
Title: Joint Undersea Surveillance and Targeting (JUST) ***Description:*** Previously approved and funded JCTD Project; now aligned under C&C. JUST will deliver a new capability to monitor changes to the undersea battlespace and seabed infrastructure by demonstrating intelligent autonomous unmanned undersea vehicle (UUV)-enabled target recognition and change detection capability enabling secure Joint Force offensive and defensive operations. Combatant Commands (CCMD) require JUST capabilities for force protection and operational plan execution. In FY 2022, JUST developed and tested automatic target recognition (ATR) and automatic change detection (ACD) capabilities and assessed surrogate UUVs for testing in an operationally-relevant environment. ***FY 2023 Plans:*** In FY 2023, JUST continues to develop and test the vehicle's on-board intelligence systems and capabilities, including ATR and ACD, and advanced vehicle autonomy with on-vehicle processing to meet the mission objectives. ***FY 2024 Plans:*** In FY 2024, JUST plans to conduct technical and operational demonstrations. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The C&C project completes in FY 2024.	-	2.887	5.600
Title: Autonomous Multi-Domain Launcher (AML) ***Description:*** Previously approved and funded JCTD Project; now aligned under C&C. AML will develop and demonstrate an unmanned, cab-less, highly mobile, C-130 transportable prototype Long Range Precision Fires (LRPF) launcher. The prototype launcher will be capable of leader-follower autonomy, drive-by-wire, and remote launcher turret and fire control operation. Coalition partners is collaborating on this C&C Project. In FY 2022, AML completed its Implementation Directive and Management Plan. ***FY 2023 Plans:*** In FY 2023, AML will deliver an initial system design review as well as deliver the vehicle and launcher and conduct a technical demonstration. ***FY 2024 Plans:***	-	3.200	3.100

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
In FY 2024, AML will conduct an operational demonstration and military utility assessment and transition to Program Executive Office (PEO) Missiles and Space, Strategic and Operational Rockets and Missiles (STORM) Project Office, Field Artillery Launchers (FAL). ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The FY 2024 funding reduction is due to planned schedule changes.			
Title: Birdseye Yonder (BEYOND) ***Description:*** Previously approved and funded JCTD project; now aligned under C&C. BEYOND matures and integrates advanced, photonic-based radiofrequency (RF) sensors (referred to as “Wall Fly”) that generate high-quality geolocation and signal intelligence of threats far beyond current capabilities. BEYOND matures and integrates sensors into existing USEUCOM sensor networks and demonstrates signals intelligence. ***FY 2023 Plans:*** In FY 2023, BEYOND builds the integrated photonics package and tactical ground-based wall fly sensor. ***FY 2024 Plans:*** In FY 2024, BEYOND builds back-end processing, continues reducing size and weight, initiates integration at US Air Forces Europe (USAFE)’s Ramstein Air Defense Sensor Integration Laboratory (RADSIL). ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Increased funding is for miniaturization and weight reduction and integration into RADSIL.	-	3.800	4.500
Title: Collaborative Artificial Intelligence (AI) for Predicting Enemy Course of Action (ECOA) (CAPE) ***Description:*** Previously approved and funded JCTD Project; now aligned under C&C. CAPE is an Artificial Intelligence (AI)-enabled decision support software for predicting enemy course of action (ECOA). CAPE introduces a unique Decision Centric Architecture (DCA) not currently found in fielded systems and advances symbolic plan recognition, semantic networks, and mixed-initiative reasoning that facilitate human- machine teaming while automating ignorance identification and request for information generation. ***FY 2023 Plans:*** In FY 2023, CAPE develops a software prototype, reusable software libraries, and a software development kit that accelerates third party artificial intelligence integration. ***FY 2024 Plans:***	-	4.500	5.200

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
In FY 2024, CAPE plans to conduct a technical demonstration of a software prototype capable of operational use by the United States Space Force (USSF). ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The C&C project completes in FY 2024.			
Title: Correlating Order-of-Battle (OB) Movement Patterns for Learned Event Exploitation (COMPLEX) ***Description:*** Previously approved and funded JCTD Project; now aligned under C&C. COMPLEX is artificial intelligence and machine learning software that improves our ability to predict our adversaries' movements and operational activities. COMPLEX will have two main impacts on the Joint Warfighter capability: increasing warning capability against foreign military actions and increasing knowledge of activity patterns within, across, and between foreign units. ***FY 2023 Plans:*** In FY 2023, COMPLEX expands inventory of indicators and warnings support for multiple adversaries military deployments while continuously updating knowledge databases on enemy deployment tactics, techniques, and procedures. ***FY 2024 Plans:*** In FY 2024, COMPLEX plans to perform an initial technology demonstration of its developed software. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Increased funding is due to the project ramping up to a full development team and preparation for test and evaluation activities.	-	4.200	4.750
Title: HAYFINS ***Description:*** Previously approved and funded JCTD project; now aligned under C&C. HAYFINS is a ground-based system supporting space and autonomy modernization priorities by fusing protection technologies, artificial intelligence/machine learning, and legacy systems enabling freedom of maneuver in support of multi-domain operations. ***FY 2023 Plans:*** In FY 2023, HAYFINS initiates design and initial development of a prototype for demonstration and assembly. ***FY 2024 Plans:*** In FY 2024, HAYFINS completes its initial prototype and an initial hardware/software package to support future transition. HAYFINS also conducts an initial technology demonstration. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding increase in FY 2024 is to ramp up prototype manufacturing.	-	4.963	5.800
Title: Joint Radiant Touchstone (J-RTS)	-	3.900	4.195

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Description: Previously approved and funded JCTD Project; now aligned under C&C. Joint Warfighters require a vulnerability assessment tool designed to enable warfighters with freedom of maneuver and freedom of action. The J-RTS tactical software tool will provide warfighters with freedom of maneuver, function as a key offensive warfare enabler, and provide awareness for disaggregated/disadvantaged users. J-RTS will scale into a Joint Force capability supporting warfighters across all theaters by sharing data as well as planning details once the tool is deployed to theater assets. Further technical details are classified. ***FY 2023 Plans:*** FY 2023 project schedule and deliverable are classified. ***FY 2024 Plans:*** FY 2024 project schedule and deliverable are classified. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Increased funding is to deliver capability with concept of operations, tactics, techniques, and procedures; and, to cover additional transition costs post demo and/or assessment.			
Title: Low-Altitude Future Vertical Take-off and Landing (VTOL) Long-Range Attack Missile (LRAM) ***Description:*** Previously approved and funded JCTD project; now aligned under C&C. The LRAM C&C project builds upon L3Harris' Red Wolf air-launched unmanned air vehicle (UAV). Specifically, the C&C project develops a launcher and control interface for vertical takeoff and landing (VTOL) aircraft, kinetic payload, command and control architecture, and a seeker for autonomous over-the-horizon engagements. Most of the aforementioned is extensible to other aircraft, to include unmanned aircraft. This weapon system concept significantly extends the lethal range of VTOL-launched weapons. Moreover, outfitting the VTOL fleet of tactical aircraft (H-1, H-60 series, AH-64, and Joint Future Vertical Lift) with this weaponized UAV dramatically increases the number of aircraft available for over-the-horizon strike. ***FY 2023 Plans:*** Development of a Fire Control System for the UAV and AH-1Z interface / launcher. Captive-carry flight testing of the UAV aboard AH-1Z. ***FY 2024 Plans:*** Flight testing, operational demonstration, military utility assessment and transition to a new program of record. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding increase is for flight testing and operational demonstration.	-	4.491	4.500
Title: Rapid Large Area Clearance (RLAC)	-	5.300	5.900

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Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603838D8Z / *Defense Innovation Acceleration (DIA)*	**Project (Number/Name)** 730 / *Concepts and Capabilities*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Description: Previously approved and funded JCTD project; now aligned under C&C. RLAC rapidly conducts large area clearance of ports and airfields from multiple explosive threats to enable access, maneuver and protection for multi-domain operations to ensure that critical air and sea ports of debarkation and ground lines of communication are tenable to support joint fires and logistics in contested environments. Specifically, RLAC will develop and integrate autonomous small Unmanned Aerial Systems (sUAS) and Unmanned Ground Vehicles (UGV) equipped with automatic target recognition to rapidly survey, detect, identify, and map both surface and buried unexploded explosive ordnance (UXO), and then use lasers to neutralize sub-munitions at stand-off distances. ***FY 2023 Plans:*** In FY 2023, RLAC builds, integrates and tests subsystem prototypes; develops standoff neutralization of sub-munitions; and, develops cooperative autonomy, target recognition and deep detection. ***FY 2024 Plans:*** In FY 2024, RLAC plans to develop surveying, detection, geolocation/mapping and identification of all surface targets and further integrate the RLAC platform with autonomy and communications. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding increase for integration and system testing.			
Title: Sea Archer ***Description:*** Previously approved and funded JCTD Project; now aligned under C&C. Sea Archer will hold key fixed military systems at risk at the onset of conflict. Further details of the project are classified. ***FY 2023 Plans:*** In FY 2023, Sea Archer will develop the platform hardware and software and any necessary modifications followed by an exercise demonstration on a testing range. ***FY 2024 Plans:*** In FY 2024, Sea Archer will conduct full system integration and testing, the operational demonstration (OD) in a threat-representative environment and conduct its military utility assessment (MUA) and transition. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding increase is for final OD and MUA.	-	3.950	4.500
Title: Shadow Cat	-	3.775	4.000

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603838D8Z / *Defense Innovation Acceleration (DIA)*	**Project (Number/Name)** 730 / *Concepts and Capabilities*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Description: Previously approved and funded JCTD project; now aligned under C&C. This project is part of the fully-networked command, control, and communications problem-set. Further details and descriptions of this project are classified. ***FY 2023 Plans:*** FY 2023 project schedule and deliverable are classified. ***FY 2024 Plans:*** FY 2024 project schedule and deliverable are classified. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The increase of is due to an accelerated technical demonstration schedule.			
Title: Aerial Port of the Future (APoF) ***Description:*** Previously approved and funded JCTD project; now aligned under C&C. Aerial ports and air transportation expeditionary operations are constrained by poorly performing and unlinked Information Technology (IT) systems, outdated command, control, and communications networks, and physical handling of critical classes of supply. To solve these problems, APoF develops, integrates, and tests emerging capabilities at aerial ports by providing a logistics common operating picture for planning, processing, and managing joint force cargo; an integrated automated system to manage personnel, cargo, and munitions; and man/unmanned materiel handling equipment to rapidly load sustainment to global air mobility assets. In FY 2022, APoF leveraged high-impact improvements to IT infrastructure for tactical awareness of the aerial port, completed the spiral for IT infrastructure development, and started two new spirals: one for automated systems with portable computing and another for the integration of autonomy and machine learning with advanced data analytics. ***FY 2023 Plans:*** APoF plans to complete the spiral for automated systems with portable computing, advance the spiral for the integration of autonomy and machine learning with advanced data analytics, and conduct technical and operational demonstrations. ***FY 2024 Plans:*** APoF plans to conduct its military utility assessment and transition the automated infrastructure tools, hardware/software residuals and robotic material handling equipment systems through Air Mobility Force Center of Excellence to Elmendorf Air Force Base, Alaska; Joint Base McGuire-Dix, New Jersey; Pope Army Airfield, North Carolina; and USINDOPACOM expeditionary locations. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The FY 2024 funding reduction is due to planned schedule changes. This C&C project completes in FY 2024.	-	5.250	5.100
Title: Concepts & Capabilities (C&C) Portfolio Development Initiatives (PDI)	-	11.000	68.876

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603838D8Z / *Defense Innovation Acceleration (DIA)*	**Project (Number/Name)** 730 / *Concepts and Capabilities*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Description: Continually-funded effort. This funding allocation is to provide future funding for in- and out-year new-start C&C projects. Through the C&C PDI effort, OUSD(R&E) sponsors efforts to address the Department's most pressing operational capability gaps and accelerate new capability development in collaboration with the Joint Services and Combatant Commands (CCMD). OUSD(R&E) executive leadership will endorse and make final recommendations for Congressional approval in accordance with H.R. 2617, Consolidated Appropriations Act, Section 8061. Selected projects leverage multicomponent agencies within the global research and engineering enterprise, to include government labs and integration agents, depots, academia, and commercial defense industrial base (DIB) providers. As provided by the Deputy Chief Technology Officer for Mission Capabilities (DCTO(MC)), operational prototyping activities utilize best practices to satisfy joint and crosscutting needs and work collectively to streamline transition and scale-up into joint Service acquisition systems where appropriate. Current developmental portfolios are designed for, but are not limited to, addressing critical capabilities gaps in battle-space management; cyber; command, control, communications, computers, cyber, intelligence, surveillance, reconnaissance, and targeting (C5ISRT) and Counter-C5ISRT; resilient communications; unmanned and autonomous systems; deception and decoys; electronic warfare and sensors; weapons and platforms; space-based capabilities; and logistics and sustainment. This fiscal year's funding includes a number of projects submitted in a Congressional new-start report. Projects identified for funding this fiscal year will be included on future R2 exhibits while projects that are more than the $5M threshold will be included in congressional new start notification packages. In future fiscal years, this report will be submitted earlier in the fiscal year and include those projects. ***FY 2023 Plans:*** Develop and shape future projects into approved C&C developmental portfolios; sponsor and invest in advanced prototyping activities as new-starts that support the National Defense Strategy (NDS) and USD(R&E) priorities. ***FY 2024 Plans:*** Develop and shape future projects into approved C&C developmental portfolios; sponsor and invest in advanced prototyping activities as new-starts that support the NDS and USD(R&E) priorities. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The increase reflects that fact that most FY 2023 projects are already identified and included as separate projects, with a few final decisions being made for prototyping projects that fill operational and strategic capability gaps. Projects that will be funded in FY 2024 are already being identified, and they will be included separately on future R-2 exhibits.			
Title: Special Access Program (SAP) Assimilation and Integrated Operational Management	-	14.200	14.650
Description: Continuously -funded effort. This effort is comprised of two execution essentials that support the entire C&C project code: (1) Special Access Program (SAP) Assimilation, and (2) Warfighter Integrated Operational Management. This effort executes a select number of highly-classified projects in areas such hypersonics and counter-hypersonics, time-sensitive targeting, electronic miniaturization, electronic countermeasures, advanced mobile / ad hoc network communications, space			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603838D8Z / *Defense Innovation Acceleration (DIA)*	**Project (Number/Name)** 730 / *Concepts and Capabilities*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
situational awareness, cyber, counter-ISR, decoys and deception, and persistence surveillance. This element funds SAP assimilation and synchronization across the Joint prototyping activities to ensure DIA efforts and investments remain fully SAP-informed while maintaining requisite security compliance. Liaising directly with the joint warfighter (e.g., Combatant Commands (CCMD) and Services) on prototype development is paramount to avoid unwanted duplication, propagate collaboration and achieve joint interoperability. ***FY 2023 Plans:*** Provide integrated operational management with joint Service and CCMD direct participation in shaping and executing operational prototypes. Sponsor and execute projects selected by the Deputy Chief Technology Officer for Mission Capabilities (DCTO(MC)) and OUSD(R&E) leadership that are fully SAP-informed and synchronized. ***FY 2024 Plans:*** Provide integrated operational management with joint Service and CCMD direct participation in shaping and executing operational prototypes. Sponsor and execute projects selected by the DCTO(MC) and OUSD(R&E) leadership that are fully SAP-informed and synchronized. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Increased funding accounts for a minor increase in project execution.			
Accomplishments/Planned Programs Subtotals	0.000	190.504	182.289

	FY 2022	FY 2023
Congressional Add: High-Altitude Optical Reconnaissance Unit and Sensor (HORUS)	-	20.000
FY 2023 Plans: HORUS is a prototype electro-optical/infrared system incorporating a modular open system architecture to provide an adaptable and evolvable capability. The HORUS prototype supports day or night operations providing multi-spectral, high-definition full motion video from extreme slant ranges. Specific activities and demonstrations will be finalized within the year of execution. This technology area is a Congressional interest item and additional resources were provided above the President's budget.		
Congressional Add: Open-Source Intelligence (OSI)	-	3.000
FY 2023 Plans: This project continues development and transition of the Open-Source Supply Chain Analytics Resource (OSSCAR) project. OSSCAR develops a capability that enables planners and operators to rapidly analyze and leverage open-source supply chain data to adapt to a dynamic operational environment. Quickly accessing and assessing publicly available information provides insights for developing distribution and sustainment courses of action and allows for vetting critical suppliers to U.S. or adversary supply chains.		

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603838D8Z / *Defense Innovation Acceleration (DIA)*	**Project (Number/Name)** 730 / *Concepts and Capabilities*

	FY 2022	FY 2023
Specific activities and demonstrations will be finalized within the year of execution. This technology area is a Congressional interest item and additional resources were provided above the President's budget.		
Congressional Adds Subtotals	-	23.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

Upon project closeout, a C&C project has three possibilities:

1) Transition as Capability Delivery (Operational Prototype)
- To a new or existing Program of Record
- As a residual leave behind for immediate operational use
- Or both

2) Transition as Capability Enabler (Developmental Prototype)
- Informs further acquisition programs and/or requirements development

3) No Transition
- Requirements change or no longer valid
- Did not meet deliverables as planned

The integrated management team on a C&C project includes an operational manager from a CCMD, a technical manager from Service research and engineering labs, and a transition manager from a program executive office. This ensures that transition is planned for throughout the lifecycle of the project.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense											Date: March 2023	
Appropriation/Budget Activity 0400 / 3					R-1 Program Element (Number/Name) PE 0603838D8Z / *Defense Innovation Acceleration (DIA)*				Project (Number/Name) 731 / *Innovation and Modernization*			
COST ($ in Millions)	**Prior Years**	**FY 2022**	**FY 2023**	**FY 2024 Base**	**FY 2024 OCO**	**FY 2024 Total**	**FY 2025**	**FY 2026**	**FY 2027**	**FY 2028**	**Cost To Complete**	**Total Cost**
731: *Innovation and Modernization*	-	-	80.000	74.821	-	74.821	77.252	72.754	74.330	76.009	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Innovation and Modernization (I&M) focuses on early-stage innovation discovery and leap-ahead efforts that expand the art-of-the-possible with a strong emphasis on small businesses and non-traditional partners. Activities within this project include early exploration of potentially game-changing technologies and concepts, harnessing small and non-traditional business innovation to address Department of Defense (DoD) modernization challenges. I&M acts as an innovation accelerator by funding discovery efforts and the development of prototypes to identify and mature solutions for joint capability gaps. Efforts support both the technology maturation and development of transition pathways through partnerships with Services, Combatant Commands (CCMDs), and other defense agencies to enable effective, affordable, and critically needed early stage “developmental” prototype technologies. I&M achieves this through a tailored execution model that:

- Leverages innovation from all sources including Service laboratories, Federally Funded Research and Development Centers (FFRDCs)/University Affiliated Research Centers (UARCs), the defense industry, small businesses, non-traditional performers, and academia;
- Responds rapidly with the ability to identify and fund prototyping efforts within the year of execution to accelerate the rate of innovation and address emerging opportunities and threats;
- Leverages Services, defense agency, and industry investments through partnerships that share risk and increase alignment with OUSD(R&E) priorities;
- Incorporates transition sponsor participation during project development, prototyping, and evaluation;
- Creates an innovation pipeline to support formalized experimentation and transition efforts, such as RDER, targeting Department priorities and capability gaps;
- Is informed by Department-level strategies and priorities, including the National Defense Strategy, OUSD(R&E) critical technology areas, and the Combatant Commands’ (CCMD) integrated priority lists ; and,
- Coordinates across the defense innovation ecosystem, including Service laboratories, FFRDCs/UARCs, academia, and the private sector, thereby increasing impact and reducing duplication.

With funds available throughout the year of execution, I&M enables the OUSD(R&E) to identify, accelerate, and rapidly transition innovation from small businesses and non-traditional performers that otherwise would not be realized through traditional research and development pathways. Accordingly, I&M can be responsive and flexible to the DoD and joint warfighter needs, supporting rapid prototyping to meet immediate capability needs or game-changing technologies that maintain technological superiority and create enduring change.

I&M’s focus on innovation discovery leads to smaller efforts supported by joint and interagency partnerships with clearly defined milestones and risk reduction. Prototyping efforts are identified throughout the year by leveraging engagements with industry, Service laboratories, FFRDCs, and other innovation centers. Individual projects generally span 12 to 24 months, typically at a cost of less than $2.000 million. In FY 2023, previously approved and funded efforts transferred from Defense Modernization and Prototyping (DM&P) 0603338D8Z to I&M for continued development and innovation discovery with small businesses and non-traditional performers.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603838D8Z / *Defense Innovation Acceleration (DIA)*	**Project (Number/Name)** 731 / *Innovation and Modernization*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Low-Cost Innovative Projects (Projects less than $1.000 million per phase)	-	12.250	-
Description: These projects are prototype investments with the potential to deliver rapid capabilities, and seek to mature and transition low-cost innovative technologies. ***FY 2023 Plans:*** In FY 2023, I&M intends to complete execution and transition the following low-cost projects: • Perched Mantlet: This effort developed an unattended ground sensor prototype to detect low and medium altitude threats. Additional details are classified. Development of the prototype capability continues in FY 2023 with final transition to DoD partners. In FY 2023, this effort transitioned from PE 0603338D8Z DM&P to I&M. • Arctic Grid Energy Storage (AGES): This project developed and demonstrated a battery storage and tactical generator microgrid capability that meets critical operational requirements in extreme cold weather environments; emphasizing scalable, flexible, and high-power quality for continuous and high-energy demands. Development and evaluation of the prototype continues in FY 2023 with final transition to the joint Services. In FY 2023, this project transitioned from PE 0603338D8Z DM&P to I&M. • International Security Assessment and Analytic Capability (ISAAC): This project leveraged small business innovators in the artificial intelligence/machine learning (AI/ML) space to further develop non-traditional intelligence, surveillance, and reconnaissance (ISR) collection and better understand diplomatic, informational, military, economic, financial, intelligence, and law enforcement actions. Development of the prototype capability continues in FY 2023 with final transition to U.S. Indo-Pacific Command (USINDOPACOM). In FY 2023, this project transitioned from PE 0603338D8Z DM&P to I&M. • U.S. Special Operations Command (USSOCOM) Ignite: This annual program is a low-cost innovation accelerator that combines the ingenuity and out-of-the-box thinking of military students with real-world military problems curated by USSOCOM. Students from multiple universities worked together to develop prototype solutions to relevant challenges like drone autonomy, sensor and data fusion, and casualty care at the tactical edge. Development of prototypes continues in FY 2023 with final transition into operational capabilities. In FY 2023, this project transitioned from PE 0603338D8Z DM&P to I&M. • Distributed sensing from Air, Ground, and Naval platforms (DRAGON): This project delivered a cost-effective solution for incoming threat detection by incorporating advancements across multiple technology focus areas including improved sensors, machine learning, and edge processing. Development and evaluation of the technology in a relevant environment continues in FY 2023 prior to transitioning to the U.S. Navy. In FY 2023, this project transitioned from PE 0603338D8Z DM&P to I&M. • Automated Joint Terminal Attack Control Message Exchange (AJME): This project designed and developed a prototype software that automates the exchange of specific messages across joint systems, improving the clarity and speed of communications necessary for coordinated fires support. Development of the technology continues in FY 2023 with final transition to the U.S. Air Force. In FY 2023, this project transitioned from PE 0603338D8Z DM&P to I&M. • SDT: This is a classified program. Additional information is available upon request. In FY 2023, this project transitioned from PE 0603338D8Z DM&P to I&M.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603838D8Z / *Defense Innovation Acceleration (DIA)*	**Project (Number/Name)** 731 / *Innovation and Modernization*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
• Bullseye: This project developed and demonstrated novel web-based tools to significantly reduce the targeting timeline. Development and integration of the software tool suite continues in FY 2023 with final transition to the U.S. Air Force and other interagency partners. • Jaded Unicorn: This project developed and demonstrated an innovative electronic-warfare capability extensible to existing ground and air platforms, to address modern challenges. Development of the capability continues in FY 2023 with final transition to the U.S. Army and U.S. Air Force. In FY 2023, this project transitioned from PE 0603338D8Z DM&P to I&M. • Automated Network Inference and Fusion: This tool enabled more robust effects-based analysis and course of action development for selected networks and nodes that allow its customers to carry out national security and military strategies. Development of this software toolset continues in FY 2023 with final transition to the U.S. Air Force. In FY 2023, this project transitioned from PE 0603338D8Z DM&P to I&M. • Tactical Microgrid Standard Environmental Control Unit (TMS ECU): This project developed a tactical microgrid standard compliant controller for environmental conditioning units enabling networked capability to optimally operate heating and cooling equipment, reducing power demand and fuel consumption. Development of the capability continues in FY 2023 with final transition to the U.S. Army. In FY 2023, this project transitioned from PE 0603338D8Z DM&P to I&M. • Future Technology Threat Understanding (FTTU): This project established a metric-based analysis methodology and rapid prototyping approach to scope, prioritize, and empirically evaluate how the confluence of a wide range of advanced technologies may lead to future threats. Development of the threat prototype continues in FY 2023 with final transition to USSOCOM. In FY 2023, this project transitioned from PE 0603338D8Z DM&P to I&M. • Dark Skies: This is a classified program to reduce risk for tactical aircraft in contested environments. Additional information is available upon request. In FY 2023, this project transitioned from PE 0603338D8Z DM&P to I&M. • 3D Printed Radiation Shielding of Electronic Components: This project investigated and developed a novel approach to mitigate radiation damage in extreme environments to microelectronic systems, using unique additive manufacturing techniques. Development of the prototype capability continues in FY 2023 with final transition to DoD and interagency partners. In FY 2023, this project transitioned from PE 0603338D8Z DM&P to I&M. • Identity Warrior: This project leveraged advances in optics, cloud computing, and AI/ML to passively capture and analyze human signatures at a distance. Identity Warrior screened individuals against known adversaries in real-time on existing Android computing platforms located throughout the joint force. Development of the prototype capability continues in FY 2023 with final transition to the U.S. Army. In FY 2023, this project transitioned from PE 0603338D8Z DM&P to I&M. • Distributed Littoral Operations Fuel Transfer System (DLOFTS): This project delivered an innovative transportable refueling system to rapidly transfer fuel to shore-based units. Development of the capability continues in FY 2023 with final transition to the U.S. Navy and U.S. Air Force. In FY 2023, this project transitioned from PE 0603338D8Z DM&P to I&M. • Flying Self Emplacement Sea Glider: This project merges two distinct unmanned systems: Unmanned Undersea Vehicle (UUVs) and Unmanned Aerial Vehicles (UAVs) resulting in a hybrid unmanned system capable of autonomous flight followed by transition			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603838D8Z / *Defense Innovation Acceleration (DIA)*	**Project (Number/Name)** 731 / *Innovation and Modernization*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
to underwater operation. Development of the capability continues in FY 2023 with final transition to the U.S. Navy. In FY 2023, this project transitioned from PE 0603338D8Z DM&P to I&M. • Next Generation Hypersonic Testing (NiGHT): This project tested and assessed the utility of a novel technology developed by an innovative start-up company that could be leveraged in DoD applications. Details of this technology and its applications are classified. Additional information is available upon request. Development of the prototype capability continues in FY 2023 with final transition to the U.S. Air Force. In FY 2023, this project transitioned from PE 0603338D8Z DM&P to I&M. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The respective projects complete in FY 2023.			
Title: Intelligence, Surveillance, Reconnaissance, and Targeting (ISRT) ***Description:*** This project develops laser target designators for integration onto a small form factor gimbal to support ISR and targeting missions. This project reduces the size, weight, and power (SWaP) of the gimbal, integrate tracking and targeting algorithms, and optimize optical and laser performance. These improvements enable precision fires while conducting ISR missions with a small unmanned aerial system (UAS). Design of the ISRT prototype initiated in FY 2022. ***FY 2023 Plans:*** In FY 2023, this project transitioned from PE 0603338D8Z DM&P to I&M. ISRT development continues in FY 2023, with the prototype targeting system undergoing operational evaluation and qualification. ISRT culminates with the delivery of a prototype to the joint Service in FY 2023. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Efforts conclude at the end of FY 2023 with the developed capability transitioning to the USSOCOM for integration.	-	1.000	-
Title: Expeditionary Accurate Tactical (EXACT) ***Description:*** This project develops a low-SWaP capability to provide accurate, robust, and reliable positioning, navigation, and timing (PNT) information. Additional details are classified. ***FY 2023 Plans:*** In FY 2023, this project transitioned from PE 0603338D8Z DM&P to I&M. EXACT development continues in FY 2023 with integration of the software and hardware into a functioning prototype with developmental testing in an operational environment. The prototype is planned to transition to the Joint Program Executive Office Armaments & Ammunition (JPEO A&A) for continued maturation and integration into existing warfighter capabilities. ***FY 2023 to FY 2024 Increase/Decrease Statement:***	-	1.000	-

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603838D8Z / *Defense Innovation Acceleration (DIA)*	**Project (Number/Name)** 731 / *Innovation and Modernization*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Efforts conclude at the end of FY 2023 with the developed capability transitioning to the JPEO A&A for continued maturation.			
Title: Intelligent Sensing for Remote & Field Care (IS4RFC) ***Description:*** This project prototyped an innovative ultrasound imaging system to enhance small unit medical self-sufficiency at the tactical edge in support of future distributed warfighting concepts, such as the Army Multi-Domain Operations and the U.S. Marine Corps (USMC) Expeditionary Advanced Base Operations. These concepts involve units separated by large geographic distances and operating in austere environments with area denial challenges, which necessitate the need for intelligent medical devices that support trauma care in the field by overwhelmed or inexperienced care providers. Access to imaging systems at the tactical edge is a critical enabler, providing combat medical personnel with a new and more accurate tool to diagnose and triage the wounded. Prototype development initiated in FY 2022. ***FY 2023 Plans:*** The IS4RFC effort completes prototype development and software integration in FY 2023. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Efforts conclude at the end of FY 2023 with the developed capability transitioning to the U.S. Army and USSOCOM for continued maturation.	-	1.000	-
Title: Autonomous Low-Profile Vessel (ALPV) Project ***Description:*** This project designs, develops, and tests an autonomous maritime surface logistics platform prototype capable of transporting up to a 10-ton payload across large distances of the ocean with minimal visibility and possibility of detection. The low profile and low-cost platform provides an innovative logistics solution to support expeditionary advanced basing operations. Prototype development initiated in FY 2022. ***FY 2023 Plans:*** In FY 2023, this project transitioned from PE 0603338D8Z DM&P to I&M. Proof of concept demonstrations of the prototype occur in the second quarter of FY 2023. The USMC Warfighting Laboratory (MCWL) and Office of Naval Research (ONR) plan to lead the transition process once testing and evaluation of the prototype has concluded. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Efforts conclude at the end of FY 2023 with the developed capability transitioning to MCWL and ONR for continued maturation.	-	1.100	-
Title: Eris	-	3.550	-

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603838D8Z / *Defense Innovation Acceleration (DIA)*	**Project (Number/Name)** 731 / *Innovation and Modernization*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Description: Previously approved and funded DM&P project now aligned under I&M. This project rapidly prototypes and tests a novel, low-cost concept to enhance joint force resilience in the presence of modern threats. In FY 2022, technical architecture development and initial system design were completed. Additional details are classified. ***FY 2023 Plans:*** In FY 2023, this project transitioned from PE 0603338D8Z DM&P to I&M. FY 2023 activities include prototype integration and system validation prior to a late FY 2023 field demonstration in an operationally relevant environment. Additional details are classified. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Efforts conclude at the end of FY 2023 with the developed capability transitioning to the U.S. Air Force.			
Title: Joint All Domain Operational Tool Suite (JADOTS) ***Description:*** JADOTS develops a capability through the integration of several software tools to enable analysis and planning of kinetic and non-kinetic fires for multi-domain effects through the production and visualization of convergence packages. Prototype development initiated in FY 2022. ***FY 2023 Plans:*** In FY 2023, this project transitioned from PE 0603338D8Z DM&P to I&M. In FY 2023, JADOTS plans to finalize development, training, and certification before final transition to the U.S. Army. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Efforts conclude at the end of FY 2023 with the developed capability transitioning to the U.S. Army for further development and integration.	-	1.300	-
Title: El Camino ***Description:*** El Camino develops a novel capability to enhance unmanned aerial systems (UAS) navigation in adverse conditions. Prototype development initiated in FY 2022. Additional details are classified. ***FY 2023 Plans:*** In FY 2023, this project transitioned from PE 0603338D8Z DM&P to I&M. In FY 2023, development and testing are planned to complete prior to transition to the U.S. Navy and USSOCOM. ***FY 2023 to FY 2024 Increase/Decrease Statement:***	-	1.000	-

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603838D8Z / *Defense Innovation Acceleration (DIA)*	**Project (Number/Name)** 731 / *Innovation and Modernization*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Efforts conclude at the end of FY 2023 with the developed capability transitioning to the U.S. Navy and USSOCOM for continued maturation.			
Title: Kestrel ***Description:*** Kestrel develops, tests, and demonstrates several technologies that improve the warfighter's ability to execute undersea missions, bringing immediate benefit to the operational force. Previously approved and funded DM&P project now aligned under I&M. In FY 2022, the project began design and manufacturing of select components. ***FY 2023 Plans:*** In FY 2023, this project transitioned from PE 0603338D8Z DM&P to I&M. In FY 2023, Kestrel plans to complete prototype development and undergo field demonstration and testing before transitioning to U.S. Special Operations Command (USSOCOM). ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Efforts conclude at the end of FY 2023 with the developed capability transitioning to USSOCOM for continued maturation.	-	1.000	-
Title: Measured Threat Risk Assessment (MeTRA) ***Description:*** This small business-led effort develops a model-based systems engineering environment and knowledge management collaboration platform to reduce security vulnerabilities, increase resiliency, and to support agile analysis for making data-driven security decisions. In FY 2022, MeTRA initiated modeling and processes assessments. Previously approved and funded DM&P project now aligned under I&M. ***FY 2023 Plans:*** In FY 2023, this project transitioned from PE 0603338D8Z DM&P to I&M. In FY 2023, MeTRA plans to complete development and deliver the final prototype and technical data package to support transition to the U.S. Air Force. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Efforts conclude at the end of FY 2023 with the developed capability transitioning to the U.S. Air Force for continued maturation	-	1.000	-
Title: Big Blue ***Description:*** This is a classified program. Additional information is available upon request. ***FY 2023 Plans:*** In FY 2023, this project transitioned from PE 0603338D8Z DM&P to I&M. This is a classified program. Additional information is available upon request. ***FY 2023 to FY 2024 Increase/Decrease Statement:***	-	1.000	-

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603838D8Z / *Defense Innovation Acceleration (DIA)*	**Project (Number/Name)** 731 / *Innovation and Modernization*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Efforts conclude at the end of FY 2023 with the developed capability transitioning to classified partners.			
Title: HITS ***Description:*** This project prototypes and demonstrates a novel detection and tracking capability for military targets. Additional details are classified. ***FY 2023 Plans:*** In FY 2023, modeling and simulation (M&S) is planned to assess target detection dependent on target size, velocity, and orientation. Data collection activities in relevant environments refine M&S predications. In late FY 2023, a real-time demonstration of the prototype capability occurs in an operationally relevant environment. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Efforts conclude at the end of FY 2023 with the developed capability transitioning to a DoD partner.	-	2.500	-
Title: Low-Cost Precision Delivery ***Description:*** This project develops a low-cost precision delivery capability with a modular, multi-purpose payload carrier for a variety of applications. The project began prototype development and completed an initial demonstration in FY 2022. ***FY 2023 Plans:*** In FY 2023, this project transitioned from PE 0603338D8Z DM&P to I&M. In FY 2023, the project plans to complete prototype development, testing, and evaluations before transitioning to DoD partners. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Efforts conclude at the end of FY 2023 with the developed capability transitioning to DoD partners for continued maturation.	-	1.000	-
Title: Aided Target Recognition (AiTR) ***Description:*** This project accelerates the development and demonstration of a modular processing component that enables automatic threat detection capabilities on size, weight, and power (SWaP) constrained platforms. AiTR provides embedded capabilities for existing and next-generation sensors, resulting in approximately 50 percent improvement in target identification range. Prototype development in FY 2022 ensured that AiTR met the SWaP requirements for effective use. ***FY 2023 Plans:*** In FY 2023, this project transitioned from PE 0603338D8Z DM&P to I&M. FY 2023 plans include continued prototype maturation; initiating targeting algorithm development; and demonstrating the AiTR with realistic target sets in military environments. ***FY 2023 to FY 2024 Increase/Decrease Statement:***	-	1.000	-

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603838D8Z / *Defense Innovation Acceleration (DIA)*	**Project (Number/Name)** 731 / *Innovation and Modernization*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Efforts conclude at the end of FY 2023 with the developed capability transitioning to the U.S. Army.			
Title: Artemis ***Description:*** Artemis develops and demonstrates a sensor package optimized for high-altitude operations. These multi-mode sensors are packaged to minimize size and power requirements, and to protect electronics from environmental interference. Design of the sensor package initiated in FY 2022, with a demonstration of the sensor package during stratospheric flight planned for FY 2024, prior to transition to the U.S. Army for qualification testing. ***FY 2023 Plans:*** In FY 2023, this project transitioned from PE 0603338D8Z DM&P to I&M. In FY 2023, activities include continuing the design and fabrication of the Artemis prototype. ***FY 2024 Plans:*** In FY 2024, activities include demonstration of the Artemis multi-function radio frequency (RF) sensor package on a fixed-wing aircraft prior to a performance demonstration during stratospheric flight. Following demonstration, the multi-function RF sensor package transitions to the U.S. Army for qualification testing. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** In FY 2024, funding decreases as prototype development concludes and the project enters final demonstration prior to transitioning to the U.S. Army.	-	2.600	1.350
Title: Featherweight Airlift for Denied Environments (FADE) ***Description:*** FADE assesses the potential to leverage commercial low-cost autonomous platforms for airlift resupply missions when outfitted with additional technologies and capabilities required to operate in military environments. Findings from FADE plan to transition into the decision-making process for evaluation, demonstration, and procurement of future airlift platforms. ***FY 2023 Plans:*** In FY 2023, this project transitioned from PE 0603338D8Z DM&P to I&M. In FY 2023, activities include validation of survivable low-cost platform concepts leveraging modeling and simulation (M&S). M&S results inform follow-on prototype development and field demonstrations. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Efforts conclude at the end of FY 2023 with the developed capability transitioning to the U.S. Marine Corps for further maturation.	-	2.000	-
Title: Advanced Position, Navigation and Timing (APNT)	-	1.025	-

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Description: This project accelerates development and matures components of a modular, agile, and reprogrammable APNT capability. This system provides a robust and secure positioning, navigation, and timing (PNT) solution in GPS degraded or denied environments. ***FY 2023 Plans:*** In FY 2023, the system is to be integrated into a laboratory test architecture and assessed to verify operation in relevant environments prior to transition into a U.S. Air Force Life Cycle Management Center (AFLCMC) Program of Record. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Efforts conclude at the end of FY 2023 with the developed capability transitioning to the U.S. Air Force.			
Title: Advanced Tactical Communications (ATC) ***Description:*** Leveraging novel technologies, the ATC project develops a low size, weight, and power (SWaP) communications capability that operates outside of the traditional RF spectrum. The developed capability provides up to a 100-fold increase in communication bandwidth enabling new and novel warfighting capabilities on SWaP constrained platforms such as tactical ground vehicles and small-unmanned aerial systems. Previously approved and funded DM&P project now aligned under I&M. In FY 2022, ATC completed the initial system design and began subcomponent development. ***FY 2023 Plans:*** In FY 2023, this project transitioned from PE 0603338D8Z DM&P to I&M. FY 2023 activities include sub-component maturation and system development. An early developmental unit is planned to be prototyped leading to a field demonstration in late FY 2023 to validate performance. ***FY 2024 Plans:*** FY 2024 plans include final refinement of the prototype subsystems, followed by manufacturing, integration, and testing of the final prototype. The ATC project culminates in a final test and evaluation of the integrated prototype in an operationally relevant environment. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** In FY 2024, funding decreases as prototype development concludes and the project enters its final test and evaluation phase prior to transitioning to the U.S. Army.	-	1.625	1.575
Title: Echelon ***Description:*** Previously approved and funded DM&P project now aligned under I&M. This project develops a common digital twin technical framework capable of supporting a wide variety of military radio frequency (RF) systems. Echelon supports virtual testing of digital twin prototypes in a highly-accurate, physics-based simulated operational environment, enabling the DoD to	-	6.135	3.523

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
evaluate the effectiveness of prototype systems or subsystems in realistic environments and against red threats early in the development phase. The developed high-fidelity, multi-physics framework enables Service research and acquisition programs to mature digital twin prototypes prior to purchasing extensive hardware, enabling programs to shorten the development lifecycle of current system upgrades and next generation systems. This effort includes the hardware and software implementation of the first instantiation of the Echelon technical framework. In FY 2022, the Echelon project completed development and delivery of the initial Echelon framework increment and framework validation methodology. Leveraging this initial framework, U.S. Army and U.S. Air Force transition partners began development of their respective Echelon-enabled digital twins. In late FY 2022, initial work began to validate the framework leveraging these Echelon-enabled digital twins within a simulated Echelon-enabled, high-fidelity multi-physics environment. ***FY 2023 Plans:*** In FY 2023, this project transitioned from PE 0603338D8Z DM&P to I&M. Building on the first release of the Echelon framework, FY 2023 activities focus on further development and validation of the framework's extensibility to support RF-based digital twins of additional RF-based DoD missions. FY 2023 concludes with a revised Echelon framework capable of supporting the identified additional RF-based DoD missions, along with a method to validate the revised framework. ***FY 2024 Plans:*** In the first half of FY 2024, validation of the revised FY 2023 framework is planned to be completed. Efforts conclude at the end of FY 2024 with the multi-function demonstration of multiple RF digital twins performing their respective RF mission, operating simultaneously, and interacting within the same high-fidelity multi-physics environment. A successful demonstration validates Echelon's ability to support a wide variety of DoD RF missions. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** After final system development and validation occurs in FY 2023, funding decreases in FY 2024, as the project completes its final demonstration and transitions to the U.S. Air Force and U.S. Army as a developed capability.			
Title: DISARM ***Description:*** This project develops and validates a low-cost concept pairing an emerging sensing technology with an already-fielded capability to provide a novel low-cost system to intercept airborne threats in the expeditionary environment. In FY 2022, the initial modeling and simulation along with an initial physics-based assessment was complete to confirm interoperability and assess how the new capability could augment current air defense capabilities to confirm the performance and cost benefits. Additional details are classified. ***FY 2023 Plans:***	-	4.000	-

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
In FY 2023, this project transitioned from PE 0603338D8Z DM&P to I&M. FY 2023 activities include subsystem development, modification of the already-fielded capability, and prototype integration and testing. Once integrated, the prototype is planned to be demonstrated in an operationally relevant environment in early FY 2024. Additional details are classified. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Efforts conclude at the end of FY 2023 with the developed capability transitioning to U.S. Navy and U.S. Army program management offices.			
Title: Extended Range Threat Detection ***Description:*** Leveraging novel improvements, this project rapidly prototypes and integrates new capabilities into an existing radar system to counter advanced peer threats. Once developed and tested, the capability enables a significant increase in threat detection and tracking ranges affording the joint force increased time to facilitate target engagements. In FY 2022, initial system design and operational architecture were developed. Additional details are classified. ***FY 2023 Plans:*** In FY 2023, this project transitioned from PE 0603338D8Z DM&P to I&M. In early FY 2023, hardware in the loop risk-reduction testing is planned to initiate to validate and refine the system design and architecture. Additional activities include a series of early system development and validation tests prior to integration and testing on a developmental prototype unit. In late FY 2023, a field demonstration with the developmental prototype unit is planned to be completed to validate performance. ***FY 2024 Plans:*** FY 2024 plans include final refinement of prototype subsystems, followed by a series of range tests to qualify the final prototype for operational deployment. The project culminates in a final test and evaluation in an operationally relevant environment. Efforts conclude at the end of FY 2024 with the developed capability transitioning to the U.S. Army Program Executive Office for Missiles and Space.	-	2.000	2.000
Title: Distributed Force Projection Focus Area ***Description:*** This focus area explores technologies and capability concepts that seek to cost effectively project force through platforms, command networks, soldier systems, and autonomy thereby extending the range of control and protecting our front-line warfighters and allies. Selected projects enable precision effects, reduce time to react, and provide decision support to increase operational flexibility and improve engagement outcomes. These projects leverage advances in machine learning; technology to enable training, tactics, techniques, and procedures; advanced autonomy; and distributed sensing and effects. Examples include battle management systems and common operating pictures, autonomous distributed platforms that enable asymmetric effects, assured PNT, and force protection. ***FY 2023 Plans:***	-	7.867	16.915

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603838D8Z / *Defense Innovation Acceleration (DIA)*	**Project (Number/Name)** 731 / *Innovation and Modernization*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Innovation and Modernization investment decisions are made during the execution year in response to DoD, CCMD, Service, and other government priorities. I&M anticipates supporting six to nine projects in FY 2023. ***FY 2024 Plans:*** Innovation and Modernization investment decisions are made during the execution year in response to DoD, CCMD, Service, and other government priorities. I&M anticipates supporting fourteen to nineteen projects in FY 2024. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding for this focus area in FY 2024 increases to support acceleration of high-priority distributed force projection prototyping efforts.			
Title: Disparate Data Fusion, Analysis, and Applications for Networked Systems Focus Area ***Description:*** This focus area includes prototypes to validate new approaches that manage and capitalize on the increase of data volume, variety, variability, and velocity from our networked communications and sensors. Growth in social media, big data analytics, and large dynamic sensor networks requires new tools for aggregation, processing, exploitation, and dissemination. Projects include the development of capabilities, software, and tools to fuse, analyze, and infer information from a wide variety of structured or unstructured datasets across a broad spectrum of sources. Where possible these projects exploit advanced machine learning systems and commercial technologies to provide solutions to emerging challenges in tracking targets, big data analytics, and extracting indications and warnings. Technologies developed within this focus area reduce cost and analysis requirements to provide meaningful intelligence in support of information advantage. ***FY 2023 Plans:*** Innovation and Modernization investment decisions are made during the execution year in response to DoD, CCMD, Service, and other government priorities. I&M anticipates supporting four to six projects in FY 2023. ***FY 2024 Plans:*** Innovation and Modernization investment decisions are made during the execution year in response to DoD, CCMD, Service, and other government priorities. I&M anticipates supporting ten to fourteen projects in FY 2024. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding for this focus area in FY 2024 increases to support acceleration of high-priority data fusion prototyping efforts.	-	5.611	12.060
Title: Low-cost Sensing and Autonomy Focus Area ***Description:*** This focus area explores technologies and capability concepts to enhance situational awareness, reduce the time to make critical decisions, autonomously distribute tasking and orders, and protect warfighters through increased use of intelligent networks, autonomous sensing platforms, and human-machine collaborative systems. Selected projects target key capabilities that enable leap-ahead improvements in small distributed sensors and intelligent autonomous systems with cost-	-	5.950	12.800

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
effective investments. These projects leverage advances in high- performance computing, miniaturization and new sensing modalities, and low-cost or attributable autonomous platforms across all domains. Examples include agile computer vision systems, enhanced capabilities for multiple autonomous systems to cooperatively interact, autonomous task discrimination and prioritization, autonomous operation in complex terrain, unattended sensors, data preprocessing to reduce bandwidth, and human-machine collaborative decision making providing faster-than-human response to threats. These projects also examine common software platforms and modular open architecture systems to reduce development cost, increase collaboration among manned and unmanned platforms, and inform requirements. ***FY 2023 Plans:*** Innovation and Modernization investment decisions are made during the execution year in response to DoD, CCMD, Service, and other government priorities. I&M anticipates supporting five to seven projects in FY 2023. ***FY 2024 Plans:*** Innovation and Modernization investment decisions are made during the execution year in response to DoD, CCMD, Service, and other government priorities. I&M anticipates supporting eleven to fourteen projects in FY 2024. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding for this focus area in FY 2024 increases to support acceleration of high-priority sensing and autonomy prototyping efforts.			
Title: Distributed, Collaborative, Multi-Function Devices for Electromagnetic Spectrum Agility Focus Area	-	7.090	15.198
Description: This focus area explores integrated, multi-function, net-centric electromagnetic spectrum (EMS) concepts and technologies to enable a multi-domain, flexible, diverse, and interoperable EMS architecture. In the modern battlespace, the EMS is both a contested resource and unique domain requiring advanced maneuvers. Tactics, techniques, and procedures are necessary to maintain access to EMS and ensure maneuverability. Selected projects provide the architecture to ensure allied access, deny enemy use, and enable future capabilities for spectrum dominance. Examples include waveform agnostic apertures, amplifiers, and digital signal processing for multi-use systems (radar, communications, electronic warfare, sensing); advanced routing and artificial intelligence task and network routing for increased efficiency; and, ad hoc distributed apertures for collaborative electronic warfare (EW) distributed radar. Activities include refining software and algorithms; novel hardware and electronic components; and advanced timing and networking technologies that directly support emerging common standards for next generation distributed, collaborative, and multi-function devices. ***FY 2023 Plans:*** Innovation and Modernization investment decisions are made during the execution year in response to DoD, CCMD, Service, and other government priorities. I&M anticipates supporting six to eight projects in FY 2023. ***FY 2024 Plans:***			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603838D8Z / *Defense Innovation Acceleration (DIA)*	**Project (Number/Name)** 731 / *Innovation and Modernization*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Innovation and Modernization investment decisions are made during the execution year in response to DoD, CCMD, Service, and other government priorities. I&M anticipates supporting thirteen to seventeen projects in FY 2024. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding for this focus area in FY 2024 increases to support acceleration of high-priority EMS prototyping efforts.			
Title: Conceptual Prototyping to Support DoD Modernization Needs Focus Area ***Description:*** This focus area supports in-year identification and execution of innovative prototyping for cutting-edge land, sea, undersea, air, and space capabilities critical to the National Defense Strategy and modernization needs and objectives of the Department of Defense (DoD). This effort matures key component technologies and representative prototypes to accelerate development and adoption of cost-effective and interoperable solutions for defense challenges. Selected limited duration projects design, mature, and deliver prototypes to reduce the time from idea to demonstrated capability; mitigate risk in DoD programs; and help characterize potential concepts of operations. Conceptual prototyping activities seek to rapidly develop and demonstrate capabilities that can help maintain the U.S. technological edge. Development of prototypes involve partnerships with the Services, industry, and academia, and leverage technologies and emerging products developed by small, innovative business and non-traditional partners. ***FY 2023 Plans:*** Innovation and Modernization investment decisions are made during the execution year in response to DoD, CCMD, Service, and other government priorities. I&M anticipates supporting three to five projects in FY 2023. ***FY 2024 Plans:*** Innovation and Modernization investment decisions are made during the execution year in response to DoD, CCMD, Service, and other government priorities. I&M anticipates supporting eight to eleven projects in FY 2024. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding for this focus area in FY 2024 increases to support acceleration of high-priority prototyping efforts.	-	4.397	9.400
Accomplishments/Planned Programs Subtotals	-	80.000	74.821

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603838D8Z / *Defense Innovation Acceleration (DIA)*	**Project (Number/Name)** 731 / *Innovation and Modernization*

D. Acquisition Strategy

Innovation and Modernization (I&M) will support FY 2024 performance metrics to transition projects to the joint warfighter and enable DoD modernization capabilities. I&M leverages the DoD's most efficient and effective acquisition approaches for rapid prototyping. This includes using Other Transaction Authorities, Broad Area Announcements, and new or existing contract vehicles.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603924D8Z / *High Energy Laser Advanced Development*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	109.113	81.173	111.149	111.799	-	111.799	113.468	115.931	118.356	120.935	Continuing	Continuing
924: *High Energy Laser Initiative*	109.113	81.173	111.149	111.799	-	111.799	113.468	115.931	118.356	120.935	Continuing	Continuing

Note

New Start (Y/N): No

Funding was realigned from this program to 0602890D8Z High Energy Laser Development starting in FY 2024 for Directed Energy Applied Research that is focused on technology in support of a strategic mission capability for counter hypersonic missile defense. Lethality Applied Research focused on the counter hypersonic missile defense is increased in FY 2024 to gain a better understanding on the vulnerabilities of threats of interest.

A. Mission Description and Budget Item Justification

This program supports the Departments initiatives to Build a Sustainable and Long-Term Advantage, and Build a Resilient Joint Force and Defense Ecosystem.

This program element funds Directed Energy (DE) advanced technology development aimed at translating technology solutions for broadly defined military problems into demonstrated performance pay-offs, increased capabilities, increased supportability, and/or increased affordability. DE weapons systems have many potential advantages, including speed-of-light time-to-target, high precision, low incremental cost per kill, and a magazine that is recharged through on-board, fuel-based power and thermal management systems that reduce logistics requirements in contrast to stocks of munitions or warheads. As a result, DE systems have the potential to perform a wide variety of military missions. Activities conducted under this program element will develop and demonstrate the technology necessary to enable DE system missions across the Department of Defense (DoD).

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	83.159	111.149	113.765	-	113.765
Current President's Budget	81.173	111.149	111.799	-	111.799
Total Adjustments	-1.986	0.000	-1.966	-	-1.966
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	-1.986	-	-1.966	-	-1.966

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603924D8Z *I High Energy Laser Advanced Development*

Change Summary Explanation

FY 2024 reduction of $1.966 million is comprised of a realignment of $2.476 million to support the Historically Black Colleges and Universities/Minority Serving Institutions program, which is a priority of the Under Secretary of Defense for Research and Engineering (USD(R&E)), $0.119 million to support departmental priorities and an economic assumption increase of $0.629 million.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603924D8Z / *High Energy Laser Advanced Development*	Project (Number/Name) 924 / *High Energy Laser Initiative*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
924: *High Energy Laser Initiative*	109.113	81.173	111.149	111.799	-	111.799	113.468	115.931	118.356	120.935	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

N/A

A. Mission Description and Budget Item Justification

This program element is part of an overall Department strategy in Directed Energy (DE) weapon system advanced technology development. This effort will focus on scaling the output power of DE systems to reach operationally effective power levels applicable to broad mission areas across the DoD. Additionally, efforts will also pursue improvements in common DE system components such as beam control & propagation, lethality & vulnerability, and efficient power and thermal management approaches. This program element complements, and will be closely coordinated with other DoD DE efforts directed at specific Service and Agency missions. This program leverages and/or builds upon other investments in DE by the Services and Agencies.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Directed Energy Advanced Technology Development	81.173	111.149	111.799
Description: Develop, mature and demonstrate directed energy sources that will provide system level performance commensurate with fieldable directed energy devices. Develop, mature and demonstrate technologies that supports improving beam control and beam propagation for DE weapon systems. Conduct directed energy lethality & vulnerability experiments on materials, components, and targets. Develop a lethality database, and integrate into a systems-level architecture plan and lethality models.			
FY 2023 Plans: DE Sources: Scaling HEL sources from 300 to 500 kW and 1 MW will begin by utilizing two laser builders who best demonstrate performance at 300 kW. Each of the two follow-on scaling efforts will validate performance of components critical for further scaling of power and reduced size and weight through risk reduction tests. Each will also establish system requirements traceability and mature the developments through a preliminary design phase. The remaining two 300kW developments will perform final scaled power laboratory demonstrations at 100-200kW to demonstrate the performance and limitations of their respective key technologies. -Beam Control and Propagation: Collect data on thermal blooming effects at higher laser powers to validate HEL propagation models. Collect tracking and atmospheric compensation data leveraging beam control testbed efforts across the Department to assess maturity of components developed under applied research. Continue to mature cross-cutting technology development in beam control systems.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603924D8Z / *High Energy Laser Advanced Development*	**Project (Number/Name)** 924 / *High Energy Laser Initiative*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
-Lethality and Vulnerability: Collect lethality damage effects, vulnerability and system response data on current and future cruise missile (CM) threats of all classes for both high energy laser and high power microwave technologies. Continuous wave and pulsed laser technologies will be investigated. Laboratory and field testing and modeling and simulation (M&S) results will be used to develop vulnerability modules (VMs) for use in DE weapons' effectiveness tools, mission and campaign level utility studies. A chartered, lethality database will begin transition to the Joint Technical Coordinating Group for Munitions Effectiveness (JTCG/ME) for analyst's use. Development efforts will continue, to include HPM lethality inputs for a more complete DE lethality database product. ***FY 2024 Plans:*** DE Sources: The follow-on 500kW-1MW developments will further mature through critical design and each begin the system build phase. -Beam Control and Propagation: Validate Beam Control technology to include acquisition and course track, fine track and aimpoint maintenance, wavefront compensation, and High Energy Laser optical components in a relevant environment to understand effectiveness and identify shortfalls that require additional research focus. -Lethality: Static and dynamic lethality testing of representative and/or actual CM targets will be conducted using HEL systems/ HELSI sources to validate cruise missile aimpoint selections, vulnerability predictions and system response. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2024 funding increase of $0.650M is due to programmatic adjustments and budget fluctuations.			
Accomplishments/Planned Programs Subtotals	81.173	111.149	111.799

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

N/A

D. Acquisition Strategy

N/A

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603941D8Z / *Test and Evaluation Science and Technology*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	1,101.401	463.080	972.372	345.384	-	345.384	302.052	245.922	250.175	258.479	-	-
090: *Nuclear Test*	-	0.000	0.000	11.000	-	11.000	11.500	11.500	11.500	11.500	-	-
091: *High Speed Systems Test*	410.129	173.080	299.744	112.682	-	112.682	106.624	79.395	80.983	82.603	-	-
092: *Spectrum Efficient Technology*	82.996	25.000	49.975	10.053	-	10.053	10.192	9.586	9.777	9.972	-	-
093: *Electronic Warfare Test*	127.792	106.000	417.765	105.055	-	105.055	71.619	40.073	40.874	41.692	-	-
094: *Advanced Instrumentation Systems Technology*	102.721	42.000	12.180	19.957	-	19.957	21.455	20.880	21.223	22.549	-	-
095: *Directed Energy Test*	90.737	24.000	30.072	10.475	-	10.475	10.205	10.450	10.688	10.932	-	-
096: *C4I & Software Intensive Systems Test*	144.356	49.000	13.088	13.246	-	13.246	13.511	13.794	14.070	14.351	-	-
097: *Autonomy and Artificial Intelligence Test*	74.599	21.000	98.992	47.379	-	47.379	41.038	43.787	44.275	47.760	-	-
098: *Cyberspace Test*	68.071	23.000	18.431	14.707	-	14.707	15.000	15.315	15.620	15.932	-	-
099: *Space Test*	0.000	-	32.125	0.830	-	0.830	0.908	1.142	1.165	1.188	-	-

Note

New Start (Y/N): Partial - New Nuclear Test Project for FY 2024.

A. Mission Description and Budget Item Justification

This program supports the Department's initiatives to defend the homeland, deter strategic attacks and aggression, prevail in conflict, build enduring advantage, and build a resilient joint force and defense eco system. The Test and Evaluation/Science and Technology (T&E/S&T) program seeks out and develops test technologies to keep pace with evolving weapons technologies. Aligned with the National Defense Strategy, this program is critical to ensure that the Department of Defense (DoD) has the ability to adequately test the advanced systems that will be fielded in the future, building a more lethal force. To meet this objective, the T&E/S&T Program performs the following activities:

- Exploits new technologies and processes to meet important T&E requirements.
- Expedites the transition of new technologies from the laboratory environment to the T&E community.
- Leverages industry advances in equipment, modeling and simulation, and networking to support T&E.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603941D8Z *I Test and Evaluation Science and Technology*

Additionally, the T&E/S&T Program examines emerging T&E requirements resulting from Joint Service initiatives to identify T&E technology needs and develop a long-range roadmap for technology insertion. The program leverages and employs applicable applied research efforts from the highly developed technology base in the DoD laboratories and test centers, other Government agencies, and industry to accelerate development of new test capabilities. The program outreaches and engages academia to address test technology challenges in DoD testing, advancing Science, Technology, Engineering and Mathematics (STEM) initiatives at Historically Black Colleges and Universities (HBCU) and other minority serving institutions. This program provides travel funds for T&E/S&T program oversight, special studies, analyses, and strategic planning related to test capabilities and infrastructure. The T&E/S&T Program aligns with the science and technology (S&T) Communities of Interest (COI) to prepare the T&E community to test warfighting capabilities that emerge from priority S&T investments. The T&E/S&T Program utilizes Advanced Technology Development funding because which supports the development and demonstration of high payoff technologies for current and future DoD test capabilities.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	464.850	315.090	304.538	-	304.538
Current President's Budget	463.080	972.372	345.384	-	345.384
Total Adjustments	-1.770	657.282	40.846	-	40.846
• Congressional General Reductions	-	-0.268			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	657.550			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	-1.770	-	40.846	-	40.846

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2022	FY 2023
Project: 091: *High Speed Systems Test*		
Congressional Add: *Test & Evaluation Science & Technology (TRMC)*	-	188.650
Congressional Add Subtotals for Project: 091	-	188.650
Project: 092: *Spectrum Efficient Technology*		
Congressional Add: *Test & Evaluation Science & Technology (TRMC)*	-	40.000
Congressional Add Subtotals for Project: 092	-	40.000
Project: 093: *Electronic Warfare Test*		
Congressional Add: *Test & Evaluation Science & Technology (TRMC)*	-	298.500

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603941D8Z *I Test and Evaluation Science and Technology*

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2022	FY 2023
Congressional Add Subtotals for Project: 093	-	298.500
Project: 095: *Directed Energy Test*		
Congressional Add: *Test & Evaluation Science & Technology (TRMC)*	-	18.750
Congressional Add Subtotals for Project: 095	-	18.750
Project: 097: *Autonomy and Artificial Intelligence Test*		
Congressional Add: *Test & Evaluation Science & Technology (TRMC)*	-	76.250
Congressional Add Subtotals for Project: 097	-	76.250
Project: 098: *Cyberspace Test*		
Congressional Add: *Test & Evaluation Science & Technology (TRMC)*	-	4.000
Congressional Add Subtotals for Project: 098	-	4.000
Project: 099: *Space Test*		
Congressional Add: *Test & Evaluation Science & Technology (TRMC)*	-	31.400
Congressional Add Subtotals for Project: 099	-	31.400
Congressional Add Totals for all Projects	-	657.550

Change Summary Explanation

The FY 2023 increase of $657.282 million is comprised of a realignment of $0.268 million for other Departmental priorities and Congressional adds to improve the following capabilities: 1) enhance hypersonic testing capabilities, 2) advance cybersecurity signal generation, 3) improve hypersonic thermal protection test equipment, 4) enhance hypersonic wave heat facilities, 5) upgrade electronicmagnetic spectrum test emitters, 6) upgrade electronicmagnetic spectrum sensor fusion, 7) improve airborne 5G, 8) upgrade 5G range instrumentation, 9) develop additional hypersonics sensor packages for RQ-4 and MQ-9 platforms, 10) advance directed energy airborne high-power testbed, 11) improve space-based range tracking, 12) advance 5th generation aerial target, 13) upgrade artificial intelligence hubs technology development, and 14) upgrade all-domain autonomous modeling and simulation. The top-line increase of $657.282M will provide enhanced capabilities and increased throughput to meet increasing test demand.

The FY 2024 increase of $40.846 million is comprised of an economic assumption increase and an increase to address Department priorities in: 1) enhancement of critical defense microelectronics infrastructure testbeds, and 2) development of artificial intelligence T&E high-performance computing resources to support continued enhancement of artificial intelligence hubs technology.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603941D8Z / *Test and Evaluation Science and Technology*	Project (Number/Name) 090 / *Nuclear Test*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
090: *Nuclear Test*	-	0.000	0.000	11.000	-	11.000	11.500	11.500	11.500	11.500	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

As a new start in FY 2024, the Nuclear Test (NT) project mission is to address national test capability gaps by providing accurate, robust, and efficient T&E solutions to successfully develop, validate, and inform the employment of a modernized nuclear enterprise. The Department of Defense (DoD) is prioritizing investments to modernize the nuclear enterprise while sustaining and increasing the resiliency of legacy systems. Current developments focus on deploying capabilities and systems to validate new designs and new materials in a complex threat-representative environment. Current testing infrastructure and methodologies to assess nuclear enterprise systems and microelectronics resilience against emerging threats is limited. Many test capabilities used in the past for acquisition are no longer available, either stopped by policy decisions or dismantled for cost savings. The NT project addresses test technology needs for adequate assessment of nuclear enterprise resiliency and aligns with the DoD S&T priority investments. The NT project is supporting the development of a strategic roadmap and investment strategy to establish nuclear test environments for microelectronics, ground test environments for system level testing, and flight test range enhancements for end-to-end testing needs. The NT project develops technologies to enable robust, accurate, and timely T&E of a modernized nuclear enterprise, and to ensure system suitability and survivability.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Nuclear Test (NT)	-	-	11.000
Description: The NT project is conducting a test infrastructure gap analysis on the needs of testing the nuclear enterprise. The analysis will result in a time-phased investment strategy based on those requirements. Work includes engaging the nuclear environments test community on needs and gaps to ensure traceability between strategic objectives and test technology development required for relevant microelectronic nuclear test environments such as single event effects, combined effects, electromagnetic pulse and others.			
FY 2024 Plans: The Nuclear Test project is new in FY 2024 and will initiate efforts to address test technology needs identified in the Nuclear T&E investment roadmap and time-phased investment strategy.			
FY 2023 to FY 2024 Increase/Decrease Statement: New start, FY 2024 increase reflects planned start of nuclear test technology development with multiple phases.			
Accomplishments/Planned Programs Subtotals	-	-	11.000

C. Other Program Funding Summary ($ in Millions)

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603941D8Z / *Test and Evaluation Science and Technology*	**Project (Number/Name)** 090 / *Nuclear Test*

C. Other Program Funding Summary ($ in Millions)

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603941D8Z / *Test and Evaluation Science and Technology*	Project (Number/Name) 091 / *High Speed Systems Test*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
091: *High Speed Systems Test*	410.129	173.080	299.744	112.682	-	112.682	106.624	79.395	80.983	82.603	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

High-speed/hypersonic weapons are being developed to ensure the continued military superiority and strike capability of the United States including freedom of movement and freedom of action in areas protected by anti-access/area denial defenses. Current weapon system demonstrations and technology development programs include high-speed and hypersonic air-breathing missiles, maneuvering reentry and boost-glide weapons, hypersonic gun-launched projectiles, and air-breathing space access vehicles. These systems require development of conventional and high-speed turbine, ramjet, scramjet, and combined cycle engines; high temperature materials; thermal protection systems (TPS); and thermal management systems. The High Speed Systems Test (HSST) project addresses test technology needs including propulsion, aerodynamic and aerothermal testing, so the test community has the technology to support the required test scenarios for concepts under development in the S&T community. The technology developments within the HSST project align with the Department of Defense (DoD) S&T priority investments. As such, the HSST project is developing, validating and transitioning advanced T&E technologies for ground test, open-air range flight test, and advanced computational tools, along with instrumentation and diagnostics systems for use in both ground tests and flight tests of high speed systems.

The HSST project develops technologies to enable robust, accurate, and timely T&E of these future weapon systems. DoD acquisition regulations require weapon systems to undergo a thorough T&E process to detect deficiencies early and to ensure system suitability and survivability. However, the extreme environments in which these weapons operate preclude accurate determination of their performance and operability with today's T&E assets. Current national test capabilities have deficiencies in data accuracy, flight condition replication and simulation, test methods, productivity, modeling and simulation (M&S) fidelity, and range safety.

The HSST mission is to address these national test capability gaps by providing test technology solutions that will enable high-speed and hypersonic weapon systems to be successfully developed through accurate, robust, and efficient T&E.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: High Speed Systems Test (HSST)	173.080	111.094	112.682
Description: The HSST project continued to advance ground and flight test technologies, techniques, instrumentation, and modeling and simulation capabilities required for the development of hypersonic weapon systems. In FY22, HSST continued to address critical technology shortfalls for hypersonic test and evaluation in aerothermal and propulsion ground testing capabilities and advanced instrumentation to support hypersonic flight tests. Several other technology development efforts also progressed throughout the year. To address the technology shortfall involving aerothermal and propulsion testing, HSST is developing a new test facility that utilizes clean-air heat addition (non-vitiated air) and a variable Mach number nozzle (VMN) capability to provide the representative			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603941D8Z / *Test and Evaluation Science and Technology*	**Project (Number/Name)** 091 / *High Speed Systems Test*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
high-temperature conditions for characterizing weapon systems, including air-breathing propulsion capabilities. The clean-air heat addition is especially important to the characterization of air-breathing propulsion systems, as previous HSST efforts demonstrated that vitiated air provides different gas properties than clean air found in the atmosphere and thus is not representative of what the vehicle would experience in flight. This significantly affects the engine's performance and operability in the test environment and results in erroneous flight predictions. Additionally, characterization of advanced sensors for hypersonic systems also benefits from clean-air heat addition as it provides a more representative environment for the sensor to operate in. The variable Mach number capability provides a more representative trajectory simulation for the system under test, permitting more accurate predictions before conducting flight tests. Assembly of the new test facility, called the Hypersonic Aerothermal and Propulsion Clean-Air Testbed (HAPCAT), was completed in FY 2022, enabling the plan for operational facility checkouts starting in FY 2023 to demonstrate the facility envelope and test techniques. Initial testing in HAPCAT will involve the characterization of advanced hypersonic sensors in a combined aerodynamic and aerothermal effects environment. All of the efforts associated with HAPCAT also serve as pathfinders for the development of a larger-scale, more capable facility at the AEDC. To address capacity constraints involved with aerothermal material characterization ground testing, HSST initiated a new aerothermal test technology development effort to prototype alternative high enthalpy test technologies, to include a plasmatron test capability. This effort involves the advancement of inductively-coupled plasma ground test facilities that can serve as a complement to arc-jet heater capabilities. Significant progress was achieved in the development of the SkyRange capability, an unmanned aerial vehicle-based range to support hypersonic flight tests and other missions for the Department of Defense. SkyRange provides a more agile, flexible, and cost-effective method for providing support to long-range hypersonic flight tests with increased data collection capabilities beyond the current state-of-the-art. It also addresses a critical throughput shortfall for supporting the number of hypersonic flight tests required, as a sufficient number of existing assets does not exist. RQ-4 Global Hawks and MQ-9 Reapers comprise the platforms used for SkyRange, taking advantage of their long-endurance, flexibility, and high-payload capability. SkyRange augments existing air, sea, and land test support assets referred to as the "string of pearls," reducing the high costs associated with traditional flight test support and increasing mission flexibility. Novel sensor suites are being developed in the areas of telemetry capture and relay, multispectral imaging, atmospheric sensing, terminal scoring, and other areas to aid in the development of hypersonic systems. Several of these sensors are being developed through HSST for integration into the SkyRange capability. Achievements were made for both SkyRange aircraft platforms in FY 2022. Three RQ-4s were fully modified into a SkyRange configuration, called RangeHawks, making them available for sensor suite integration. Two of these RangeHawks were equipped with advanced phased-array telemetry antennas and provided data collection support to multiple hypersonic flight test missions.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603941D8Z / *Test and Evaluation Science and Technology*	**Project (Number/Name)** 091 / *High Speed Systems Test*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Additional RQ-4s were added to the SkyRange RangeHawk fleet by leveraging Air Force divestments in operational RQ-4 aircraft. SkyRange initiated conversion of the additional RQ-4 platforms into the RangeHawk configuration. Throughout FY 2022, the RangeHawks completed several milestones, including the first simultaneous operation of two RangeHawks, the first simultaneous operation of two sensor suites on two RangeHawks, and the first deployment of two RangeHawks to a forward operating location. For the MQ-9s, five aircraft were stationed at the main operating base in California. These MQ-9s, called RangeReapers, will be used for integrating various sensors, generally through the use of pylon-carried pods. Necessary agreements to enable flight operations were established with multiple entities, paving the way for the first flight operations as a part of SkyRange in FY 2023. The development, integration, and operation of multiple phased-array telemetry capabilities continued as part of SkyRange in FY 2022. One variant was integrated and operated on two RangeHawks, achieving initial operating capability by successfully collecting data during long range missile flight tests. These telemetry antennas will continue to support flight test missions in FY 2023. A second variant was fully fabricated in FY 2022 and is planned for integration onto a RangeHawk in FY 2023. A third variant that will be developed for both RangeHawks and RangeReapers will continue design and fabrication and is scheduled for integration onto both SkyRange platforms in FY 2023. RangeLynx module installation was completed on all three RangeHawks in FY 2022, providing real-time, secure satellite-based telemetry and data relay to ground stations and other SkyRange assets. RangeLynx will also be integrated onto RangeReapers by including the modules in the sensor suite pods. Progress continued on the development of a high-fidelity automated and reconfigurable multispectral imaging tracking system for integration into an RQ-4 Global Hawk as part of the overall SkyRange capability. Fabrication of the system was completed and an initial fit-check on a RangeHawk was successfully executed, enabling a planned installation of the system in FY 2023. Ground checkouts were successfully completed in preparation for full installation as well. The High-Altitude LIDAR Atmospheric Sensing (HALAS) system for improved atmospheric measurements continued to make progress in FY 2022. A version installed on a Gulfstream G-IV performed multiple airborne data collection missions as part of a technology risk reduction effort for the eventual HALAS system for the RangeHawk. The RangeHawk variant completed its critical design review and progressed to full fabrication. Additional upgrades and technology development continued at the CUBRC hypersonic shock and expansion wind tunnels to support hypersonic ground testing. These included the design and integration of an aero-optic instrumentation suite to enable the evaluation of sensor and seeker systems for hypersonic vehicles, the initial conceptual design of a jet interactions test capability using the CUBRC facilities, and the continued development of a fast-response force and moment balances for use in the CUBRC facilities. In addition to these upgrades, a new wave rotor facility development continued. Progress with this new facility included			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603941D8Z / *Test and Evaluation Science and Technology*	**Project (Number/Name)** 091 / *High Speed Systems Test*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
the successful development and demonstration of a small-scale pathfinder facility that provided critical risk reduction to the full-scale facility and the initial development of the full-scale facility at its chosen location at the CUBRC site. This facility will provide important test capabilities for aero-optic and aerothermal ground testing required for hypersonic weapon system development. ***FY 2023 Plans:*** The HAPCAT facility will achieve initial operating capability after its checkout campaign is completed, allowing the facility to provide support to hypersonic weapon system development. Multiple tests supporting hypersonic seeker systems will be conducted, taking advantage of the combined aerothermal and aero-optic effects using clean-air the facility provides. The operation of HAPCAT will also continue risk reducing test technologies as a pathfinder for the development of the larger-scale, more capable facility at the AEDC. In addition to air-on operations, the VMN development will continue, with the nozzle fabrication planned to be completed at the end of FY 2023, making it available for installation into the facility. Other test techniques to support directed energy and other propulsion system characterizations will also be developed. SkyRange will continue providing critical test support to hypersonic and other DoD flight tests, further demonstrating the novel sensor suites integrated onto the SkyRange platforms. This will involve multiple RangeHawks equipped with telemetry antennas supporting missions and a RangeHawk with the multispectral imaging system collecting in-flight imagery. SkyRange will continue conversion of additional RQ-4 platforms into the RangeHawk configuration. Additionally, the RangeReapers will achieve first flight operations and will begin providing telemetry data collection support to flight tests using wing-mounted pods. The atmospheric sensing capability will complete fabrication and be ready for integration onto a RangeHawk at the end of FY 2023. Additionally, new capabilities will begin development in FY 2023, including a flight termination support capability, an increased bandwidth satellite communication capability, RangeReaper multispectral imaging support, and terminal scoring system development. Finally, additional technology development of hypersonic sensor packages for RQ-4 and MQ-9 platforms will begin. The full-scale wave rotor facility at CUBRC will be completed and undergo a checkout and characterization campaign to reach initial operating capability. Once achieving this milestone, the facility will begin supporting aero-optic and aerothermal ground testing for hypersonic weapon system development efforts. Additionally, the development of a jet interactions test capability will continue, with upgrades made to the CUBRC facilities to enable such testing. Enhancements will deliver a prototype high-Mach, high-enthalpy ground test capability increasing the run time and matching flight conditions. Further technology upgrades to aerothermal test capabilities will continue to include prototyping of plasma heated hypersonic thermal protection system test equipment. Enhancements to address small scale hypersonic air-breathing ground test capabilities gaps improving altitude simulation will also start in FY 2023 Other test and evaluation gaps associated with ground and flight test, modeling and simulation, and instrumentation will be addressed through new efforts. ***FY 2024 Plans:***			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603941D8Z / *Test and Evaluation Science and Technology*	**Project (Number/Name)** 091 / *High Speed Systems Test*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
New test techniques for the HAPCAT facility will be developed and demonstrated, taking advantage of the clean-air, long-duration run-time capability. The VMN will be completed, installed, and demonstrated as a capability for the facility. Additionally, the HAPCAT facility will provide critical test and evaluation support to various DoD hypersonic development efforts. SkyRange will further mature its capabilities supporting DoD flight tests. This will include next generation versions of the original telemetry antennas, providing additional spectrum coverage for telemetry collection. The HALAS atmospheric measurement capability will be fully integrated and demonstrated on a RangeHawk platform. An upgraded satellite communication capability that provides large bandwidth data relay will be fully integrated onto the RangeHawks. Development of a flight termination capability and a terminal scoring system will continue. SkyRange will continue conversion of additional RQ-4 platforms into the RangeHawk configuration. A multispectral imaging capability for the RangeReaper will be completed and integrated onto the platform. SkyRange support involving both RangeHawk and RangeReaper platforms for the same flight test will be demonstrated. Continued development of the wave rotor facility at CUBRC will occur, to include studies for higher Mach number capabilities using this technology. The facility will also provide critical test and evaluation support to various hypersonic development efforts. Other technology development efforts involving the CUBRC facilities will also be conducted to address test and evaluation requirements involving these facilities. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Increase supports improvements in hypersonic ground test and flight test capability and program adjustments due to economic assumptions.			
Accomplishments/Planned Programs Subtotals	173.080	111.094	112.682

	FY 2022	FY 2023
Congressional Add: Test & Evaluation Science & Technology (TRMC)	-	188.650
FY 2023 Plans: Program increase to support the improvement of hypersonic ground test and flight test capability.		
Congressional Adds Subtotals	-	188.650

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603941D8Z / *Test and Evaluation Science and Technology*	**Project (Number/Name)** 091 / *High Speed Systems Test*

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603941D8Z / *Test and Evaluation Science and Technology*	Project (Number/Name) 092 / *Spectrum Efficient Technology*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
092: *Spectrum Efficient Technology*	82.996	25.000	49.975	10.053	-	10.053	10.192	9.586	9.777	9.972	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Weapon systems have become increasingly complex in recent years, resulting in the need for significantly more data to be passed among these systems as well as between the systems and our test infrastructure. A vast amount of data must be collected, transmitted, and analyzed, which requires a large amount of radio frequency (RF) spectrum resources. However, the amount of RF spectrum designated to support test and evaluation (T&E) is decreasing, most notably due to reallocation of spectrum for commercial use. The combination of decreasing RF spectrum and increasing data requirements results in an urgent need to develop test technologies that maximize the use of spectrum resources for the Department of Defense (DoD) T&E operations.

The L- and S- Band frequencies are the traditional spectrum allotted for military T&E use. The explosive need for spectrum in the commercial sector has resulted in reallocation of portions of these bands to industry. To compensate, the DoD is now authorized to use the C-Band spectrum which offers numerous benefits, including the potential for a large increase in available bandwidth, but the C-Band spectrum comes with technical challenges and regulatory constraints. Most notably, our current test infrastructure for telemetry is not designed to accommodate C-Band and the band is heavily shared for alternate uses. Technologies are required to implement innovative techniques that efficiently facilitate our use of C-Band without a major overhaul to our national test infrastructure. For instance, commercial telemetry transmitters operate in C-Band but do not have the form factor (size, weight and power) nor ruggedized packaging to survive airborne test applications.

Traditional telemetry applications employ streaming telemetry where data is moved one-way from the instrumented system under test to our test range infrastructure. Modern network based telemetry and cellular based telemetry capabilities enable more robust, efficient bidirectional transfer of data. The DoD strategy is to create technologies for implementing a telemetry capability in C-Band, using the legacy L- and S-Bands for both streaming and networked telemetry, and researching the feasibility of using higher frequency bands to augment telemetry operations.

The Spectrum Efficient Technology (SET) project is developing test technologies that enable more efficient use of legacy telemetry bands and expansion into non-traditional areas of the RF and optical spectra at DoD test ranges. The technology development efforts within the SET project have been prioritized to align with the Department of Defense guidance on science and technology priority investments. As such, the SET project is focusing on growing data requirements of warfighting systems and the limited availability of spectrum for testing. The SET project is structured to develop test technologies to advance range communications, networked and cellular based telemetry capabilities, and enhanced management of spectrum at DoD test ranges

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Spectrum Efficient Technology	25.000	9.975	10.053

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603941D8Z / *Test and Evaluation Science and Technology*	**Project (Number/Name)** 092 / *Spectrum Efficient Technology*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Description: The SET project continued to mature technologies required for network and cellular based telemetry. Airborne phased array telemetry antenna technologies were matured for both manned and unmanned platforms, to include demonstration of airborne phased array telemetry data collection. The SET project upgraded the small, lightweight data recorder and data transmission scheme integrated onto unmanned airborne platforms to support long range flight test telemetry data collection. The data recorder addressed long range flight test requirements for data recording and storage during flight testing. ***FY 2023 Plans:*** The SET project will continue development of technologies required for network and cellular based telemetry. Airborne and ground based phased array telemetry antenna technologies will continue to be matured and integrated onto unmanned airborne platforms and transportable ground based systems. Ground based phased array telemetry antenna technologies to support large footprint test events will be demonstrated. The SET project will initiate test technology development of airborne 5G test capability and improve 5G range instrumentation. ***FY 2024 Plans:*** The SET project will continue development of technologies required for network and cellular based telemetry. The SET project will begin transition of cellular technologies to support aeronautical telemetry requirements at open air test ranges. Airborne and ground based phased array telemetry antenna technologies will continue to be matured. Ground based phased array telemetry antenna technologies to support large footprint test events will be transitioned to support multiple long range flight test corridors. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The slight increase between FY 2023 and FY 2024 is due to program adjustments related to economic assumptions.			
Accomplishments/Planned Programs Subtotals	25.000	9.975	10.053

	FY 2022	FY 2023
Congressional Add: Test & Evaluation Science & Technology (TRMC) ***FY 2023 Plans:*** Program increase in support of airborne 5G test capability and 5G range instrumentation.	-	40.000
Congressional Adds Subtotals	-	40.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603941D8Z / *Test and Evaluation Science and Technology*	**Project (Number/Name)** 092 / *Spectrum Efficient Technology*

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603941D8Z / *Test and Evaluation Science and Technology*	Project (Number/Name) 093 / *Electronic Warfare Test*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
093: *Electronic Warfare Test*	127.792	106.000	417.765	105.055	-	105.055	71.619	40.073	40.874	41.692	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

In order to establish dominance in the modern battlespace, our offensive and defensive electronic warfare systems must be capable against advanced radio frequency (RF) directed threats and electro-optic (EO) guided threats, which include infrared (IR) guidance. Ensured dominance in these areas requires more robust test and evaluation (T&E) with technologies that are rapidly adaptable to changing threats.

Readily available, IR seeking, man-portable air defense systems (MANPADS) are difficult to detect and pose an imminent and lethal threat to military aircraft of all types. Our ability to counter such threats is essential to owning the battlespace in theater. Therefore, the ability to test missile warning systems (MWS), hostile fire indicator (HFI) systems, IR countermeasures (IRCM), and advanced threat sensors is critical to our national defense. Additionally, a new generation of enemy RF missile seekers is both currently fielded and in further development, requiring a correspondingly new generation of test technologies to test the latest countermeasures. The T&E community is required to test IRCM and RF countermeasure systems in a repeatable manner with ground-truth data before and after integration into warfighting systems. Without new test technologies, the Department of Defense (DoD) will be unable to perform adequate T&E of advanced warning and countermeasure systems.

The Electronic Warfare Electronic attack and Electronic protect (EP) community is developing jammers and EP measures that are more sophisticated and take advantage of newer technology that allows adaptive waveforms and artificial intelligence and autonomy to respond to threats more rapidly and robustly. In addition, the testing of these systems in realistic many on many environments that are more threat representative requires new technology investment.

The technology development efforts within the Electronic Warfare Test (EWT) project have been prioritized to align with DoD guidance on science and technology priority investments. As such, the EWT project is focusing on the test needs in both the EO, including IR, and the RF threat domains. Additionally, development of core test technologies in this area can be leveraged to meet other EO and RF test requirements, such as in fire control systems; intelligence, surveillance and reconnaissance (ISR) sensors, and weapon seekers.

The EWT project develops test technologies to stimulate IRCM and RF system sensors through the high-fidelity simulation of scenes viewed by the sensors. Stimulation can be as simple as testing to see if a system under test responds to an image or as complex as simulating complex battle space phenomena to measure the response of a system under test in a more relevant, cluttered scenario. Simulations and stimulations are used at open air ranges and in installed system test facilities (ISTF), and in hardware-in-the-loop (HWIL) test beds.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Electronic Warfare Test	106.000	119.265	105.055

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603941D8Z / *Test and Evaluation Science and Technology*	**Project (Number/Name)** 093 / *Electronic Warfare Test*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Description: EWT initiated joint Electronic Warfare (EW) test technology developments to address Electronic Attack (EA) test technology needs, to expand the battlespace, and to enable improved assessment of EW platforms. This includes efforts to address inadequate laboratory and secure Installed System Test Facility (ISTF) modeling and simulation (M&S) representing evolving and changing RF threat systems, simulator and stimulator test technology. These joint EW test technologies initiated will also address shortfalls with open-air-range complex radar emitters, models, and RF threats inability to represent emerging and changing threat systems. The EWT project initiated efforts to address the inability to test EA techniques in secure environments and replicate modern threat signals through Hardware-In-the-Loop (HITL) and Installed System Test Facility (ISTF) simulations. Also, EWT initiated efforts to expand current range play-boxes to enable test and training with EW platforms that stress modern threat radar acquisition and detection ranges. The EWT project also began to address test technology needs for EW platforms and systems to have representative scale and depth for test and training of real-world missions. The EWT project continued to develop high fidelity scene generation technology for both EO and RF environments. The EWT project continued to develop high fidelity scene generation technology for both EO and RF environments. Work continued on the development of hardware and software that generates large number of independent radar targets in a high fidelity HITL facility. This enabled chamber testing of radars in more dense target environments by generating large numbers of dissimilar false targets. Work continued on high temperature IR scene projectors. The EWT project developed a dynamic infrared (IR) scene projector to enable chamber testing of missile warning systems and directional infrared countermeasure systems. The new scene projector creates scenes with higher temperatures and higher resolution creating a more threat representative environment for sensor test. The effort transitioned and delivered scene projectors to the Air Force Guided Weapons Evaluation Facility (GWEF). Work continued on increasing the efficiency of LED pixels for use in IR scene projectors. Work continued on development of interfaces for use of Active Electronically scanned arrays for open air range threat simulators. ***FY 2023 Plans:*** EWT will continue joint electronic warfare test technology developments to address Electronic Attack (EA) test technology needs, to expand the battlespace, and to enable improved assessment of EW platforms. The EWT project will continue investments in technologies related to Cognitive EW, Cognitive Radar, and EW sensors that feed Artificial Intelligence uses of EW data. EWT will initiate technology developments to improve Ground EW systems and cUAS EW testing. Prototype open air range threat emitter with wider frequency coverage and agility will be demonstrated. The EWT project will initiate technology development to develop threat representative electronicmagnetic spectrum warfare test emitters and associated sensor fusion. The EWT project will also advance 5th generation aerial target technology development. ***FY 2024 Plans:*** EWT will continue joint electronic warfare test technology developments to address Electronic Attack (EA) test technology needs, to expand the battlespace, and to enable improved assessment of EW platforms. The EWT project will continue investments in			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603941D8Z / *Test and Evaluation Science and Technology*	**Project (Number/Name)** 093 / *Electronic Warfare Test*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
technologies related to Cognitive EW, Cognitive Radar, and EW sensors that feed Artificial Intelligence uses of EW data. EWT will continue technology developments to improve Ground EW systems and cUAS EW testing. Prototype open air range threat emitter with wider frequency coverage and agility will be matured. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Decrease from FY 2023 to FY 2024 due to the completion of an upgrade to electronic warfare threat emitter technology.			
Accomplishments/Planned Programs Subtotals	106.000	119.265	105.055

	FY 2022	FY 2023
Congressional Add: Test & Evaluation Science & Technology (TRMC)	-	298.500
FY 2023 Plans: Program increase to support improvement of electronic magnetic spectrum test emitters, sensor fusion, and 5th generation aerial target test technology development.		
Congressional Adds Subtotals	-	298.500

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603941D8Z / *Test and Evaluation Science and Technology*	Project (Number/Name) 094 / *Advanced Instrumentation Systems Technology*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
094: *Advanced Instrumentation Systems Technology*	102.721	42.000	12.180	19.957	-	19.957	21.455	20.880	21.223	22.549	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Advanced Instrumentation Systems Technology (AIST) project addresses the test technology gaps resulting from emerging weapon systems that need to be assessed at the Department of Defense (DoD) installed systems test facility and hardware-in-the-loop testing (ISTF/HITL) and open-air range test facilities (including tropospheric, land-based, open-ocean, and undersea ranges). Instrumentation requirements for systems under test are increasing exponentially for new weapons systems. System-borne, warfighter-wearable, and remote sensing instrumentation packages are required. This instrumentation is for sensing and collecting critical performance data; determining accurate time, space, position information (TSPI) and attitude information; interfacing with command and control data links; monitoring and reporting system-wide communications; recording human operator physical and cognitive performance; and storing and transmitting data.

The technology development efforts within the AIST project have been prioritized to align with the DoD guidance on science and technology (S&T) communities of interest (COIs). The AIST project is focused on developing technologies for advanced TSPI instrumentation (especially with limited or no availability of Global Positioning System (GPS)), advanced sensors, advanced energy and power systems for instrumentation, micro-electronics, mitigating range encroachment issues, and measuring warfighter physical and cognitive performance. The AIST project addresses requirements for miniaturized, non-intrusive instrumentation suites with increased survivability in harsh environments. Such instrumentation is an urgent need because minimal space is available to add instrumentation to new or existing weapon systems subsequent to their development; furthermore, additional weight and power needs for instrumentation can adversely affect weapon system signature and performance. Instrumentation for humans-in-the-loop, especially dismounted warfighters, must not adversely affect performance, induce artificiality in the test environment, or create any operational burdens. New technologies can be exploited to integrate small, non-intrusive instrumentation (micro-technology) into emerging platforms during design and development, and, in some cases, into existing platforms. This class of instrumentation will provide critical system performance data during operational test (OT) and continuous assessment throughout a system's lifecycle. Technology developed under AIST can also benefit training and combat missions by enabling a continual feedback loop between the developer, training staff, operators, and commanders.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Advanced Instrumentation Systems Technology	42.000	12.180	19.957
Description: Description: Major thrusts included efforts in advanced sensors and TSPI instrumentation. The AIST projected continued three efforts to design a test technology for weapon testing use cases impacting the broad ocean area to collect TSPI, lethality, and scoring data; one technology uses optics, another leverages an imaging radar and a third employs underwater acoustic technology.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603941D8Z / *Test and Evaluation Science and Technology*	**Project (Number/Name)** 094 / *Advanced Instrumentation Systems Technology*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
The AIST project continued an effort to develop a sensor to collect acceleration measurement data during high-speed flight tests, enabling the gathering of accurate position and attitude, 6 Degrees of Freedom (6DOF) data over very long ranges and into the exo-atmosphere to measure the aerodynamics and internal guidance and control systems of new munitions in an ultra-high dynamic environment. The AIST project completed the development of an effort to support testing of military aircraft using externally mounted sound pressure instrumentation to gather data for analysis in all weather conditions, to overcome current constraints to flight testing in dry environments. Flight testing in a relevant environment is planned to take place at the Naval Air Warfare Center Aircraft Division, Patuxent River, MD. The AIST project continued a portable technology development effort using acoustic splash signatures to measure weapon location and attitude to characterize high dynamic weapon end-game maneuvers, and to evaluate impact location & velocity of attacking projectiles and resolving (scoring) very large quantities of impacts occurring closely spaced in position and/or time. This system has participated in at-sea system checkout activities and is planned to be an auxiliary sensor on an upcoming at-sea test of a weapon system impacting the ocean. ***FY 2023 Plans:*** The AIST project will initiate several new technology development efforts: a sweater battery prototype technology to store or convert energy and deliver useful power in austere ocean environments to support T&E sensor employment beyond the extents of existing test ranges; enhancements in electromagnetic (EM) propagation modeling for Atlantic Test Range radars; and a GPS-denied navigation prototype that uses a network of terrestrial-based transmitters. The AIST project will continue development of: multi-disciplinary technologies addressing T&E requirements for real-time casualty assessment (RTCA) of warfighter and weapon engagements, sensors to support advanced hypervelocity projectile testing, TSPI data fusion algorithms and technologies, high precision range radar technology, improved energy and power density systems for T&E, advanced non-intrusive data management techniques, and mitigation technologies for monitoring effects from encroachment on test ranges. The AIST project will also continue the investigation and development of advanced instrumentation technologies to support lethality testing and end-game scoring in the broad ocean area. ***FY 2024 Plans:*** The AIST project will initiate an effort to develop a mobile shallow water range to evaluate unmanned undersea vehicles (UUV) sensors and systems for high-resolution ocean environmental sensing, monitoring, and prediction systems. The AIST project plans to initiate a soft catch system for large caliber munitions to assess munitions internal ballistics, strength of design, and			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603941D8Z / *Test and Evaluation Science and Technology*	**Project (Number/Name)** 094 / *Advanced Instrumentation Systems Technology*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
function of critical components, where the munition can be fired at operational velocities, and captured in a way that does not damage the projectile or the environment. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The increase between FY 2023 and FY 2024 provides new test instrumentation technology development technologies and program adjustments due to economic assumptions.			
Accomplishments/Planned Programs Subtotals	42.000	12.180	19.957

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603941D8Z / *Test and Evaluation Science and Technology*	Project (Number/Name) 095 / *Directed Energy Test*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
095: *Directed Energy Test*	90.737	24.000	30.072	10.475	-	10.475	10.205	10.450	10.688	10.932	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Department of Defense (DoD) is exploring the military utility, safety, and suitability of directed energy weapons. A robust test capability to assess directed energy weapons is essential to understanding their effectiveness and limitations, including determining their effectiveness in performing counter improvised explosive device (C-IED) operations and counter UAS operations. Such assessments will depend upon knowledge acquired through the test and evaluation (T&E) of directed energy technologies and testing of operational concepts. Directed energy weapon technologies, primarily consisting of high energy lasers (HEL) and high powered microwaves (HPM), are outpacing available test capabilities. Traditional test techniques for evaluating conventional munitions (with flight times ranging from seconds to minutes) are not sufficient for the T&E of directed energy weapons that place energy on target instantaneously. Consequently, new test technology solutions are needed to ensure that adequate developmental, live-fire, and operational test capabilities are available when directed energy programs are ready to test.

Directed energy system and component testing requires three principal assessments: (1) energy or power on target; (2) the effects on the target; and (3) the propagation of the directed energy to the target through the atmosphere. In addition, the vulnerabilities of DoD systems to directed energy threats are required to be characterized, such as those requirements captured in Military Standard (MIL-STD)-464C. Equally as important, current test capabilities do not provide the detailed data required to understand U.S. directed energy system performance and effects. The technology development efforts within the Directed Energy Test (DET) project have been prioritized to align with DoD guidance on science and technology priority investments. As such, the DET project is developing the technologies necessary for quantitative assessment of United States (U.S.) HEL and HPM performance, as well as the vulnerability of DoD weapon systems to enemy directed energy threats.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Directed Energy Test	24.000	11.322	10.475
Description: The DET project initiated efforts to upgrade directed energy lab and test range infrastructure. The DET project continued efforts to measure HEL energy on small targets such as mortars, rockets, artillery, and UAS. The effort designed a recoverable mortar prototype to address Army and Navy requirements and an Air Force requirement for a missile-mounted target board. The DET project continued efforts to develop M&S capability for assessing effects of threat HEL systems on blue aircraft. The DET project completed efforts to mature a dense plasma focus technology to produce strategically relevant, ultra-short pulse neutron fluence levels for nuclear vulnerability testing. The DET project successfully demonstrated neutron production and dense plasma focus technology development continues to be optimized to support neutron production rates scalable to a test facility to be developed by the Central Test and Evaluation Investment Program (CTEIP). A larger chamber was integrated into the facility to test obtaining higher			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603941D8Z / *Test and Evaluation Science and Technology*	**Project (Number/Name)** 095 / *Directed Energy Test*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
FY 2023 Plans: The DET project will continue developments in HEL test technologies and HPM test technologies to characterize the performance and effectiveness of HEL and HPM systems as they engage small targets, such as enemy rockets, missiles, artillery, and unmanned aerial vehicles, as well as electronic systems and other targets of interest and expand into larger UAS classes. This will include sensor and associated data collection systems that can survive an HPM environment. Finally, the DET project will continue development of HELSTF capability to engage missile targets for a demonstration in FY 2023 against supersonic targets. The DET project will also develop a directed energy airborne high-power testbed ***FY 2024 Plans:*** The DET project will continue developments in HEL test technologies and HPM test technologies to characterize the performance and effectiveness of HEL and HPM systems as they engage small targets, such as enemy rockets, missiles, artillery, and unmanned aerial vehicles, as well as electronic systems and other targets of interest and expand into larger UAS classes. This will include sensor and associated data collection systems that can survive an HPM environment, near surface laser weapon system propagation measurement sensors, atmospheric absorption sensors for high energy lasers, and target swarm tracking. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The slight increase between FY 2023 and FY 2024 is due to program adjustments related to economic assumptions.			
Accomplishments/Planned Programs Subtotals	24.000	11.322	10.475

	FY 2022	FY 2023
Congressional Add: Test & Evaluation Science & Technology (TRMC)	-	18.750
FY 2023 Plans: Program increase to develop a directed energy airborne high-power testbed.		
Congressional Adds Subtotals	-	18.750

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603941D8Z / *Test and Evaluation Science and Technology*	Project (Number/Name) 096 / *C4I & Software Intensive Systems Test*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
096: *C4I & Software Intensive Systems Test*	144.356	49.000	13.088	13.246	-	13.246	13.511	13.794	14.070	14.351	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Command, Control, Communications, Computers, Intelligence (C4I) and Software Intensive Systems (SIS) (C4T) project addresses test technology for next generation resilient, survivable, federated networks and information ecosystems (information superiority) from the tactical level up to strategic planning. The technology development efforts within the C4T project have been prioritized to align with DoD guidance of S&T Communities of Interest (CoIs) and the National Defense Strategy. Gaps are driven by more complex warfare environments and distributed systems; large quantities of data and intelligence (e.g., Big Data, Artificial General Intelligence (AGI) and Machine Learning Algorithms (MLA)); and more software intensive systems (e.g. F-35, CVN, IBCS)).

C4T addresses gaps in Big Data Analytics technologies to gain knowledge from massive amounts of structured and unstructured data collected over a single test, but also expanded to look at the systems' performance over the acquisition lifecycle. The technologies are required when testing sensor platforms, command and control systems and weapon platforms that support the kill chain in a Joint multi-domain operation. These systems must be evaluated for their ability to provide the accurate, timely transfer of data (e.g., target tracks, weapons allocation, mission tasking, and situational awareness) as the data passes among the Services, Warfighting Domains, and Coalition Partners.

C4T also addresses gaps in Live and Simulated Environments, these technologies are required to increase the use of a distributed test environment for new warfare concepts leveraging simulated entities (e.g. modeling and simulation) for more thorough joint mission context platform T&E (e.g., Anti-Access Arial Denial (A2AD)and Manned and Unmanned Systems (MUM-T)). The technologies within C4T will remove undesired distributed testing biases while improving test agility and the tester's ability to effectively support knowledge management, rapid analysis of "Big Data," and automated test reporting. The C4T project advances these test technologies as well as Big Data collection, analysis, and visualization that enable the virtual integration of Department of Defense (DoD) weapon laboratories and open air ranges. Using Modeling and Simulation (M&S) along with hardware-in-the-loop (HWIL) laboratories, the effectiveness of Joint missions can be assessed in terms of system-of-systems interoperability and effectiveness in executing Joint mission operations, including testing of weapons and C4I and SIS systems accessing and providing information.

Lastly C4T addresses technologies to support C2 Analysis in Multi-Domain Operations (MDO), specifically at scale and density to fully assessed the mission kill web with new test design, planning and assessment technologies utilizing artificial intelligence and machine learning to not only plan assessments within a domain, but also to enable assessments of "what-if" testing cascading across the other domains of warfare. This will enable full assessment of multi-domain operations to ensure information superiority to accomplish mission objectives. New intelligent testing technologies are required for assessment of MDO missions for our future warfighter AI/ML-enabled C2 Warfighter Systems to ensure the battlefield will not be the testing field. These new MDO focused technologies are vital to creation of a robust operationally relevant Joint Service All Domain Test Range.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603941D8Z / *Test and Evaluation Science and Technology*	**Project (Number/Name)** 096 / *C4I & Software Intensive Systems Test*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: C4I and Software Intensive Systems Test	49.000	13.088	13.246

Description: The C4T Threat Submarine Modeling Validation project transitioned advanced modeling and simulation technology capabilities to the Naval Undersea Warfare Center (NUWC) Weapons Analysis Facility (WAF) validated (by COTF and DOT&E) modeling capabilities that resulted in over $150 million of saving by reducing the number of live in-water runs required for the MK 48 Heavy Torpedo. These technologies will be instrumental to all future next generation torpedo developments as well as current torpedo system upgrades. With these advanced M&S capabilities we can now finally assess performance of torpedoes in all underwater bathometry (e.g. deep, shallow, and varying ocean ecology).

The C4T MultiVariate Data Workbench (MVDW) is transitioning to the US Army Fort Sills Test Directorate providing advanced AI/ML technologies to support near real-time data collection and validation for the US Army indirect fire doctrine. Data collection includes structured and unstructured datasets which currently requires multiple days to validate after collection and often resulting in retesting cycles as anomalies are not recognized during execution. MVDW will provide these answers after the completion of each test day. This exciting technology product is being used to support US Army Bold Quest 2022.

The C4T Multivariate Algorithms for Optimized Test Heuristics and Real-time Analysis (MAOTHRA) is transitioning to the Redstone Test Center ATEC providing advanced statistical analytic techniques in a parallel processing computing environment to automatically calibrate cameras (low-cost, high-speed) to support generation of TSPI on weapon systems test events, resulting in cost savings from existing high-cost cameras with lengthy (hours) calibration techniques to low-cost cameras that are calibrated within minutes. MAORTHRA AI/ML techniques for analysis of large multivariant data sets to provide valuable insights from time-series weapon systems sensor are presently supporting the US Army Project Convergence 2022.

The C4T project continued the development of several big data analytics (BDA) efforts implementing artificial intelligence/ machine learning (AI/ML) techniques for multi-variant time series sensor datasets, unstructured dataset analytics (audio, video, and imagery), and advanced visualizations of large T&E datasets.

These efforts include: traditional statistical and machine learning/artificial intelligence (ML/AI) techniques to deal with massive complex datasets; the software execution has been focused on the use of containerized microservices architecture for ease of technology transfer across all T&E organizations. Common technologies across C4T project also supports advanced data synchronization and fusion frameworks to automate development of assessment metrics and to quickly recall synchronized segments from large T&E datasets (e.g., multivariate time series, audio, video, and imagery. Lastly, C4T project is creating advanced visualization techniques; to support the presentation of information by abstracting data into particles to optimally exploit current vision and neuroscience research. This allows the T&E analyst to visualize anomalies, trends, patterns, and failure conditions found across the entirety of the T&E dataset and not be focused on an individual dataset. These technologies are being

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603941D8Z / *Test and Evaluation Science and Technology*	**Project (Number/Name)** 096 / *C4I & Software Intensive Systems Test*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
developed to support test and evaluation of future warfighter C4I and Software Intensive Systems (4th and 5th generation military platforms). ***FY 2023 Plans:*** The C4T project will continue development of technologies to enable the next generation resilient, survivable, federated networks and information ecosystems (information superiority) from the tactical level up to strategic planning across three domains: BDA, Live and Simulated Environments, and C2 Analysis in Multi-Domain Environments. The C4T project will continue to focus on testing more advanced BDA technologies to support rapid data-to-decisions across complex and distributed warfighter systems environments and in support of each warfighter platform's acquisition lifecycle. The C4T project will investigate the increased use of live and simulated test participants using test environment driven M&S validation techniques. The C4T project TSMV will be maturing M&S technologies to enable updates to the Office of Naval Intelligence threat submarine models to allow a better vision of threat submarines structural vulnerabilities as these targets are tracked and engaged by the U.S. Fleet. The C4T project will initiate investments to support C2 Analysis in Multi-Domain Environments and investigate the increased use of test automation utilizing virtualization and cloud environments. ***FY 2024 Plans:*** The C4T project will continue development of technologies to enable the next generation resilient, survivable, federated networks and information ecosystems (information superiority) from the tactical level up to strategic planning. The C4T project will continue to focus on testing more advanced BDA technologies to support rapid data-to-decisions across complex and distributed warfighter systems environments and in support of each warfighter platform's acquisition lifecycle. The C4T project will initiate investments to support C2 Analysis in Multi-Domain Environments and investigate the increased use of test automation utilizing virtualization and cloud environments. C4T will initiate test technology development to enable a test, training, and experimentation continuum supporting all aspects of multi-domain operations. The C4T project will investigate the increased use of live and simulated test participants using test environment driven M&S validation techniques. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The slight increase between FY 2023 and FY 2024 is due to program adjustments related to economic assumptions.			
Accomplishments/Planned Programs Subtotals	49.000	13.088	13.246

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603941D8Z / *Test and Evaluation Science and Technology*	**Project (Number/Name)** 096 / *C4I & Software Intensive Systems Test*

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603941D8Z / *Test and Evaluation Science and Technology*	Project (Number/Name) 097 / *Autonomy and Artificial Intelligence Test*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
097: *Autonomy and Artificial Intelligence Test*	74.599	21.000	98.992	47.379	-	47.379	41.038	43.787	44.275	47.760	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Unmanned and autonomous systems support every domain of warfare -- operating in space, in air, on land, on the sea surface, undersea, and in subterranean conditions to support a vast variety of missions. The emergence of Artificial Intelligence (AI) brings a host of revolutionary capabilities that will profoundly influence warfare, and bring special challenges for testers of Artificial Intelligence systems. The Unmanned Autonomous System Test (UAST) project addresses current and emerging challenges associated with the test and evaluation (T&E) of unmanned systems, particularly in testing autonomy, artificial intelligence, and machine learning. As such, the UAST project is developing test technologies to simulate, stimulate, instrument, measure, and assess an autonomous system's ability to perceive its environment, process information, adapt to dynamic conditions, make decisions, and effectively act on those decisions in the context of mission execution.

The AAIT project will provide the test technologies to effectively measure performance and characterize risk, thereby increasing warfighter trust in autonomous systems and artificial intelligence tools. This program will improve DoD test capabilities and methodologies to address the testing of increasingly autonomous units operating in unstructured, dynamic, battlespace environments. Furthermore, advancements are being made in developing collaborating, system-of-autonomous-systems that will work in concert as a swarm or pack, and in close proximity with humans. New test technologies are needed to stress the collective set of autonomous systems under realistic conditions, predict emergent behavior of autonomous systems, emulate the complex environment, and assess mission performance of these highly-coupled and artificially-intelligent systems.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Autonomy and Artificial Intelligence Test	21.000	22.742	47.379
Description: The AAIT Project continued test technology development supporting testers in the DoD of Unmanned and Artificial Intelligence-Based Systems. AAIT develops technology to improve ability to develop salient and high-value test plans, increasing safety during live test, to identify safety defects deep inside complex autonomy software, and to improve performance of machine vision systems. The AAIT project collaborated with the Autonomy Community of Interest (COI) Test and Evaluation, Verification and Validation (TEVV) Working Group to ensure that the AAIT project is investing in technologies relevant to the future of autonomous systems. The AAIT Project seeks solutions for legacy topics (test planning, test execution, safety, and performance assessment) but has also expanded interest to find solutions for Artificial Intelligence and Machine Learning systems, topics identified by the intelligence community, and any other topics that are priority for TRMC and OUSD(R&E). The AAIT project continued the Assured DevSecOps of Autonomous Systems (ADAS) effort. ADAS addresses the unique challenges of Autonomy test & evaluation to provide enterprise solutions in support of future programs and joint initiatives. ADAS			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603941D8Z / *Test and Evaluation Science and Technology*	**Project (Number/Name)** 097 / *Autonomy and Artificial Intelligence Test*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
addresses autonomy test and evaluation verification and validation (TEV&V) needs across the life cycle beginning with mission analysis and engineering and ending with the mission operations. ADAS is a leading pathfinder effort to address gaps identified by the National Security Commission on Artificial Intelligence. The AAIT Project continued investments in robustness testing technology to detect and predict safety-related vulnerabilities and failures within UAS software, in advance of live test. The AAIT project provided the key S&T technology as a basis for the Navy-led CTEIP, “Autonomy, Integration, and Teaming” (AIT), which developed test capabilities to be demonstrated on the Airborne Collision Avoidance System (ACAS-Xu) on Triton, and as a basis for Guardian, a Ground Based Detect and Avoid system, which will allow UAS to achieve certification for use during live test (DO-278A/NAVAIR Cert). The same core technologies are used as a basis for the Army-led CTEIP “Autonomous Systems Test Capability” (ASTC). The AAIT project give testers a more comprehensive means of identifying and reporting on safety vulnerabilities found deep within the UAS software, allowing testers to test for defects that may not have ever been found by traditional testing techniques. The AAIT Project completed development of test technology to improve test planning for surface, sub-surface, ground, and airborne autonomy using optimization algorithms to rapidly generate salient test scenarios. The AAIT project provided the key S&T technology (for test planning) as a basis for the Navy-led CTEIP, “Autonomy, Integration, and Teaming” (AIT). The same core technologies are used as a basis for the Army-led CTEIP “Autonomous Systems Test Capability” (ASTC). The AAIT project, via the CTEIP programs, give testers information about how to choose high-value test conditions. AAIT technology shows exactly where software-based systems are on a performance edge (between mission success and mission failure) and a safety edge (between safety success and safety failure). AAIT helps testers see critical test conditions that they might not have chosen by traditional means. The AAIT Project initiated development of technology to create machine-learned, behavioral copies of autonomy software. This technology creates faster-than-real-time versions of a given autonomy that can then be tested in an accelerated timeline in a simulated environment, and can also be cloned to be tested in parallel-processing fashion. This technology will provide faster, better, and more statistically significant testing data for testers. This technology can also capture human performance, for example a pilot, or a ground radar operator) to be used as more realistic elements of a simulated environment. The AAIT project developed machine vision test technologies to identify where a machine vision system shows brittleness – inconsistent identification – of elements in its field of view. This technology can be used to improve performance of machine vision systems by identifying test data (images or video) to be used for focused testing and also can be used to re-train a brittle system for improved performance.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603941D8Z / *Test and Evaluation Science and Technology*	**Project (Number/Name)** 097 / *Autonomy and Artificial Intelligence Test*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
The AAIT Project developed technology to use functional architecture data to identify safety faults, and build safety fault trees) for complex autonomy software systems. Fault tree development has been traditionally built by hand. This technology will identify faults and build a fault tree more comprehensively and thoroughly than humanly possible, saving resources and improving the identification of safety risks in advance of live test. The AAIT Project developed technology to assist with the validation and verification of a learning-in-the-field AI-based system. This technology will assist testers by advising when a learning system has learned sufficiently different information to the point where it is no longer valid for use. This technology can also be used to determine if a system trained in one domain (urban, for example) is valid for use in another domain (desert). ***FY 2023 Plans:*** The AAIT Project will continue development of test technology for machine vision systems, learning systems, improved safety awareness, and measure of effectiveness of Counter-UAS systems. AAIT will initiate technology development to generate relevant synthetic data to train AI algorithms. AAIT will also develop and deploy new test techniques, referred to as data collection at the edge, to automate the collection, storage, tagging, and analysis of data during live DoD test events with systems under test employing autonomy and artificial intelligence algorithms. AAIT will also initiate artificial intelligence hubs and all-domain autonomous M&S technology development. The AAIT Project will continue to initiate and develop technologies to support test planning, test execution, and performance assessment of unmanned, autonomous, artificial intelligence, and machine learning systems. ADAS will continue to deliver pathfinding solutions of transformational capabilities addressing the full spectrum of TEV&V needs. AAIT will continue to transition technologies to end users at the labs and ranges of the MRTFB. AAIT will continue to risk reduce test capability development. AAIT will investigate concepts to verify the autonomy design models against design requirements using formal methods, and a Test-Case Execution Environment based on AI-guided Testing, using machine-learning in the test planning process to make recommendations of test conditions for evaluation of machine learning image classifiers. ***FY 2024 Plans:*** The AAIT Project will continue development of test technology for machine vision systems, learning systems, and improved safety awareness, and synthetic imagery generation. AAIT will initiate technology development for measures of trust/confidence in autonomous/AI-based systems, also measures of effectiveness of human/machine teams. The AAIT project will develop AI test and evaluation (T&E) high-performance computing resources to support continued enhancement of artificial intelligence hubs technology. The AAIT Project will continue to initiate and develop technologies to support test planning, test execution, and performance assessment of unmanned, autonomous, artificial intelligence, and machine learning systems. ***FY 2023 to FY 2024 Increase/Decrease Statement:***			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603941D8Z / *Test and Evaluation Science and Technology*	**Project (Number/Name)** 097 / *Autonomy and Artificial Intelligence Test*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
The increase between FY 2023 and FY 2024 supports enhanced Cyber Security and IT for Artificial Intelligence Assurance.			
Accomplishments/Planned Programs Subtotals	21.000	22.742	47.379

	FY 2022	FY 2023
Congressional Add: Test & Evaluation Science & Technology (TRMC)	-	76.250
FY 2023 Plans: Program increase to support the initiation of AI hubs, all-domain autonomous M&S technology development		
Congressional Adds Subtotals	-	76.250

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603941D8Z / *Test and Evaluation Science and Technology*	Project (Number/Name) 098 / *Cyberspace Test*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
098: *Cyberspace Test*	68.071	23.000	18.431	14.707	-	14.707	15.000	15.315	15.620	15.932	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Department of Defense (DoD) ability to use cyberspace for rapid communication and information sharing in support of operations is a critical enabler of DoD military missions. Advancements in utilizing cyberspace are outpacing the technologies needed for test and evaluation (T&E). The Cyberspace Test Technology (CTT) project develops advanced technologies and methodologies to test and evaluate DoD capabilities and information networks to defend and conduct full-spectrum military operations across cyberspace. This program will improve cyberspace T&E capabilities to support the continual experimental, contractor, developmental, operational, and live-fire testing requirements of warfighter systems operating in cyberspace. Many of the test tools and infrastructure items required for systems in cyberspace will require advancement and maturation of nascent test technologies. The CTT project will address test technology shortfalls in cyberspace testing, including planning cyberspace tests, creating representative cyberspace threats and test environments, executing cyberspace tests, and performing cyberspace test analysis and evaluation.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Cyberspace Test	23.000	14.431	14.707
Description: The CTT project developed a next generation Traffic Generation and Content System that used modern Artificial Intelligence techniques and detailed network, human social, and work flow models to generate traffic. This technology development worked to ensure host and network traffic that was easily distinguished from human generated traffic. The CTT project developed the novel capability to fuzz targets' virtual machine state. This technology enabled exploring an entirely new class of attacks compared to existing fuzzers which fuzzed only the program inputs. The CTT project developed a framework to provide the red team and other DoD test organizations an automated attack capability. This technology development enabled red team personnel to focus on more challenging problems and other test organizations to conduct automated testing.			
FY 2023 Plans: The CTT project will continue to pursue technology developments addressing needs in Cyber-Physical Systems, in Tactical Edge Networks, and in Enterprise Information Systems. This includes the development of fuzzing tools and tools to measure the efficacy of cyber testing events and share anonymized results for all DoD testing. CTT also plans to develop more tools for red team automation. In addition, CTT plans to demonstrate the new traffic generation and content system in a relevant test environment. CTT plans to start projects in the Cyber-Physical System domain such as Cyber-Physical System virtualization and Cyber-Physical System Test Automation.			
FY 2024 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603941D8Z / *Test and Evaluation Science and Technology*	**Project (Number/Name)** 098 / *Cyberspace Test*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
The CTT project will continue developing and demonstrating technology to address needs in the Cyber-Physical Systems, Tactical Edge Networks, and Enterprise Information Systems domains. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The slight increase between FY 2023 and FY 2024 is due to program adjustments related to economic assumptions.			
Accomplishments/Planned Programs Subtotals	23.000	14.431	14.707

	FY 2022	FY 2023
Congressional Add: Test & Evaluation Science & Technology (TRMC) ***FY 2023 Plans:*** Program increase to advance cybersecurity signal generation.	-	4.000
Congressional Adds Subtotals	-	4.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603941D8Z / *Test and Evaluation Science and Technology*	Project (Number/Name) 099 / *Space Test*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
099: *Space Test*	0.000	-	32.125	0.830	-	0.830	0.908	1.142	1.165	1.188	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The space domain has become a competitive, congested, and contested environment dominated by global economics and key to national security. With the creation of the United States Space Force, the Department of Defense (DoD) is prioritizing investments to maintain space superiority and increase resiliency of space systems. Current testing infrastructure and methodologies to assess space system resilience against emerging threats is limited. The Space Test (ST) project mission is to address national test capability gaps by providing accurate, robust, and efficient T&E solutions to successfully develop, validate, and inform the employment of new space control systems. The ST project addresses test technology needs for adequate realism for space systems and aligns with the DoD S&T priority investments and is developing a strategic roadmap and investment strategy to establish live and virtual range environments, develop space and ground-based threat emulation capabilities. The ST project seeks to develop technologies that will enable robust, accurate, and timely T&E of future space weapon systems.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Space Test	-	0.725	0.830
Description: The Space Test (ST) project has conducted a test infrastructure analysis of space systems test needs and developed a time-phased investment strategy based on those requirements. Work included engaging the space test community on needs and gaps to ensure traceability of test technology development to strategic objectives. Space Test continued design and initial development of a Space Based Telemetry (SBTM) system to support long rang flight test needs. Work continued to develop the Tactical Aerospace Laser Optical Simulator – High Altitude (TALOS-High), successfully passing Critical Design Review (CDR). Development work for the TALOS-High dynamic laser test bed will continue.			
FY 2023 Plans: The Space Test project will begin to address test technology needs identified in the Space T&E investment roadmap and time-phased investment strategy. Development of a Space Based Telemetry (SBTM) system to support long rang flight test needs will continue. SBTM payload, bus, and orbit design continues with partnerships between Army Futures Command and the Space Development Agency. Additional improvements to SBTM space based range tracking test technology development will also start under STT. In coordination with Laurence Livermore National Laboratory (LLNL), TRMC will begin the initial phase development of a mobile space system test bed. Lastly, TRMC plans to begin laboratory upgrades to the Kirtland AFB laboratory facility, Monzano Mountain, to support space test needs.			
FY 2024 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603941D8Z / *Test and Evaluation Science and Technology*	**Project (Number/Name)** 099 / *Space Test*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
SBTM payload/bus integration and initial deployment to support long rang flight test needs is planned. The next phase of the mobile space system test bed is planned to start in FY24 to enhance capacity and capability of the test bed. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The slight increase between FY 2023 and FY 2024 is due to program adjustments related to economic assumptions.			
Accomplishments/Planned Programs Subtotals	-	0.725	0.830

	FY 2022	FY 2023
Congressional Add: Test & Evaluation Science & Technology (TRMC) ***FY 2023 Plans:*** Program increase to improve space based range tracking.	-	31.400
Congressional Adds Subtotals	-	31.400

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603945D8Z / *AUKUS Innovation Initiatives*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	25.000	-	25.000	25.000	25.000	25.000	25.000	Continuing	Continuing
079: *AUKUS*	-	0.000	0.000	25.000	-	25.000	25.000	25.000	25.000	25.000	Continuing	Continuing

Note

New Start (Y/N): Yes

A. Mission Description and Budget Item Justification

This program supports the Department's initiatives to (1) deter strategic attacks against the United States, and its Allies and partners; (2) deter aggression while being prepared to prevail in conflict when necessary; and (3) building enduring advantages for the future Joint Force. Specifically, the Enhanced Trilateral Security Partnership among Australia, the United Kingdom, and the United States (AUKUS) will deepen defense capability and technological cooperation by developing and providing joint advanced military capabilities to promote security and stability in the Indo-Pacific region.

This program provides funding to pursue operationally relevant advanced capability co-development, support integration of multi-national capabilities to act as a force multiplier, and test and evaluate promising solutions found across the AUKUS innovation ecosystem. The program portfolio aligns with the critical technology areas and operational requirements.

The intent is to consider proposals submitted from the Services and the Defense Agencies and Field Activities, as applicable. The appropriate leadership will select proposals using a merit-based process that identifies the most promising solutions to operational challenges with an emphasis on transitioning technologies current or future programs of record.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	0.000	0.000	0.000	-	0.000
Current President's Budget	0.000	0.000	25.000	-	25.000
Total Adjustments	0.000	0.000	25.000	-	25.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• FY 2024 New Start	-	-	25.000	-	25.000

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603945D8Z *I AUKUS Innovation Initiatives*

Change Summary Explanation

New start program

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603945D8Z / *AUKUS Innovation Initiatives*	Project (Number/Name) 079 / *AUKUS*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
079: *AUKUS*	-	0.000	0.000	25.000	-	25.000	25.000	25.000	25.000	25.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

New Start (Y/N): Yes

A. Mission Description and Budget Item Justification

This program supports the Department's initiatives to (1) deter strategic attacks against the United States, and its Allies and partners; (2) deter aggression while being prepared to prevail in conflict when necessary; and (3) building enduring advantages for the future Joint Force. Specifically, the Enhanced Trilateral Security Partnership among Australia, the United Kingdom, and the United States (AUKUS) will deepen defense capability and technological cooperation by developing and providing joint advanced military capabilities to promote security and stability in the Indo-Pacific region.

This program provides funding to pursue operationally relevant advanced capability co-development, support integration of multi-national capabilities to act as a force multiplier, and test and evaluate promising solutions found across the AUKUS innovation ecosystem. The program portfolio aligns with the critical technology areas and operational requirements.

The intent is to consider proposals submitted from the Services and the Defense Agencies and Field Activities, as applicable. The appropriate leadership will select proposals using a merit-based process that identifies the most promising solutions to operational challenges with an emphasis on transitioning technologies current or future programs of record.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Artificial Intelligence (AI) Development Hub	0.000	-	5.000
FY 2024 Plans: This project seeks to develop a new cloud-based AUKUS AI Development Hub to support the exchange data and support trilateral collaboration within a shared modeling and simulation environment. Once established, this environment could support experimentation and demonstration across the AUKUS Advanced Capabilities Pillar in the future. The initial expenditure will take place in FY 2024, with the project funding to continue in FY 2025 and FY 2026.			
FY 2023 to FY 2024 Increase/Decrease Statement: This is a new start in FY 2024			
Title: Mission Payloads for Unmanned Underwater Vehicles (UUV's)	0.000	-	10.000
FY 2024 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603945D8Z / *AUKUS Innovation Initiatives*	**Project (Number/Name)** 079 / *AUKUS*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
This project seeks to develop payloads to execute specific trilateral missions. The initial expenditure will take place in FY 2024, with the project funding to continue in FY 2025 and FY 2026. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** This is a new start in FY 2024.			
Title: Cyber Capability Development ***FY 2024 Plans:*** This project seeks to purchase commercial space data to incorporate in an existing project that fuses and processes data derived from distributed platforms to support decision-making. The initial expenditure will take place in FY 2024. This project might require additional resourcing in FY 2025. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** This is a new start in FY 2024.	0.000	-	6.000
Title: Enhanced Battlespace Awareness ***FY 2024 Plans:*** This project seeks to purchase commercial space data to incorporate in an existing project that fuses and processes data derived from distributed platforms to support decision-making. The initial expenditure will take place in FY 2024. This project might require additional resourcing in FY 2025. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** This is a new start in FY 2024.	0.000	-	1.000
Title: Engineering and Architecture Studies ***FY 2024 Plans:*** This project seeks to conduct a series of engineering and architecture studies to support the integration of existing and/or future AUKUS capabilities. The initial expenditure will take place in FY 2024, with the project funding to continue in FY 2025 and FY 2026. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** This is a new start in FY 2024.	0.000	-	3.000
Accomplishments/Planned Programs Subtotals	0.000	-	25.000

C. Other Program Funding Summary ($ in Millions)

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603945D8Z / *AUKUS Innovation Initiatives*	**Project (Number/Name)** 079 / *AUKUS*

C. Other Program Funding Summary ($ in Millions)

Remarks

Other Funding Summary: This program is also funded in OUSD(Policy), OUSD(A&S) and O&M for Manpower support.

D. Acquisition Strategy

Successful projects support capability acquisition in several ways: technology upgrade insertion in a current platform or program providing greater capability or prolonging life of the system, inform or refine requirements for planned systems, or direct procurement. The AUKUS Innovation Initiative will leverage the Departments most efficient and effective cooperation or acquisition approaches to support the appropriate transition pathway.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603950D8Z / *National Security Innovation Network*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	76.190	34.876	79.268	21.575	-	21.575	21.494	21.374	21.821	22.297	Continuing	Continuing
845: *National Security Innovation Network*	76.190	34.876	79.268	21.575	-	21.575	21.494	21.374	21.821	22.297	Continuing	Continuing

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

This program supports the Department's initiatives to Build a Sustainable and Long-Term Advantage, and Build a Resilient Joint Force and Defense Ecosystem.

The National Security Innovation Network (NSIN) is a program office within the Office of the Under Secretary of Defense for Research and Engineering (OUSD(R&E)) and authorized through Section 219 of the National Defense Authorization Act for FY 2021. NSIN reports through the Defense Innovation Unit (DIU) to the USD(R&E). NSIN's mission is to build networks of innovators that generate new solutions to national security problems. NSIN develops and executes programs that engage these networks to solve the problems of Department of Defense (DoD) entities from the Military Services, Joint Staff, Combatant Commands, Defense Agencies, and Field Activities. NSIN is organized around three core lines of effort: Network Building, Program Execution, and Transition Support. These lines of effort include: 1) regional engagement and community building to source problem solvers and solutions to national security problems; 2) executing programs to attract new talent and solutions from among students, entrepreneurs, and the startup, venture and academic communities; and 3) enabling transition by providing subject matter expertise to reduce ambiguity and provide reliable, clear, and dependable information to the NSIN network making it easier for solutions to be identified, assessed, and implemented.

The Regional Network Team is NSIN's outreach arm responsible for building the networks of innovators. The physical network is spread across nine (9) regions spanning the Continental United States and reaching out to Hawaii. Regional engagement activities are led by nine (9) Regional Directors supported by additional Regional Network Team members able to reach into critical venture innovation hubs throughout the country including: Boston, MA; New York City, NY; Washington, DC; Orlando, FL; Chicago, IL; St. Louis, MO; Austin, TX; Denver, CO; Seattle, WA; San Diego, CA; and San Francisco, CA. Additional members of the Regional Network Team currently include Regional Engagement Principals (REPs) that are embedded in and have responsibility for specific, critical innovation ecosystems within each region including universities and other tech hubs. Currently, NSIN has a total Regional Network Team of 44 members throughout the country.

NSIN executes programs through two portfolios: Talent and Venture. The Talent Portfolio provides inspiration and opportunity for individuals outside the traditional federal talent pipeline to serve our country and solve real-world national security, technology, and policy challenges. By bridging the gap between students, academics, and entrepreneurs to engage with the Department of Defense (DoD), NSIN is helping build a deep bench of diverse, qualified civilian and military workers to preserve our competitive emerging technology advantage with resilient personnel trained for the unpredictable global operating environment. The Talent Portfolio acknowledges that people are the most valuable resource to achieving the mission. The Venture Portfolio develops and executes programs and services intended to facilitate access to emerging technology as it engages the talents of fast-moving innovators and non-traditional problem-solvers. The Venture Portfolio works directly with dual-use

early stage ventures emerging from both the academic and venture community who have solutions that address Department of Defense (DoD) problems. The Venture Portfolio creates advantage for defense innovation through customer discovery and solution adoption.

The NSIN Transition Cell reduces ambiguity and provides reliable, clear, and dependable information to NSIN program participants, Mission Acceleration Center users, and to the larger NSIN DoD mission partners; making it easier for solutions to be identified, assessed, and implemented. The Transition Cell ensures dual-use early stage ventures have the resources they need to understand and access the DoD market, provides education and resources to strengthen and fortify dual-use business maturity of alumni ventures, and provides materials and consultation to the DoD on the various authorities and vehicles available. The Transition Cell bridges the gap between NSIN post-program and solution implementation, facilitates market research within the non-traditional early stage venture ecosystem, and builds a bridge between the dual-use investor community, dual-use ventures, and the DoD innovation ecosystem. The Transition Cell enables the identification of reusable pathways to get solutions to the place where they will have the greatest effect.

In prior years, NSIN was predominantly funded through Congressional Additions but was included in the President's Budget submission for FY 2020 ($25.000 million). FY 2022 was the first year that NSIN appeared as a funded Program Element throughout the Future Years Defense Program and its program mission was codified in Section 219 of the NDAA for FY 2021. In FY 2023, NSIN was included in the President's Budget submission at $22.028 million and received a total Congressional Addition of $57.240 million.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	36.203	22.028	21.955	-	21.955
Current President's Budget	34.876	79.268	21.575	-	21.575
Total Adjustments	-1.327	57.240	-0.380	-	-0.380
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	57.240			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.327	-			
• Program Adjustments	-	-	-0.380	-	-0.380

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2022	FY 2023
Project: 845: *National Security Innovation Network*		
Congressional Add: *NSIN Program Increase*	15.000	-
Congressional Add: *Secure Email Access*	-	1.240
Congressional Add: *DoD mission acceleration centers*	-	50.000

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603950D8Z *I National Security Innovation Network*

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2022	FY 2023
Congressional Add: *Adaptive Threat Force Cyber Cell*	-	1.000
Congressional Add: *Hacking 4 Defense*	-	5.000
Congressional Add Subtotals for Project: 845	15.000	57.240
Congressional Add Totals for all Projects	15.000	57.240

Change Summary Explanation

FY 2024 minimal reduction due to programmatic adjustments.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603950D8Z / *National Security Innovation Network*	Project (Number/Name) 845 / *National Security Innovation Network*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
845: *National Security Innovation Network*	76.190	34.876	79.268	21.575	-	21.575	21.494	21.374	21.821	22.297	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

NSIN executes the following programs and pilot activities, all of which are designed to enhance DoD's access to technologists and entrepreneurs for the purposes of improving its talent pool, enable collaboration with universities and the early-stage venture community to develop novel concepts and solutions for end-user problems and requirements, and prototype and test new technologies to place them on the path to becoming programs of record or integrated with existing platforms.

• Technology and National Security Fellowship: a national, one-year fellowship pilot that places STEM graduates into the immediate offices of policymakers in Congress and the Pentagon for the purposes of enhancing technical literacy and improving policy outcomes through an informed understanding of emerging and nascent technologies.

• X-Force Fellowship: a summer fellowship experience for current students that embeds project-based teams of graduate and undergraduate students with DoD mission partners for the purposes of developing early-stage prototypes. Occurs annually from June-August.

• Hacking for Defense: a course taught at universities around the country that pairs DoD end-users with top university students for collaborative problem-solving over the course of an academic semester. Students work to develop a minimum viable product solution to improve the real-world problems of service members that can be adopted by the DoD end-users.

• Bootcamp: a national program that provides crowd-sourced solutions for DoD mission partners by deploying faculty from top-tier research universities to bases and installations to facilitate early-stage concepts for technology and policy-based problems.

• Maker: a national program that offers rapid prototyping for solutions drawn from accepted novel solution concepts from NSIN programming, allowing customers to turn ideas from the abstract and theoretical into practical and real prototypes.

• Capstone: a national program that pairs prototyping development needs for DoD mission partners with extant engineering capstone courses from top-tier research universities throughout the country. Outputs include TRL-4 prototypes that can undergo testing and evaluation.

• Forge/Foundry: a national program that identifies breakthrough DoD and other USG lab technology and leverages it to solve the real-world problems of DoD and commercial customers. Teams of entrepreneurs (Foundry) or ventures (Forge), working with DoD lab scientists and technologists, assess the market viability and the potential to commercialize DoD lab technologies.

• Propel: a national program that partners with commercial accelerators to sponsor particularly promising technology and early-stage ventures into cohort-based customer discovery that improves DoD end-user validation.

• Challenges: NSIN Challenges bring collaborators from the defense, academic, and venture communities to work on the most challenging technical problems in national security.

• Emerge: a national program that identifies extant university IP, matches it against DoD mission partner needs, and then commercializes the technology through entrepreneurial training, recruitment, and licensing agreements.

• Fulcrum: a pilot program that enables access to critical infrastructure that can be used to accelerate the development of solutions by early stage ventures.

• Dual-Use Fundamentals: A pilot program delivering dual-use fundamental curriculum to early stage ventures.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603950D8Z / *National Security Innovation Network*	**Project (Number/Name)** 845 / *National Security Innovation Network*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: National Security Innovation Network (NSIN)	19.876	22.028	21.575
Description: NSIN's mission is to build networks of innovators that generate new solutions to national security problems. NSIN develops and executes programs that engage these networks to solve the problems of Department of Defense (DoD) entities from the Military Services, Joint Staff, Combatant Commands, Defense Agencies, and Field Activities. NSIN is organized around three core lines of effort: Network Building, Program Execution, and Transition Support. ***FY 2023 Plans:*** In addition to executing programs and pilots with its DoD mission partners, NSIN will: • Establish at least one (1) project site for the Emerge program in as many states. • Expand the Propel program, which partners with commercial incubators and accelerators to sponsor early-stage dual-use ventures of DoD interest to up to five (5) different sites throughout the United States. • Expand the Mission Acceleration Center program from one (1) pilot location in Seattle, WA to at least five (5) total locations across the United States. • Pilot additional program concepts in partnership with the Office of Small Business Programs, ManTech, SBIR office and offices of the Deputy Director of Research and Engineering for Modernization, including efforts for Diversity, Equity, Inclusion, and Accessibility. • Conduct at least 5 national prize challenges on areas of critical need for the Department of Defense. • Develop 15 prototypes of promising concepts from NSIN alumni through the Maker rapid prototyping program. • Establish additional regional providers for the innovation Bootcamp program, to keep up with the rapidly increasing demand signal from DoD Organizations. Develop and deliver a Train-the-Trainer option for high demand and capable mission partners. ***FY 2024 Plans:*** NSIN will continue to: • Establish 15 project sites for the Emerge program in as many states. • Expand the Propel program to sponsor early-stage dual-use ventures of DoD interest to up to 15 different sites throughout the United States. • Pilot additional program concepts in partnership with the Office of Small Business Programs, ManTech, SBIR office and offices of the Deputy Director of Research and Engineering for Modernization, including efforts for Diversity, Equity, Inclusion, and Accessibility. • Conduct at least 10 national prize challenges on areas of critical need for the Department of Defense. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Slight decrease reflects minor budget fluctuations.			
Accomplishments/Planned Programs Subtotals	19.876	22.028	21.575

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603950D8Z / *National Security Innovation Network*	**Project (Number/Name)** 845 / *National Security Innovation Network*

	FY 2022	FY 2023
Congressional Add: NSIN Program Increase ***FY 2022 Accomplishments:*** The Congressional Add of $15 million enabled NSIN to: • Continue supporting the Mission Acceleration Center pilot and expand program offerings. • Establish rapid prototyping sites at new universities and accelerators to facilitate Maker projects. • Develop a deeper regional presence in Oklahoma, Texas, Georgia, North Carolina, and West Virginia to facilitate NSIN programming opportunities. • Establish additional regional providers for the Bootcamp program, to keep up with the rapidly increasing demand signal from DoD Organizations. • Continue to expand Foundry (rebranded from the Defense Innovation Accelerator program) to other Government laboratories (e.g., Department of Energy (DOE), National Nuclear Security Administration (NNSA), etc.), Federally Funded Research Centers (FFRDCs), and other sources of latent technology.	15.000	-
Congressional Add: Secure Email Access ***FY 2023 Plans:*** Develop and manage pilot program designed to enable access to a secure facility within an academic institution that will be available to “cleared” faculty researchers, visiting government researchers, and industry partners.	-	1.240
Congressional Add: DoD mission acceleration centers ***FY 2023 Plans:*** • Respond to Section 231 of the NDAA for FY 2022 requirement to build a "pilot program on the use of private sector partnerships to promote technology transition”. NSIN will provide mechanisms for data capture of small business interest in working with the DoD. • $50 million in FY 2023 funding for Mission Acceleration Centers (MACs) to continue supporting the Pacific Northwest Mission Acceleration Center (MAC) pilot and expand program offerings by establishing new regional Mission Acceleration Centers (MACs) in Ohio, Hawaii, Arizona, and Kansas. • The FY 2023 5 MACs across the country will give the DoD the opportunity to co-locate and collaborate with non-profits, academia, and a broad spectrum of private industry that includes entrepreneurs and venture capitalists that will accelerate the pace of innovation regarding the challenges facing the DoD: (1) Facilitate Collaborative Interaction with the DoD, Academia, and Venture Communities; (2) Broaden the National Security Industrial Base; and (3) Mature the Network. • Continue to support the development of a national network of geographically dispersed and strategically located innovation defense ecosystems that enhances the National Security Innovation Network (NSIN) Regional Network Team activities.	-	50.000

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603950D8Z / *National Security Innovation Network*	**Project (Number/Name)** 845 / *National Security Innovation Network*

	FY 2022	FY 2023
• By continuing the Pacific Northwest MAC and expanding to key defense ecosystems to include but not limited to Arizona, Hawaii, Kansas and Ohio, the DoD will be able to leverage regional expertise through embedded industry experts to deliver timely and innovative solutions to national security problems through persistent tech scanning, regional strategic engagements and warfighter support.		
Congressional Add: Adaptive Threat Force Cyber Cell ***FY 2023 Plans:*** • The Adaptive Threat Force (ATF) Cyber Cell will conduct red team challenges as opposing force (OPFOR) and support the blue force (BLUFOR) at Camp Shelby during Thunderstrike. ATF will meet mission partner requirements and demand signal by providing an experienced and complex hybrid warfighting force as ATF. • The Adaptive Threat Force Cyber Cell will embed with the U.S. Army National Guard (USARNG) and conduct joint experimentation and hybrid warfare training simulating near peer capability. In addition, the ATF will participate in the planning and execution of the Army and DoD's future doctrine with multi-domain operations.	-	1.000
Congressional Add: Hacking 4 Defense ***FY 2023 Plans:*** Execute Hacking 4 Defense (H4D) at 36 major universities within the Continental United States and Hawaii.	-	5.000
Congressional Adds Subtotals	15.000	57.240

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0604055D8Z / *Operational Energy Capability Improvement (OECI)*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	78.099	107.989	199.142	171.668	-	171.668	176.399	178.782	187.755	191.702	-	-
455: *Operational Energy Capability Improvement*	78.099	24.746	199.142	171.668	-	171.668	176.399	178.782	187.755	191.702	-	-
456: *Commanding Energy*	0.000	35.950	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
457: *Powering the Force*	0.000	18.744	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
458: *Electrifying the Battlespace*	0.000	28.549	0.000	-	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

The Operational Energy Capability Improvement (OECI) program matures and demonstrates advanced technologies in operational energy across warfighting platforms and domains.

This program supports the Department's initiatives to Build Sustainable and Long-Term Advantage and a Resilient Joint Force. OECIF supports the Department's strategic goals to deter aggression and strategic attacks against the United States, allies, and partners, while being prepared to prevail in conflict when necessary, prioritizing the People's Republic of China (PRC) challenge in the Indo-Pacific and the Russia challenge in Europe. The OECI is the Department's dedicated investment in Operational Energy Advanced Technology Development to address joint operational energy requirements. Investments in OECI support current policy objectives and inform future policy goals.

In FY 2024, OECI will continue and complete projects started in FY 2022 and FY 2023 and will continue to initiate new projects in the following areas: 1) Powering the Force, 2) Electrifying the Battlespace, 3) Commanding Energy, and 4) Nuclear. Competitively awarded projects will continue to focus on multi-year technology maturation efforts. New focused Science and Technology (S&T) efforts will be started to specifically address operational energy challenges faced by space systems, ground vehicles, aviation systems, and the Department's commanding energy challenges. All OECI investments address high priority joint operational energy requirements to ensure best use of operational energy on the battlefield. Projects will increase the joint force's lethality and agility and reduce logistical burdens. New capabilities are required to address threats from near peer enemies across the globe and provide asymmetric advantage including better planning and use of power and fuel to achieve operational objectives while minimizing risk under contested logistics.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0604055D8Z *I Operational Energy Capability Improvement (OECI)*

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	108.482	180.170	170.703	-	170.703
Current President's Budget	107.989	199.142	171.668	-	171.668
Total Adjustments	-0.493	18.972	0.965	-	0.965
• Congressional General Reductions	-0.418	-0.028			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	19.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.075	-			
• Program Adjustments	-	-	0.965	-	0.965

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2022	FY 2023
Project: 455: *Operational Energy Capability Improvement*		
Congressional Add: *Operational Energy Capability Improvement Program Increase*	21.600	37.000
Congressional Add Subtotals for Project: 455	21.600	37.000
Congressional Add Totals for all Projects	21.600	37.000

Change Summary Explanation

FY 2024 minimal increase due to programmatic adjustments.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0604055D8Z / *Operational Energy Capability Improvement (OECI)*	Project (Number/Name) 455 / *Operational Energy Capability Improvement*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
455: *Operational Energy Capability Improvement*	78.099	24.746	199.142	171.668	-	171.668	176.399	178.782	187.755	191.702	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The mission of the OECI is to fund innovation that will improve DoD operational effectiveness via targeted S&T investments. The program incentivizes S&T to promote long term change in DoD capabilities, so they are better aligned with the Operational Energy Strategy. The OECI fosters innovation to improve operational energy performance and has two key mission aspects. First, to develop, demonstrate, and transition into use operational energy technologies and practices that will improve DoD military capabilities and/or reduce costs. Second, to establish within the military Services and OSD, sustainable, institutional capability to continue to research, develop and adopt operational energy innovations. The OECI funds serve as “seed money” to start or consolidate promising operational energy programs to be sustained by the Services; accordingly, the OECI generally emphasizes supporting or establishing programs, rather than one-off projects.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Operational Energy Capability Improvement (OECI)	3.146	162.142	171.668
FY 2023 Plans: In FY 2023, OECI will continue and complete projects started in FY 2022 and support new projects in DoD Science and Technology Energy Strategy Focus areas of 1) Powering the Force, 2) Electrifying the Battlespace, 3) Commanding Energy, and 4) Nuclear. Two thirds of the FY 2022 projects will continue their multi-year development. Example deliverables include better energy collection, awareness, connectivity, and education with a focus on positively impacting climate change. In addition, focused S&T efforts will be initiated to specially address operational energy challenges faced by ground vehicles, aviation systems, and space systems. Technology development to support electrified/hybridized power architectures for existing crewed/uncrewed vehicles are starting and enhanced efficiency power/energy architectures for crewed/uncrewed air vehicles are being developed. Space systems that improve the efficiency of photovoltaics are maturing along with advances in energy storage, power beaming, and nuclear power systems. With additional funding, investments in expanding Hydrogen’s role in battlespace operations; improvements to batteries for arctic environments; exploring underwater power stations for land, surface, and sub-surface operations; hybrid airship operations with industry, high-altitude renewable energy aviation, and additional space energy investments would have been awarded.			
FY 2024 Plans: In FY 2024, OECI will continue and complete projects started in FY 2022 and FY 2023 and support new projects in DoD Science and Technology Energy Strategy Focus areas of 1) Powering the Force, 2) Electrifying the Battlespace, 3) Commanding Energy, and 4) Nuclear. Two thirds of previous year projects will continue their multi-year development. New focused S&T efforts will be initiated to specially address operational energy challenges faced by space systems, ground vehicles, and aviation systems.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0604055D8Z / *Operational Energy Capability Improvement (OECI)*	**Project (Number/Name)** 455 / *Operational Energy Capability Improvement*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Technology development to support electrified/hybridized power architectures for existing crewed/uncrewed vehicles will continue and enhanced efficiency power/energy architectures for crewed/uncrewed air vehicles will continue development. Space technologies that improve the efficiency of photovoltaics will be matured as well as energy storage, power beaming, and nuclear power systems. OECI is partnering with industry to advance waste-to-energy and ensure all DOD burn-pit permanent closures. OECI is also solving some of the most stressing climate demands with energy investment for Arctic energy solutions. Awards will also address 200+ needs / gap references under commanding energy including investment in energy-informed mission planning, command and control for energy, operational energy data collection and distribution, modeling and simulation, and training and education. Investments will leverage commercial and cyber investments to significantly improve energy data awareness and enable combatting of carbon emissions. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** OECI competitively awards joint service-nominated projects that best provide operational advantage to combat forces with an emphasis on 1) the deployment of more mobile and distributed operations systems, 2) reduced and more agile logistics, and 3) reduced risk especially within contested environments. An increase of funding of $9.546 million from the FY 2023 appropriation is planned to account for maturation and transition of technologies to support underwater power distribution for ashore, afloat, and underwater electric capabilities along with ensuring continued maturation for precision aerial delivery (long, medium, and short range) for power and energy across the battlespace.			
Accomplishments/Planned Programs Subtotals	3.146	162.142	171.668

	FY 2022	FY 2023
Congressional Add: Operational Energy Capability Improvement Program Increase	21.600	37.000
FY 2022 Accomplishments: $10 million to support TRISO nuclear fuel cores for Project Pele (production began Dec. 7, 2023) and $11.6 million for Power and Thermal Management of Directed Energy Systems. Both contracts are performing with expected on-time delivery. This OECI success resulted in stand-up of the first commercial-scale TRISO fuel line in the U.S. and it will continue to support NASA development of fuel for space reactors and meet emerging industry demands.		
FY 2023 Plans: $8 million to support a program increases allowed competitive funding for projects in AI to support Energy Command & Control; Supply chain understanding for Chinese-dominated graphene for batteries; advances in relays for power beaming with Defense Advanced Research Projects Agency (DARPA); and prioritization of energy technology maturation opportunities across DoD; $5 million to support adaptive aerodynamic surfaces technology, $2 million to support distributed maritime energy research, $5 million to		

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0604055D8Z / *Operational Energy Capability Improvement (OECI)*	**Project (Number/Name)** 455 / *Operational Energy Capability Improvement*

	FY 2022	FY 2023
support laser wireless power transfer, $10 million to support TRISO advanced fuel, and $7 million to support power and thermal management subsystem technologies for high energy laser activities.		
Congressional Adds Subtotals	21.600	37.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0604055D8Z / *Operational Energy Capability Improvement (OECI)*	Project (Number/Name) 456 / *Commanding Energy*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
456: *Commanding Energy*	0.000	35.950	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Commanding Energy S&T efforts harness energy data and information to better battlespace decision making as part of Joint All-Domain Command and Control (JADC2). Specific technology advances: 1) Improve mission-planning tools and analytics; 2) Increase operational control and decision making for power and energy at all warfighting echelons; 3) Provide pioneering metering and monitoring of platform / system capabilities to ensure optimal use of energy and improve predictive maintenance; 4) Enable transition of platforms and systems through continued support and development of foundational modeling and simulation tools that include future energy concepts and innovation; 5) Bring power and energy-innovation knowledge and analytics to warfighters and senior leaders to inform future acquisition, sustainment, and budget decision making; and 6) Deliver foundational training and education on power and energy-innovation across the military and S&T communities

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Commanding Energy	35.950	-	-
Accomplishments/Planned Programs Subtotals	35.950	-	-

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0604055D8Z / *Operational Energy Capability Improvement (OECI)*	Project (Number/Name) 457 / *Powering the Force*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
457: *Powering the Force*	0.000	18.744	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Powering the Force technology investments improve the energy security of military missions through innovation that save lives, lower costs, increase resilience, and strengthen warfighting capabilities while lowering carbon emissions. Specific technology innovations 1) Expand energy sources creating energy-at-the-edge through innovative synfuel production and providing power, fuel, and heat from waste; 2) Increase efficiencies of aviation platforms through novel engine/propulsion advances and alternate fuel use; 3) Deliver on the promise of tactical microgrid savings with energy storage and standardization for interoperability across US and coalition forces; 4) transition real cold-weather and energy storage solutions for hard to reach locations; and 6) Diversify, and harden for military use, distribution options and that increase operational reach and resilience

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Powering the Force	18.744	-	-
Accomplishments/Planned Programs Subtotals	18.744	-	-

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0604055D8Z / *Operational Energy Capability Improvement (OECI)*	Project (Number/Name) 458 / *Electrifying the Battlespace*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
458: *Electrifying the Battlespace*	0.000	28.549	0.000	-	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Enabling the electrification of weapons, platforms, uncrewed systems and dismounted warfighters to field new offensive capabilities including sensing, active defense, and other technologies. Specific technology innovations 1) Enable Directed Energy Weapons and High Energy Lasers through novel mechanical power and thermal management innovation; 2) Electrify tactical vehicles and military platforms delivering signature management, silent watch capabilities, and increased and extended performance with decreased maintenance; 3) Provide US leadership in wireless power delivery ahead of (near)peer competitors; and 4) Deliver on innovations that enable space solar use for terrestrial and space applications, including space testing, while driving down future production costs

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Electrifying the Battlespace	28.549	-	-
Accomplishments/Planned Programs Subtotals	28.549	-	-

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0603161D8Z *I Nuclear and Conventional Physical Security, Nuclear Forensics, Resilience, Survivability*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	369.987	27.802	40.706	76.764	-	76.764	67.160	59.104	51.431	50.629	Continuing	Continuing
162: *Nuclear and Conventional Physical Security*	313.537	20.412	31.338	28.686	-	28.686	28.202	27.473	25.866	26.410	Continuing	Continuing
040: *National Technical Nuclear Forensics Systems*	56.450	7.390	9.368	39.154	-	39.154	30.832	25.419	21.270	19.821	Continuing	Continuing
058: *Innovative Technologies*	-	-	-	6.034	-	6.034	5.035	3.025	1.009	1.010	Continuing	Continuing
064: *Nuclear Survivability*	-	-	-	2.890	-	2.890	3.091	3.187	3.286	3.388	Continuing	Continuing

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

This program supports the Department's initiatives to Deter Aggression, Defend the Homeland, Provide Nuclear Deterrence, and Build Sustainable and Long-Term Advantage.

Nuclear and Conventional Physical Security/Nuclear Forensics, Resilience, and Survivability addresses the need to defend and deter against weapons of mass destruction threats and to safeguard personnel, prevent unauthorized access to equipment, installations, material, and documents, and to safeguard the foregoing against espionage, sabotage, damage, and theft. This program oversees advanced engineering development and rapid fielding throughout the DoD for an integrated and systemic approach to develop material solutions. Public Law, Presidential, and DoD guidance, and Combatant Command and Service requirements drive the priorities for these programs.

The Physical Security Enterprise and Analysis Group (PSEAG) is responsible for avoiding duplication of effort, ensuring systems integration, and promoting interoperability and sustainability. The material solutions either (a) lead to a Program of Record, (b) become technology insertions into existing programs; or (c) advance to being a certified Commercial/Government off-the-shelf product.

Per National Security Presidential Memorandum 35, the DoD provides the U.S. Government (USG) post-detonation National Technical Nuclear Forensics (NTNF) capability. Per DoD Directive S-2060.04, the Office of the Undersecretary of Defense for Acquisition & Sustainment (OUSD(A&S)) is the office responsible for developing and leading the DoD’s NTNF capabilities. The DoD mission to collect and analyze post-detonation nuclear debris is critical to ensuring the USG can identify the source of nuclear material and hold those responsible for an attack is critical to our national defense and security. Internal and independent assessments indicate new capabilities are needed to sustain an effective deterrent against an unattributed nuclear attack and meet the challenges of future threats. This PE is the only DoD research, development, and test and evaluation (RDT&E) program focused on Advanced Component Development and Prototypes for post-detonation NTNF capabilities and without fully supporting these requirements, the DoD’s ability to meet this critical deterrence need will be significantly degraded.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0603161D8Z *I Nuclear and Conventional Physical Security, Nuclear Forensics, Resilience, Survivability*

Innovative Technologies is a classified project that is transferring responsibility from the Office of the Deputy Assistant Secretary of Defense for Threat Reduction and Arms Control to the Office of the Deputy Assistant Secretary of Defense for Nuclear Matters. Funding for this project is being transferred in FY 2024 from Program Element 0305310D8Z to 0603161D8Z.

Nuclear Survivability will invest in innovative radiation hardening techniques to modernize microelectronics for strategic and space systems and increase the reliability of mission critical systems. This program will result in achieving key metrics, including improved understanding of radiation effects on advanced CMOS technologies; Radiation Hardened/Strategic Radiation Hardened parts qualified and available for space and strategic modernization; Improved mission critical systems reporting; and a Military Handbook for neutron single event effects testing.

This PE can fund travel to support the requirements of this program.

This appropriation will finance work, including staffing, performed by a government agency or by private individuals or organizations under a contractual or grant arrangement with the government who conduct RDT&E efforts.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	28.525	41.507	37.552	-	37.552
Current President's Budget	27.802	40.706	76.764	-	76.764
Total Adjustments	-0.723	-0.801	39.212	-	39.212
• Congressional General Reductions	-	-0.801			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	-0.723	-	39.212	-	39.212

Change Summary Explanation

The FY 2023 to FY 2024 increase is to restore the baseline NTNF budget to near 2015-2017 levels, it stops atrophy and builds capability. The funding allows DoD to make continuing progress against the threshold requirements outlined in the Nuclear Forensics and Attribution Strategic Plan for FYs 2022 – 2026, an interagency strategic plan drafted by the Nuclear Forensics Steering Committee, endorsed by the Nuclear Forensics Executive Council, and cleared at the National Security Council Interagency Policy Committee level.

FY 2023 to FY 2024 funding increase also reflects adding Nuclear Survivability and Advanced Innovative Technologies to the portfolio.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603161D8Z / *Nuclear and Conventional Physical Security, Nuclear Forensics, Resilience, Survivability*	**Project (Number/Name)** 162 / *Nuclear and Conventional Physical Security*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
162: *Nuclear and Conventional Physical Security*	313.537	20.412	31.338	28.686	-	28.686	28.202	27.473	25.866	26.410	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Physical Security Enterprise and Analysis Group (PSEAG) pursues the development of nuclear and conventional physical security materiel solutions in response to the stated needs and requirements of the Combatant Commands and Military Services. This program leverages commonalities in physical security requirements in order to closely balance and integrate the needs of users. The PSEAG is responsible for avoiding duplication of effort, ensuring systems integration, and promoting interoperability and sustainability. The materiel solutions either (a) lead to a Program of Record, (b) become technology insertions into existing programs; or (c) advance to being a certified Commercial/Government off-the-shelf product.

This PE can fund travel to support the requirements of this program.

This appropriation will finance work, including staffing, performed by a government agency or by private individuals or organizations under a contractual or grant arrangement with the government who conduct research, development, and test and evaluation efforts.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Physical Security System Development & Demonstration Advanced Component Development & Prototypes	20.412	31.338	28.686
Description: Develop physical security components and systems to support valid requirements while eliminating duplication of effort, pursuing the use of government and commercial off-the-shelf products, ensuring systems integration, and promoting interoperability and sustainability. ***FY 2023 Plans:*** - Detect an adversary and assess their intentions by identifying and warning of unauthorized access to a specified area or installation, as well as equipment related to the notification and identification of explosive threats or hazards. - Control access to safeguard personnel and their families and to prevent unauthorized access to critical infrastructure and materials to validate and verify individuals entering or already within, a facility. - Invest in robust installation and transport security to prevent a weapon of mass destruction attack or the unauthorized access to key assets such as nuclear weapons and special nuclear material. - Improve the physical security profile of fixed sites and facilities, as well as critical items while in-transit.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603161D8Z / *Nuclear and Conventional Physical Security, Nuclear Forensics, Resilience, Survivability*	**Project (Number/Name)** 162 / *Nuclear and Conventional Physical Security*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
- Deter an adversary from accessing weapons of mass destruction or gaining unauthorized access to critical assets are at the heart of prevention. - Implement control measures that ensure access is limited to authorized persons is the foundation of physical security to delay or stop unauthorized entry/access to a specified/localized area. - Incorporate decision support systems to help management, operations, and planners make decisions, which may be rapidly changing and not easily specified in advance with a focus on command and control equipment, creation and enhancement of common operating pictures, and the establishment of common architectures / interface standards. ***FY 2024 Plans:*** - Detect an adversary and assess their intentions by identifying and warning of unauthorized access to a specified area or installation, as well as equipment related to the notification and identification of explosive threats or hazards. - Control access to safeguard personnel and their families and to prevent unauthorized access to critical infrastructure and materials to validate and verify individuals entering or already within, a facility. - Invest in robust installation and transport security to prevent a weapon of mass destruction attack or the unauthorized access to key assets such as nuclear weapons and special nuclear material. - Improve the physical security profile of fixed sites and facilities, as well as critical items while in-transit. - Deter an adversary from accessing weapons of mass destruction or gaining unauthorized access to critical assets are at the heart of prevention. - Implement control measures that ensure access is limited to authorized persons is the foundation of physical security to delay or stop unauthorized entry/access to a specified/localized area. - Incorporate decision support systems to help management, operations, and planners make decisions, which may be rapidly changing and not easily specified in advance with a focus on command and control equipment, creation and enhancement of common operating pictures, and the establishment of common architectures / interface standards. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2024 decrease is the result of planned internal program adjustments based on Combatant Command and Military Services needs.			
Accomplishments/Planned Programs Subtotals	20.412	31.338	28.686

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603161D8Z / *Nuclear and Conventional Physical Security, Nuclear Forensics, Resilience, Survivability*	**Project (Number/Name)** 162 / *Nuclear and Conventional Physical Security*

D. Acquisition Strategy

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603161D8Z / *Nuclear and Conventional Physical Security, Nuclear Forensics, Resilience, Survivability*	**Project (Number/Name)** 162 / *Nuclear and Conventional Physical Security*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Physical Security - Closed Out Efforts	Various	Various : Various	269.549	-		-		-		-		-	-	-	-
Physical Security Enterprise & Analysis Program	Various	Multiple Performers : Multiple Locations	-	2.651		31.338		28.686		-		28.686	Continuing	Continuing	-
Automated Installation Entry Multiple Authentication Fast Lanes	MIPR	Various : Various	-	2.027		-		-		-		-	-	-	-
Deep Learning Real Time Adaptive Learning Monitoring of Sound Velocity Profile	MIPR	Various : Various	-	1.530		-		-		-		-	-	-	-
Development, Test and Evaluation of an Electronic Security Systems Information Management System	MIPR	Various : Various	-	1.444		-		-		-		-	-	-	-
Electronic Harbor Security System–Sensor Track Fusion	MIPR	NIWC, Pacific : NIWC, Pacific	-	0.854		-		-		-		-	-	-	-
Enterprise Ready Tactical Assault Kit	MIPR	Various : Various	-	2.307		-		-		-		-	-	-	-
Improved UUV Detection and Tracking Using the AN/WQX-2 Sonar	MIPR	Various : Various	-	1.950		-		-		-		-	-	-	-
Next Generation Electronic Security System	MIPR	Various : Various	-	1.200		-		-		-		-	-	-	-
Self Homing and Event Triggered / Assessment DroneAerial PS Assessment	MIPR	Various : Various	-	1.275		-		-		-		-	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603161D8Z / *Nuclear and Conventional Physical Security, Nuclear Forensics, Resilience, Survivability*	**Project (Number/Name)** 162 / *Nuclear and Conventional Physical Security*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Wide Area Surveillance & Detection System with Radar	MIPR	Various : Various	-	1.386		-		-		-		-	-	-	-
Sonar Navigated Autonomous Grabber	MIPR	Various : Various	-	1.446		-		-		-		-	-	-	-
Automated Neural Classification of Seismic and Acoustic Sensors	MIPR	Various : Various	-	1.237		-		-		-		-	-	-	-
		Subtotal	269.549	19.307		31.338		28.686		-		28.686	Continuing	Continuing	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Prior Years Completed Efforts	Various	Various Performers : Various Locations	21.555	-		-		-		-		-	-	-	-
PSEAG Interoperability	MIPR	TBD : TBD	-	0.455		-		-		-		-	-	-	-
		Subtotal	21.555	0.455		-		-		-		-	-	-	N/A

Remarks

NA

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Prior Years Completed Efforts	Various	Multiple Performers : Multiple Locations	15.127	-		-		-		-		-	-	-	-
Test & Evaluation of Maritime Application Environment Radar	MIPR	NIWC, Atlantic : NIWC, Atlantic	-	0.650		-		-		-		-	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603161D8Z / *Nuclear and Conventional Physical Security, Nuclear Forensics, Resilience, Survivability*	**Project (Number/Name)** 162 / *Nuclear and Conventional Physical Security*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	15.127	0.650		-		-		-		-	-	-	N/A

Remarks

NA

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Prior Years - Completed Efforts	Various	Multiple Performers : Multiple Locations	7.306	-		-		-		-		-	-	-	-
		Subtotal	7.306	-		-		-		-		-	-	-	N/A

Remarks

NA

	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	313.537	20.412		31.338		28.686		-		28.686	Continuing	Continuing	N/A

Remarks

NA

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603161D8Z / *Nuclear and Conventional Physical Security, Nuclear Forensics, Resilience, Survivability*	**Project (Number/Name)** 162 / *Nuclear and Conventional Physical Security*

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603161D8Z / *Nuclear and Conventional Physical Security, Nuclear Forensics, Resilience, Survivability*	**Project (Number/Name)** 162 / *Nuclear and Conventional Physical Security*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Nuclear and conventional physical security R&D				
Nuclear and Conventional Physical Security	1	2023	4	2028

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603161D8Z / *Nuclear and Conventional Physical Security, Nuclear Forensics, Resilience, Survivability*	Project (Number/Name) 040 / *National Technical Nuclear Forensics Systems*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
040: *National Technical Nuclear Forensics Systems*	56.450	7.390	9.368	39.154	-	39.154	30.832	25.419	21.270	19.821	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Funding transferred from Counter Nuclear Threats (CNT) to National Technical Nuclear Forensics (NTNF), P040. In FY 2018, Departments and Agencies began to shift research and development from NTNF to other mission areas. This resulted in degradation of the DoD (and by default, the U.S. Government's (USG) ability to execute the nuclear forensics mission and deter adversaries. As the lead for providing the USG post-detonation nuclear forensics capability, the DoD is emphasizing the importance of this mission to ensure success and to be compliant with National Security Presidential Memorandum (NSPM)-35 requirements.

A. Mission Description and Budget Item Justification

Per NSPM 35, the DoD provides the USG post-detonation NTNF capability. Per DoDD S-2060.04, OUSD(A&S) is the DoD office responsible for DoD's NTNF capabilities. This program is the only DoD RDT&E program focused on Advanced Component Development & Prototypes for NTNF capabilities.

Collecting and analyzing post-detonation debris is critical to ensure the USG can identify the source of nuclear material and hold those involved or supporting an attack accountable is critical to our national defense and security. Swift and accurate forensic and attribution (identification) capabilities are vital to supporting the President and Secretary of Defense in developing an appropriate, and timely, national response to a nuclear event and to prevent future attacks. An effective NTNF capability ensures potential adversaries, or those who support them, know that they will be held accountable if they use proxies or other non-traditional delivery of nuclear weapons against the U.S., U.S. interests, or allies. Both internal and independent studies indicate that continued improvement to the USG's NTNF capabilities is needed to sustain a credible deterrent against an attempted or actual nuclear attack.

Additionally, this program sustains perishable U.S. technical expertise at the operational DoD laboratories required to respond to a post-detonation NTNF event. The DoD's laboratory capability in this area is limited by capacity and technical expertise. In FY 2018, Departments and Agencies began to shift research and development from NTNF to other mission areas, which resulted in degradation of the DoD's (and by default, the USG's) ability to execute the nuclear forensics mission and deter adversaries through the attrition of technical experts vital to the response. Sustained support of the DoD's NTNF mission is crucial to prevent attrition of current capabilities and knowledge base, ensure that this critical and unique deterrence capability is not lost, putting the security of the nation and the ability to deter specific kinds of nuclear attack at risk, and meeting a higher standard of timeliness and confidence as directed.

This PE can fund travel to support the requirements of this program.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: NTNF Capability Development	7.390	9.368	39.154

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603161D8Z / *Nuclear and Conventional Physical Security, Nuclear Forensics, Resilience, Survivability*	**Project (Number/Name)** 040 / *National Technical Nuclear Forensics Systems*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024

Description: The development of capability to collect and analyze nuclear debris is critical to our national defense and security. Swift and accurate forensic analysis and contribution to USG attribution (identification) processes are vital to supporting the President and Secretary of Defense in developing an appropriate national response to a nuclear event and to prevent future attacks in a timely manner.

NTNF investments support development and retention of technical nuclear forensics expertise, improve CONUS and OCONUS collection, improve the fixed laboratory process, improving legacy NTNF capabilities, and supporting operationalization of new capabilities.

FY 2023 Plans:
- Further develop and transition technologies to address prompt detection gaps, including the United States Prompt Diagnostics System.
- Continue to advance DoD NTNF laboratory and collection capabilities to shorten timelines and improve confidence levels in reporting to national level decision makers.
- Educate Military and Federal workforce in areas critical to the Stockpile Stewardship Program and to increase understanding of the history of nuclear weapons development, testing, and design.

FY 2024 Plans:
- Increase R&D towards achieving unmanned air collect capabilities leveraging the Harvester Particulate Airborne Collection System (PACS).
- Funding to prepare for a National-Level Exercise currently planned for FY 2025.
- Hiring additional contractors to work at the DoD operational laboratories, as well as, procuring needed equipment specific to post-detonation sample analysis.
- Further develop and transition technologies to address prompt detection gaps, including the United States Prompt Diagnostics System and developing unmanned aerial and ground collection.
- Continue to advance DoD NTNF laboratory and collection capabilities to shorten timelines and improve confidence levels in reporting to national level decision makers.
- Exercise component and collective collection and analysis to both assess readiness to inform improvements and demonstrate USG NTNF capability to contribute to strategic deterrence.

FY 2023 to FY 2024 Increase/Decrease Statement:
FY 2024 increase is to restore the baseline NTNF budget to near 2015-2017 levels in order to stop atrophy and build capability. The funding allows the DoD to make continuing progress against the threshold requirements outlined in the Nuclear Forensics

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603161D8Z / *Nuclear and Conventional Physical Security, Nuclear Forensics, Resilience, Survivability*	**Project (Number/Name)** 040 / *National Technical Nuclear Forensics Systems*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
and Attribution Strategic Plan for FYs 2022 – 2026, an interagency strategic plan drafted by the Nuclear Forensics Steering Committee, endorsed by the Nuclear Forensics Executive Council, and cleared at the National Security Council Interagency Policy Committee level.			
Accomplishments/Planned Programs Subtotals	7.390	9.368	39.154

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603161D8Z / *Nuclear and Conventional Physical Security, Nuclear Forensics, Resilience, Survivability*	Project (Number/Name) 040 / *National Technical Nuclear Forensics Systems*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
National Nuclear Technical Forensics Product Development	Various	Multiple Performers : Multiple Locations	55.323	7.195		9.173		38.959		-		38.959	Continuing	Continuing	-
		Subtotal	55.323	7.195		9.173		38.959		-		38.959	Continuing	Continuing	N/A

Remarks

NA

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Nuclear Testing, Diagnostics, Forensics and Stockpile Stewardship Course	IA	DOE : Livermore, CA	1.127	0.195		0.195		0.195		-		0.195	Continuing	Continuing	-
		Subtotal	1.127	0.195		0.195		0.195		-		0.195	Continuing	Continuing	N/A

Remarks

NA

	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	56.450	7.390		9.368		39.154		-		39.154	Continuing	Continuing	N/A

Remarks

NA

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603161D8Z / *Nuclear and Conventional Physical Security, Nuclear Forensics, Resilience, Survivability*	**Project (Number/Name)** 040 / *National Technical Nuclear Forensics Systems*

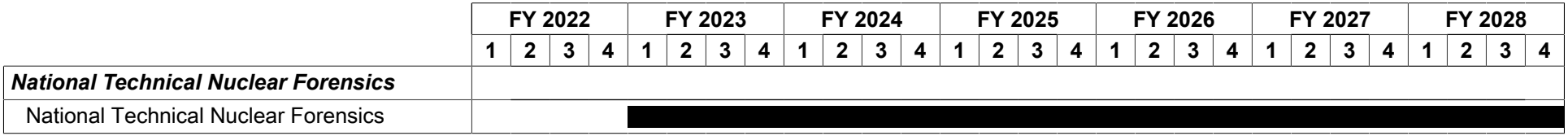

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603161D8Z / *Nuclear and Conventional Physical Security, Nuclear Forensics, Resilience, Survivability*	**Project (Number/Name)** 040 / *National Technical Nuclear Forensics Systems*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
National Technical Nuclear Forensics				
National Technical Nuclear Forensics	1	2023	4	2028

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603161D8Z / *Nuclear and Conventional Physical Security, Nuclear Forensics, Resilience, Survivability*	Project (Number/Name) 058 / *Innovative Technologies*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
058: *Innovative Technologies*	-	-	-	6.034	-	6.034	5.035	3.025	1.009	1.010	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Innovative Technologies is a classified project that is transferring responsibility from the Office of the Deputy Assistant Secretary of Defense for Threat Reduction and Arms Control to the Office of the Deputy Assistant Secretary of Defense for Nuclear Matters. Funding for this project is being transferred in FY 2024 from Program Element 0305310D8Z to 0603161D8Z.

A. Mission Description and Budget Item Justification

Advance Innovative Technologies is a classified project.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Innovative Technologies	-	-	6.034
Description: Advance Innovative Technologies is a classified project. ***FY 2024 Plans:*** Advance Innovative Technologies is a classified project. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2024 increase is related to transferring responsibility from the Office of the Deputy Assistant Secretary of Defense for Threat Reduction and Arms Control to the Office of the Deputy Assistant Secretary of Defense for Nuclear Matters. Funding for this project is being transferred in FY 2024 from Program Element 0305310D8Z to 0603161D8Z.			
Accomplishments/Planned Programs Subtotals	-	-	6.034

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603161D8Z / *Nuclear and Conventional Physical Security, Nuclear Forensics, Resilience, Survivability*	Project (Number/Name) 058 / *Innovative Technologies*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Advance Innovative Technologies	C/TBD	TBD : TBD	-	-		-		6.034		-		6.034	Continuing	Continuing	-
		Subtotal	-	-		-		6.034		-		6.034	Continuing	Continuing	N/A

	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	-		-		6.034		-		6.034	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603161D8Z / *Nuclear and Conventional Physical Security, Nuclear Forensics, Resilience, Survivability*	**Project (Number/Name)** 058 / *Innovative Technologies*

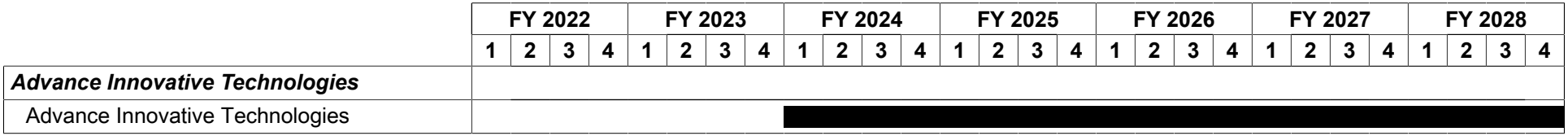

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603161D8Z / *Nuclear and Conventional Physical Security, Nuclear Forensics, Resilience, Survivability*	**Project (Number/Name)** 058 / *Innovative Technologies*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Advance Innovative Technologies				
Advance Innovative Technologies	1	2024	4	2028

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603161D8Z / *Nuclear and Conventional Physical Security, Nuclear Forensics, Resilience, Survivability*	Project (Number/Name) 064 / *Nuclear Survivability*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
064: *Nuclear Survivability*	-	-	-	2.890	-	2.890	3.091	3.187	3.286	3.388	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Nuclear Survivability will invest in innovative radiation hardening techniques to modernize microelectronics for strategic and space systems and increase the reliability of mission critical systems. This program will result in achieving key metrics, including improved understanding of radiation effects on advanced complementary metal oxide semiconductor (CMOS) technologies; Radiation Hardened/Strategic radiation hardened parts qualified and available for space and strategic modernization; Improved mission critical systems reporting; and a Military Handbook for neutron single event effects testing.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Nuclear Survivability Research & Development	-	-	2.890
Description: Many DoD mission-critical systems must survive and operate through one or more nuclear weapons effects (NWE) environments. This requires assured DoD access to NEW-survivable components, materials, and the test and evaluation infrastructure to validate system performance. This program will result in achieving key metrics, including improved understanding of radiation effects on advanced CMOS technologies; Radiation Hardened/Strategic radiation hardened parts qualified and available for space and strategic modernization; Improved mission critical systems reporting; and a Military Handbook for neutron single event effects testing. ***FY 2024 Plans:*** - Sponsor R&D to better understand the effects of extreme radiation environments on state-of-the-art microelectronics to support nuclear modernization and improve radiation hardening by design. - Modernize the reporting infrastructure for the CBRN Mission Critical Reports in accordance with requirements from DoDI 3150.09. - Sponsor sustainment of trusted sources of supply and critical production lines for strategic radiation hardened microelectronics. - Increase access and reduce cost for technologies and materials that provide increased levels of survivability to the effects of nuclear weapons. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** New project added to Nuclear Matters' portfolio.			
Accomplishments/Planned Programs Subtotals	-	-	2.890

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603161D8Z / *Nuclear and Conventional Physical Security, Nuclear Forensics, Resilience, Survivability*	**Project (Number/Name)** 064 / *Nuclear Survivability*

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603161D8Z / *Nuclear and Conventional Physical Security, Nuclear Forensics, Resilience, Survivability*	Project (Number/Name) 064 / *Nuclear Survivability*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Nuclear Survivability	TBD	TBD : TBD	-	-		-		2.890		-		2.890	Continuing	Continuing	-
		Subtotal	-	-		-		2.890		-		2.890	Continuing	Continuing	N/A

	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	-		-		2.890		-		2.890	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603161D8Z / *Nuclear and Conventional Physical Security, Nuclear Forensics, Resilience, Survivability*	**Project (Number/Name)** 064 / *Nuclear Survivability*

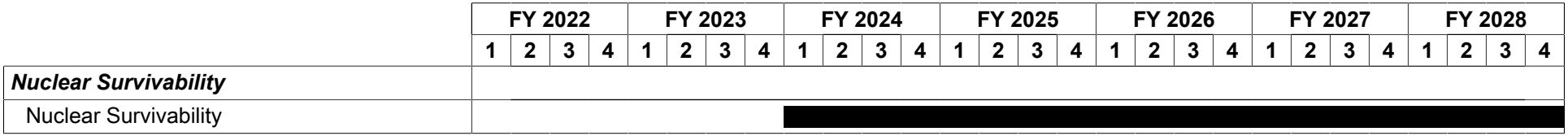

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603161D8Z / *Nuclear and Conventional Physical Security, Nuclear Forensics, Resilience, Survivability*	**Project (Number/Name)** 064 / *Nuclear Survivability*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Nuclear Survivability				
Nuclear Survivability	1	2024	4	2028

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0603600D8Z / *WALKOFF*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	98.841	123.439	133.795	143.486	-	143.486	138.816	140.928	130.410	133.016	Continuing	Continuing
600: *WALKOFF*	98.841	123.439	133.795	143.486	-	143.486	138.816	140.928	130.410	133.016	Continuing	Continuing

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

This program supports the Department's initiatives to Deter Aggression, Defend the Homeland, and Build Sustainable and Long-Term Advantage.

The program is Classified.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	108.652	133.795	140.485	-	140.485
Current President's Budget	123.439	133.795	143.486	-	143.486
Total Adjustments	14.787	0.000	3.001	-	3.001
• Congressional General Reductions	-0.017	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-2.696	-			
• Program Adjustments	17.500	-	3.001	-	3.001

Change Summary Explanation

Classified program.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603600D8Z / *WALKOFF*	Project (Number/Name) 600 / *WALKOFF*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
600: *WALKOFF*	98.841	123.439	133.795	143.486	-	143.486	138.816	140.928	130.410	133.016	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Classified.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: WALKOFF	123.439	133.795	143.486
Description: Classified. ***FY 2023 Plans:*** Classified ***FY 2024 Plans:*** Classified ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Classified			
Accomplishments/Planned Programs Subtotals	123.439	133.795	143.486

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
• 0603600D8Z O&M DW: *WALKOFF*	3.810	4.058	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Remarks

D. Acquisition Strategy

Classified.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603600D8Z / *WALKOFF*	**Project (Number/Name)** 600 / *WALKOFF*

Remarks

Classified.

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603600D8Z / *WALKOFF*	**Project (Number/Name)** 600 / *WALKOFF*

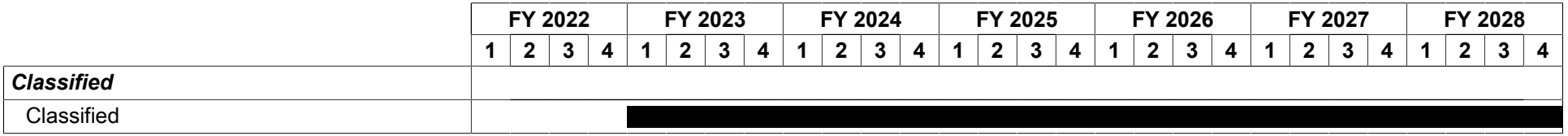

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603600D8Z / *WALKOFF*	**Project (Number/Name)** 600 / *WALKOFF*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Classified				
Classified	1	2023	4	2028

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0603851D8Z / *Environmental Security Technology Certification Program (ESTCP)*

COST ($ in Millions)	Prior Years (+)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	598.395	120.120	122.638	117.196	-	117.196	147.654	175.145	185.768	189.192	-	-
514: *Environmental Security Technology Certification Program*	592.395	120.120	122.638	117.196	-	117.196	147.654	175.145	185.768	189.192	-	-

(+) The sum of all Prior Years is $6.000 million less than the represented total due to several projects ending

Note

New Start (Y/N): Partial - The Sustainable Technologies and Demonstration Program $3.000; Climate Resilience Technology Demonstration/Validation Program $13.094

STED is a new start. It was added by Congress the last three years but is in the request this year. The work characterized as Climate Resilience Technology Dem/Val is an increase to existing work that was categorized as Environment previously. This work is scheduled to increase as efforts to support the Administration's priorities so we thought it best to call this out as a separate sub-effort to better communicate the distribution of funds.

A. Mission Description and Budget Item Justification

This program supports the Department's initiative for Building Sustainable and Long-Term Advantage.

The Environmental Security Technology Certification Program (ESTCP) demonstrates and validates promising and innovative environmental, resilience, and energy technologies that target the most urgent needs of the Department of Defense (DoD). Technologies selected are projected to provide a return on the investment through cost savings and improved efficiencies. The program responds to: (1) Congressional concern over the slow pace of remediation of environmentally polluted sites on military installations, (2) Congressional direction to conduct demonstrations specifically focused on emerging new technologies, and (3) the need to improve defense readiness by reducing the drain on the Department's operation and maintenance dollars caused by environmental restoration, waste management, and the cost of energy. Preference for demonstrations is given to technologies that have successfully completed all necessary research and development objectives, and address the highest priority DoD requirements.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0603851D8Z / *Environmental Security Technology Certification Program (ESTCP)*

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	122.737	84.638	113.690	-	113.690
Current President's Budget	120.120	122.638	117.196	-	117.196
Total Adjustments	-2.617	38.000	3.506	-	3.506
• Congressional General Reductions	-0.402	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	38.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-2.215	-			
• Program Adjustments	-	-	3.506	-	3.506

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2022	FY 2023
Project: 514: *Environmental Security Technology Certification Program*		
Congressional Add: *PFAS remediation and disposal technology*	-	5.000
Congressional Add: *AFFF replacement, disposal, and cleanup technology*	-	15.000
Congressional Add: *PFAS on-site remediation technologies*	-	15.000
Congressional Add: *Sustainable Technologies Evaluation and Demonstration Program*	-	3.000
Congressional Add Subtotals for Project: 514	-	38.000
Congressional Add Totals for all Projects	-	38.000

Change Summary Explanation

FY 2024 increase to support climate related grid vulnerability and on-base power.

FY 2023 Congressional Adds: ($15M) Program increase - PFAS remediation and disposal technology, ($5M) Program increase - AFFF replacement, disposal, and cleanup technology, ($15M) Program increase - PFAS on-site remediation technologies, and ($3M) Program increase - sustainable technology evaluation and demonstration program.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603851D8Z / *Environmental Security Technology Certification Program (ESTCP)*	Project (Number/Name) 514 / *Environmental Security Technology Certification Program*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
514: *Environmental Security Technology Certification Program*	592.395	120.120	122.638	117.196	-	117.196	147.654	175.145	185.768	189.192	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Environmental Security Technology Certification Program (ESTCP) demonstrates and validates promising and innovative environmental and energy technologies that target the DoD's most urgent needs. Technologies selected are projected to provide a return on the investment through cost savings and improved efficiencies. The program responds to: (1) Congressional concern over the slow pace of remediation of environmentally polluted sites on military installations, (2) Congressional direction to conduct demonstrations specifically focused on emerging new technologies, and (3) the need to improve defense readiness by reducing the drain on the Department's operation and maintenance dollars caused by environmental restoration, waste management, and the cost of energy. Preference for demonstrations is given to technologies that have successfully completed all necessary research and development objectives, and address the highest priority the DoD requirements.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Environmental Technology Demonstration/Validation	77.220	33.693	31.631
Description: Funds are programmed for investments in projects that address priority DoD environmental requirements. The focus of the program is on live site unexploded ordnance (UXO) in the underwater environment, addressing emerging and recalcitrant cleanup issues, range sustainment technologies, and reducing life cycle costs of the DoD weapon systems by eliminating hazardous materials. Accomplishments/plans are described for each fiscal year below.			
FY 2023 Plans: Continued demonstration of firefighting performance of new PFAS-free Aqueous Film Forming Foam (AFFF) alternatives as they emerge from the Strategic Environmental Research and Development Program (SERDP) and/or are introduced by industry. Demonstration of PFAS destruction technologies for investigation derived wastes. Initial demonstrations of predictive corrosion models. Expansion of efforts to develop tools to guide installation staff as they adapt to the impacts of climate change.			
FY 2024 Plans: Ongoing demonstration of firefighting performance of new PFAS-free AFFF alternatives as they emerge from SERDP and/or are introduced by industry and PFAS destruction technologies for investigation derived wastes. Continued demonstrations of predictive corrosion models and tool development for climate change impacts to installations. Advancing technology for monitoring and assessment natural and cultural resources on DoD lands.			
FY 2023 to FY 2024 Increase/Decrease Statement:			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603851D8Z / *Environmental Security Technology Certification Program (ESTCP)*	**Project (Number/Name)** 514 / *Environmental Security Technology Certification Program*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
The FY 2023 to FY 2024 decrease is reflective of the Congressional adds of FY 2023. The baseline increase is the result of planned program growth in support of PFAS remediation and disposal technology and AFFF replacement, disposal, and cleanup technology.			
Title: Energy Technology Demonstration/Validation	39.900	36.704	45.770
Description: Funds are programmed for investments in energy projects that constitute the Installation Energy Test Bed Initiative. This initiative responds to Congressional direction for the Department to increase energy efficiency, reduce installation energy intensity, increase the use of renewable energy, and improve energy security. Emerging energy technologies offer the DoD a cost effective opportunity to meet these requirements on its installations while reducing energy and operational costs. The DoD test bed program validates and tests the operational cost and performance of innovative energy technologies in a real-world integrated building environment so as to reduce risk, overcome the barriers to deployment, and facilitate wide-scale deployment. The test bed program exploits the Department's existing built infrastructure to evaluate energy efficiency and renewable energy technologies under the varied climatic conditions and building types the DoD manages. The test bed's key elements are: 1) competitive selection of new technologies, 2) systematic and consistent evaluation to determine performance, operational readiness and life cycle costs, and 3) development of guidance and design information for future deployment across installations. ***FY 2023 Plans:*** Continued demonstrations of microgrid technologies that show promise at test beds to the DoD installations to collect performance data under real-world conditions. Complete demonstrations of technologies for affordable energy assurance at National Guard installations and moisture control in the DoD buildings. Complete initial projects on effective planning for electric vehicle (EV) infrastructure and maintenance. Renewed emphasis on technology transition through UESCs. ***FY 2024 Plans:*** Continued demonstrations of innovative technology transfer approaches for energy and water technologies, effective planning for electric vehicle infrastructure and management, and improved installation energy resilience. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The FY 2023 to FY 2024 growth is the result of planned program growth is in support of continued planning for electric vehicle infrastructure and management and improved installation energy resilience.			
Title: Sustainable Technologies Evaluation and Demonstration Program	3.000	-	3.000
Description: The Sustainable Technology Evaluation and Demonstration (STED) Program demonstrates technologies to address climate mitigation and Executive Order 14057, “Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability.” ***FY 2024 Plans:***			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603851D8Z / *Environmental Security Technology Certification Program (ESTCP)*	**Project (Number/Name)** 514 / *Environmental Security Technology Certification Program*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Addressing climate mitigation and Executive Order 14057, “Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability.” Continue sustainable technology demonstrations at the DoD installations and other federal facilities to demonstrate and validate performance and cost effectiveness of sustainable alternatives. Expand STED Program awareness and outreach by conducting sustainable technology expos at federal facilities and providing sustainable product training to the DoD personnel. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** No funding change.			
Title: Installation Climate Resilience Technology Demonstration/Validation ***Description:*** Funds are programmed for investments in projects that address priority resilience needs of Department of Defense installations. Accomplishments/plans are described for each FY below. ***FY 2023 Plans:*** Initiate demonstration projects on Impact of Climate Change on DoD Buildings, Climate Impacts on the DoD Water Infrastructure, Analyzing the Impacts of Weather Events on the DoD Installations, and Improving Climate Resilience of the DoD Installation and Surrounding Community Infrastructure. ***FY 2024 Plans:*** Continue demonstration projects on Impact of Climate Change on DoD Buildings, Climate Impacts on the DoD Water Infrastructure, Analyzing the Impacts of Weather Events on the DoD Installations, and Improving Climate Resilience of the DoD Installation and Surrounding Community Infrastructure. Demonstrate greenhouse gas assessment methodologies for military construction materials, construction, and lifecycles. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The FY 2023 to FY 2024 increase is the result of planned program growth in support for improving DoD Climate Resilience.	0.000	14.241	36.795
Accomplishments/Planned Programs Subtotals	120.120	84.638	117.196

	FY 2022	FY 2023
Congressional Add: PFAS remediation and disposal technology ***FY 2023 Plans:*** Demonstration of PFAS destruction technologies for investigation derived wastes. Initial demonstrations of predictive corrosion models.	-	5.000
Congressional Add: AFFF replacement, disposal, and cleanup technology ***FY 2023 Plans:*** Continued demonstration of firefighting performance of new PFAS-free Aqueous Film Forming Foam (AFFF) alternatives as they emerge from the Strategic Environmental Research and Development	-	15.000

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603851D8Z / *Environmental Security Technology Certification Program (ESTCP)*	**Project (Number/Name)** 514 / *Environmental Security Technology Certification Program*

	FY 2022	FY 2023
Program (SERDP) and/or are introduced by industry. Demonstration of PFAS destruction technologies for investigation derived wastes. Initial demonstrations of predictive corrosion models.		
Congressional Add: PFAS on-site remediation technologies ***FY 2023 Plans:*** Continued demonstration of firefighting performance of new PFAS-free Aqueous Film Forming Foam (AFFF) alternatives as they emerge from the Strategic Environmental Research and Development Program (SERDP) and/or are introduced by industry. Demonstration of PFAS destruction technologies for investigation derived wastes. Initial demonstrations of predictive corrosion models.	-	15.000
Congressional Add: Sustainable Technologies Evaluation and Demonstration Program ***FY 2023 Plans:*** Increase the Sustainable Technology Evaluation and Demonstration (STED) Program focus to address climate mitigation and Executive Order 14057, “Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability.” Continue sustainable technology demonstrations at the DoD installations and other federal facilities to demonstrate and validate performance and cost effectiveness of sustainable alternatives. Expand STED Program awareness and outreach by conducting sustainable technology expos at federal facilities and providing sustainable product training to the DoD personnel.	-	3.000
Congressional Adds Subtotals	-	38.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

The ESTCP solicits proposals from all of the DoD organizations, other Federal Agencies, and the commercial sector. Projects are selected based on an annual competitive process through reviews by multi-agency panels.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603851D8Z / *Environmental Security Technology Certification Program (ESTCP)*	**Project (Number/Name)** 514 / *Environmental Security Technology Certification Program*

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Support Contract	C/IDDQ	Noblis : Reston, VA	28.611	2.940		4.000	Sep 2022	4.000		0.000		4.000	-	-	32.000
		Subtotal	28.611	2.940		4.000		4.000		0.000		4.000	-	-	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Installation Energy and Water	C/Various	Various : Various	235.879	38.254		34.464		43.530		-		43.530	-	-	-
Weapons Systems and Platforms	C/Various	Various : Various	89.756	17.819		13.387		8.486		-		8.486	-	-	-
Munitions Response	C/Various	Various : Various	62.136	9.878		4.557		4.865		-		4.865	-	-	-
Environmental Restoration	C/Various	Various : Various	117.145	40.287		42.439		9.052		-		9.052	-	-	-
Resource Conservation and Resilience	C/Various	Various : Various	53.868	7.942		6.551		7.468		-		7.468	-	-	-
Sustainable Technologies Evaluation and Demonstration Program	C/Various	Various : Various	5.000	3.000		3.000		3.000		-		3.000	-	-	-
Installation Climate Resilience	C/Various	Various : Various	0.000	0.000		14.240		36.795		-		36.795	-	-	-
		Subtotal	563.784	117.180		118.638		113.196		-		113.196	-	-	N/A

	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	592.395	120.120		122.638		117.196		0.000		117.196	-	-	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603851D8Z / *Environmental Security Technology Certification Program (ESTCP)*	**Project (Number/Name)** 514 / *Environmental Security Technology Certification Program*

ID	Task Name	Start	Finish
1	FY 2022 In-Progress Reviews	9/1/2023	11/30/2023
2	Develop FY 2023 Program	1/1/2023	9/30/2023
3	FY 2023 In-Progress Reviews	2/1/2024	11/30/2024
4	Develop FY 2024 Program	1/1/2024	9/30/2024

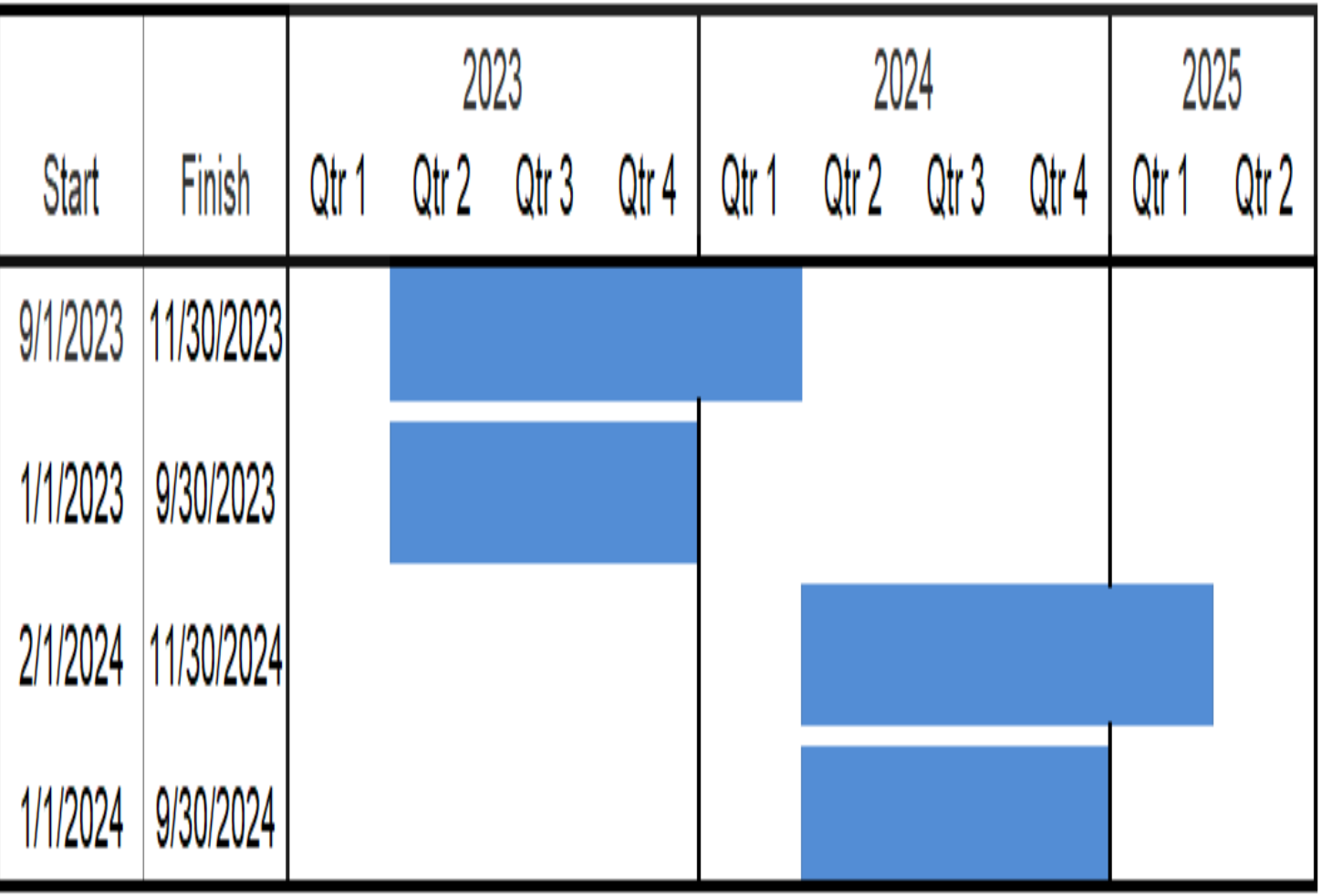

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603851D8Z / *Environmental Security Technology Certification Program (ESTCP)*	**Project (Number/Name)** 514 / *Environmental Security Technology Certification Program*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
In Progress Reviews				
FY 2022 In Progress Reviews	2	2023	1	2024
FY 2023 In Progress Reviews	2	2024	1	2025
Develop Program				
Develop FY 2023 Program	2	2023	4	2023
Develop FY 2024 Program	2	2024	4	2024

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0603923D8Z / *Coalition Warfare Program (CWP)*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	102.263	5.000	11.154	12.103	-	12.103	10.430	10.207	10.418	10.635	-	-
923: *Coalition Warfare*	102.263	5.000	11.154	12.103	-	12.103	10.430	10.207	10.418	10.635	-	-

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

This program supports the Department's initiatives to Deter Aggression, Defend the Homeland, and Build Sustainable and Long-Term Advantage.

The Coalition Warfare Program (CWP) supports the DoD organizations that: 1) work with foreign partners to collaboratively address strategic technology gaps for current and future missions; 2) develop interoperability solutions for coalition operations; and 3) develop and strengthen defense relationships. It comprehensively supports the 2022 National Security and Defense Strategies. In the National Security Strategy, the President states we will "fully engage all countries and institutions to cooperate on shared threats" and "redouble our efforts to deepen our cooperation with like-minded partners." In the National Defense Strategy, the Secretary of Defense states, we will "use every tool at the Department's disposal, in close coordination with our counterparts across the US Government and with Allies and partners to ensure potential foes understand the folly of aggression." The CWP provides a broad base of technological, operational, and logistical support for military operations and eases the U.S. financial and manpower burdens associated with meeting military goals and objectives. Coalitions and relationships with international partners are high priorities for the nation and the DoD.

The CWP supplements U.S. Government proponents' funding for cooperative efforts, ensuring U.S. funds are sufficient to complete the engagement with the foreign partners. When the CWP funds are used to help fund a cooperative project, that project leverages technical and financial contributions of the foreign partners and accelerates the development and delivery of technical solutions to the warfighter. For every $1 the CWP has invested in cooperative projects with 81 partners since 2001, the program has leveraged $3 in foreign partner resources and $2 in other U.S. Government resources. The CWP funding enables the DoD project teams to transition technology to operational use, further development, or integration into other systems. These projects may also form the basis for future cooperation with international partners.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0603923D8Z / *Coalition Warfare Program (CWP)*

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	5.074	11.154	12.266	-	12.266
Current President's Budget	5.000	11.154	12.103	-	12.103
Total Adjustments	-0.074	0.000	-0.163	-	-0.163
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	-0.074	-	-0.163	-	-0.163

Change Summary Explanation

FY 2024 minimal decrease due to programmatic adjustments.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603923D8Z / *Coalition Warfare Program (CWP)*	Project (Number/Name) 923 / *Coalition Warfare*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
923: *Coalition Warfare*	102.263	5.000	11.154	12.103	-	12.103	10.430	10.207	10.418	10.635	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Coalition Warfare Program (CWP) supports the DoD organizations that: 1) work with foreign partners to collaboratively address strategic technology gaps for current and future missions; 2) develop interoperability solutions for coalition operations; and 3) develop and strengthen defense relationships. It comprehensively supports the 2022 National Security and Defense Strategies. In the National Security Strategy, the President states we will "fully engage all countries and institutions to cooperate on shared threats" and "redouble our efforts to deepen our cooperation with like-minded partners." In the National Defense Strategy, the Secretary of Defense states, we will "use every tool at the Department's disposal, in close coordination with our counterparts across the US Government and with Allies and partners to ensure potential foes understand the folly of aggression." The CWP provides a broad base of technological, operational, and logistical support for military operations and eases the U.S. financial and manpower burdens associated with meeting military goals and objectives. Coalitions and relationships with international partners are high priorities for the nation and the DoD.

The CWP supplements U.S. Government proponents' funding for cooperative efforts, ensuring U.S. funds are sufficient to complete the engagement with the foreign partners. When the CWP funds are used to help fund a cooperative project, that project leverages technical and financial contributions of the foreign partners and accelerates the development and delivery of technical solutions to the warfighter. For every $1 the CWP has invested in cooperative projects with 86 partners since 2001, the program has leveraged $3 in foreign partner resources and $2 in other U.S. Government resources. The CWP funding enables the DoD project teams to transition technology to operational use, further development, or integration into other systems. These projects may also form the basis for future cooperation with international partners.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Coalition Warfare Program (Continuing Projects)	5.000	11.154	12.103
Description: The CWP provides funding on a competitive basis to the DoD organizations to conduct cooperative research, development, test, and evaluation projects with foreign partners. The goals of the CWP program are to: collaboratively address strategic technology gaps for current and future missions, develop interoperability solutions for coalition operations, and strengthen current and future defense partnerships. The CWP selects projects for funding through an annual competitive selection process in accordance with Department of Defense and Combatant Command needs. In addition to funding newly selected projects, the program also provides funding to projects that began in earlier selection cycles (for a total of up to three years of funding for each project). Currently, the funded portfolio includes 53 active projects governed by negotiated/signed international agreements with 21 foreign partners.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603923D8Z / *Coalition Warfare Program (CWP)*	**Project (Number/Name)** 923 / *Coalition Warfare*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Post-funding CWP projects that are currently executing will: • Develop and validate a new class of multirole 5000 series aluminum-magnesium alloys for improved welded strength, ballistics, and marine corrosion resistance to replace current alloy 5083 used in ground, amphibious, and sea systems (AL MGS ALLOYS) (US Army) • Over the Horizon Radar Accuracy (DETAILS CLASSIFIED) • Robotics collaboration and progressive demonstrations to improve Coalition exploitation of WMD underground facilities (ATE) (DTRA) • Develop and assess a low light level, digital fused goggle with augmented reality for enhanced Soldier mobility and lethality (DELTA-I) (US Army) • Develop, test, and demonstrate terrestrial lasercomm network system to provide uninterrupted, anti-jam, real-time data/video links and ISR operations. (LASERCOMMNET) (US Army) • Build, fly, and demonstrate microsatellites with onboard AIS and imagery-based ship detection fused to provide Maritime Domain Awareness (MICROSAT MDA) (US Navy) • Establish the capability for space solar cell calibration to enable accurate calculation on orbit power for all spacecraft, military and commercial (SOLARCELLCAL) (US Air Force) • Develop dynamic Resource Allocation Management (RAM) applications and decision aids to allow both coalition warfighters to operate efficiently in the electromagnetic spectrum (EMW RAM) (US Navy)) • Develop Long Wavelength Infrared (LWIR)/Very Long Wavelength Infrared (VLWIR) camera for standoff detection of buried Improvised Explosive Devices (IED) (IED CAM) (US Navy) • Develop a standards based Mission Partner Gateway eXtended (MPGW-X) solution to improve the exchange of command and control information during contingency operations (MPGW-X) (OSD) • Develop shared, automated infrasonic detection and localization software for persistent surveillance (MSAIW) (US Army) • Develop and demonstrate a gas-generator (solid propellant) fueled rotating detonation engine through static firing tests under relevant flight conditions for high speed operation and demonstrate performance characteristics that will translate into a tactical missile propulsion system with 2-5 times longer range (SPEAR) (US Navy) • Advance understanding of near sunset ionospheric structures to improve predictions for space environment disturbance effects that impact operational radio telecommunications, surveillance systems, and GPS signals propagation (SPORT) (US Army) • Create a distributed contextually aware, heterogeneous collaborative Counter Unmanned Aerial System (CUAS) capability against multi-agent UAS threats (CHCUAS) (US Army) • Develop a shared, persistent, affordable and accessible distributed simulation test bed capability, with a repository of released data and models for reuse, connected to FVEY nation defense labs to facilitate rapid prototype testing and experimentation to address warfighter challenges (VIPRE) (US Army) • Develop a fieldable prototype man portable system that is immune to detection (WARWS) (US Navy)			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603923D8Z / *Coalition Warfare Program (CWP)*	**Project (Number/Name)** 923 / *Coalition Warfare*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
• Flight-test multiple guidance, navigation, and control technologies to validate sensor apertures and design tools in representative flight conditions. (HSMAC) (US Air Force) • Develop a manufacturing process with a novel high temperature alloy that fabricates small/medium scale turbine engine components for high-speed propulsion (MANTAS) (US Air Force) Interoperability and Collaboration Initiatives: Program provides funds in support of new or planned acquisition programs with the aim of 1) promoting coalition interoperability early in the requirements or technical development phases, 2) harmonizing common goals between U.S. and foreign partners, 3) improving management of collaborative efforts. These funds support workshops, risk reduction efforts, standards development, architecture analysis, and information management initiatives. ***FY 2023 Plans:*** Including FY 2023 selection cycle new-starts and prior year project selections, the following projects encompass the CWP funding in FY 2023 and FY 2024: • Develop, test and field AI algorithms to enhance sonar operator performance by improving situational awareness, increasing decision-making bandwidth, and reducing decision making time (AI for ASW ACOUSTICS) (US Navy) • Develop a capability to provide beyond line of sight wide area volume surveillance, target track and cueing over large forward areas from a sanctuary-based HF OTH radar to support microwave fire-control radars on forward stationed blue platforms hiding in contested environments, enhancing platform survivability (BIFOCAL) (US Navy) • Develop and refine neurocognitive optimization training tools for improving Soldiers' physical and psychological resiliency to combat operational stress (BPOC IPCFEx) (US Army) • Develop a Fire and Forget (F&F) Counter FIAC swarm modeling and analysis (M&A) capability to support follow-on war gaming and at sea experimentations activities (COUNTER FIAC) (US Navy) • Develop, test, improve, and evaluate prototype cyber defensive technologies (e.g., Intrusion Detection/Prevention Systems, or IDPSs) for protecting ground vehicle systems from cyber threats. (CYBER GEMINI) (US Army) • Integrate live, virtual and constructive (LVC) environments across Joint and Coalition warfighter training continuums in order to maximize pilot training and readiness (ELITE) (US Air Force) • Develop an airborne optical communications model terminal and interface documentation to connect distributed coalition forces through the aerial layer with secure, interoperable information transport (IOT) (US Marine Corps) • Assure Positioning, Navigation, and Timing (PNT) availability in Global Positioning System (GPS)-challenged and denied marine environments (MARINE PNT W/O GPS) (US Navy) • Create software that will autonomously detect, characterize, identify causation, and recover from a satellite fault (REFLEX) (US Air Force) • Develop an autonomous sensor emplacement capability for persistent indoor surveillance (RISES) (US Army)			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603923D8Z / *Coalition Warfare Program (CWP)*	**Project (Number/Name)** 923 / *Coalition Warfare*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
• Develop and test structural steel prototypes that exhibit non-magnetic and self-damping characteristics and achieve high-yield and tensile strength for DoD structural applications (SELF-DAMPING STRUCTURES) (US Navy) • Development, Test, and Evaluate the Binocular Near Infrared Optical Augmentation (NIRO) Device (BINO NIRO) (US Marine Corps) • Develop a capability for Chemical Biological Wide Area Decontamination (CBWAD) (US Army) • Develop a Solid State High Power Microwave (HPM) Cannon (COMPACT HPM) (US Air Force) • Develop a Robust Anti-Submarine Warfare (ASW) Detection & Tracking Capability for High Clutter Environments (ROBUST ASW) (US Navy) • Selective Cyber Information Access (SCIA) (US Air Force) • Develop an open standards architecture to enable “plug-n-play” insertion of assistive artificial intelligence (AI) agents into coalition intelligence processing systems and build a new generation of AI enabled smart sensors (CATE) (US Army) • Design, develop, and produce air-launched UAS and carriage/launch systems to address extended range communication needs (ALUAS) (USAF) • Deliver real-time hazard awareness using the Mission Partner Environment (MPE) for the automated exchange of digital threat data and analytics in a multinational common operating picture (ITAC) (US Army) • Develop low-cost non-cooperative space-based maritime surveillance technologies (LLAMDA) (US Navy) • Integrate ultra-low power sensors into stealth underwater power sources (LPS) (US Navy) • Develop a lightweight transparent armor (LWTA) to defeat 7.62X39 threats using revolutionary energy guiding layer concept (LWTA) (US Navy) • Test quality assurance Non-destructive Inspection (NDI) surface analysis devices for surface preparation inspections prior to structural adhesive bonding on composites (SAT REVIEW) (US Navy) • Develop advanced technology demonstration of next-generation air-breathing munition for long-range precision fires to achieve range increase on the order of 3-6 times from existing gun weapon systems (ABLRMD) (US Navy) • Develop space environment sensors and tools for common Space Situational Awareness (SSA) picture enabling a neighborhood watch capability for space attack assessment (Common SSA) (US Air Force) • Develop a low-cost, low-weight chemical detection payload for a Black Hornet 3 micro UAS (MCS) (US Army) • Characterize region-specific threats to coalition warfighters subject to infectious diseases (severe acute respiratory infections (SARI), Middle East Respiratory Syndrome (MERS), and Coronavirus (CoV) and establish clinical trials (SARI) (US Army) • Develop launch, recovery, and teaming of Hybrid/Vertical Take-off and Landing Unmanned Aerial Systems (UAS) with autonomous sea and ground vehicles (VTUAS) (US Navy) • Develop a boost to ramjet operation burn of a liquid-fueled integral rocket ramjet in full-scale ground experimentation (THRESHER B2B) (US Air Force)			
FY 2024 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603923D8Z / *Coalition Warfare Program (CWP)*	**Project (Number/Name)** 923 / *Coalition Warfare*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
CWP project nominations for the FY 2024 selection cycle will be selected for funding approximately April 2023 with initial funding beginning in FY 2024. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** An increase of approximately $1M from FY 2023 to FY 2024 is the result of funds being restored after the 2022 reduction of CWP funding to support higher-priority DoD requirements. 60% of the $4.388M FY 2022 reduction was restored in FY 2023 and the remaining 40% will be restored in FY 2024.			
Accomplishments/Planned Programs Subtotals	5.000	11.154	12.103

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

The Combatant Commands, Services, Defense Agencies, and the Office of the Secretary of Defense nominate candidate projects on an annual basis. CWP provides selected projects up to three years of funding. The Program selects projects that address DoD priorities and meet the needs and requirements specified by the Joint Staff and the Combatant Commanders. Projects have equitable contributions from international partners, strong potential for transition, Combatant Command endorsement, and contribute to allied interoperability and/or meet a user need.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603923D8Z / *Coalition Warfare Program (CWP)*	**Project (Number/Name)** 923 / *Coalition Warfare*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Coalition Warfare Program Project Product Development Costs	Various	Various : Various	76.315	3.764		9.341		9.708		-		9.708	-	-	-
		Subtotal	76.315	3.764		9.341		9.708		-		9.708	-	-	N/A

Remarks

The typical appropriation for CWP is approximately $10M per year. The Department re-phased $4.388M of the planned FY 2022 CWP appropriation to support higher-priority DoD requirements, with funds being restored later in the FYDP. The FY 2022 reduction has been restored in the FY 2023 and FY 2024 CWP appropriation request by $4.388M above the prior planned FYDP amount (60% in FY 2023 and 40% in FY 2024). An estimated $.9404 was added to the total FY2024 estimate to account for an overall 8% inflation rate.

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Coalition Warfare Program Project Test and Evaluation Costs	Various	Various : Various	14.721	0.386		0.933		1.500		-		1.500	-	-	-
		Subtotal	14.721	0.386		0.933		1.500		-		1.500	-	-	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Coalition Warfare Program Project Management Services Costs	Option/ FFP	Analygence, INC. : Fulton, MD	11.227	0.850		0.880		0.895		-		0.895	-	-	-
		Subtotal	11.227	0.850		0.880		0.895		-		0.895	-	-	N/A

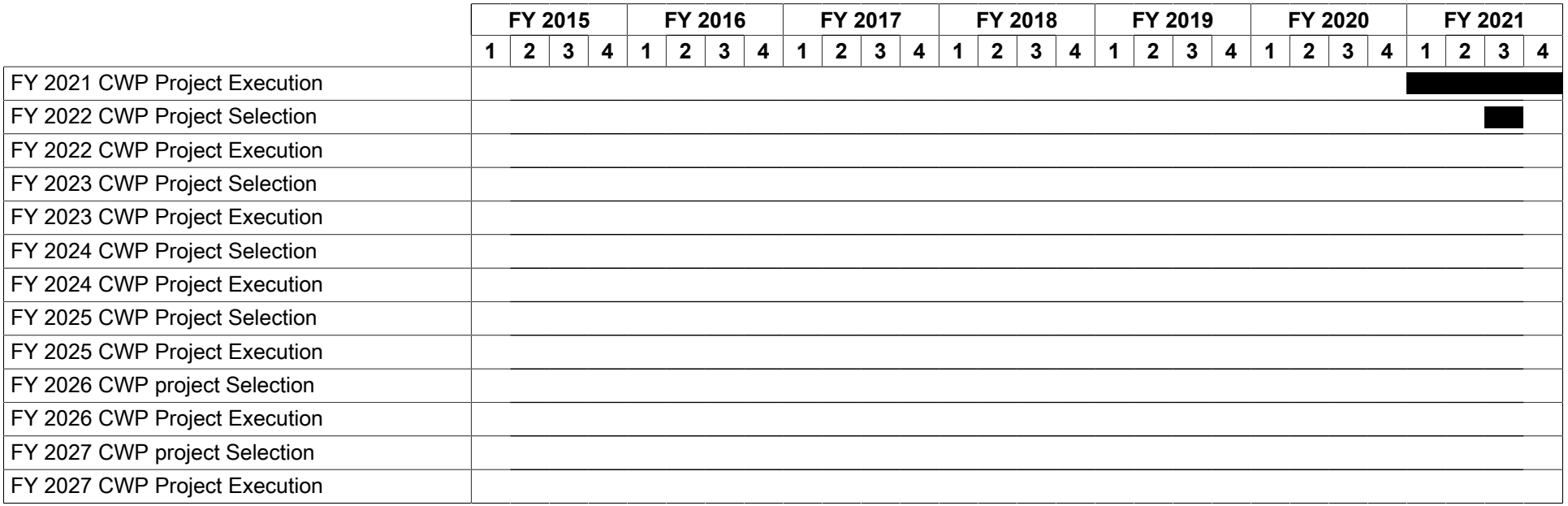
	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	102.263	5.000		11.154		12.103		-		12.103	-	-	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603923D8Z / *Coalition Warfare Program (CWP)*	Project (Number/Name) 923 / *Coalition Warfare*	

	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603923D8Z / *Coalition Warfare Program (CWP)*	**Project (Number/Name)** 923 / *Coalition Warfare*



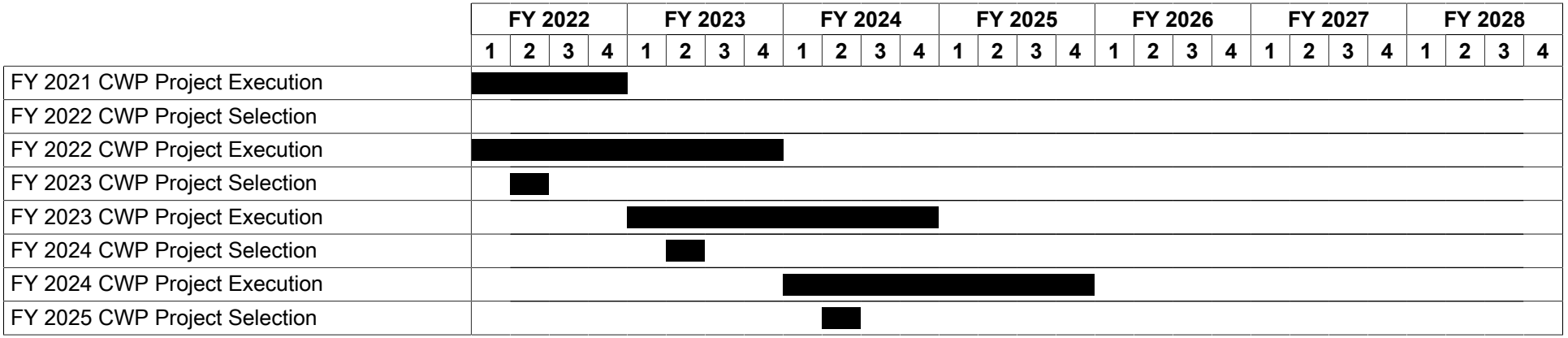


Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603923D8Z / *Coalition Warfare Program (CWP)*	**Project (Number/Name)** 923 / *Coalition Warfare*

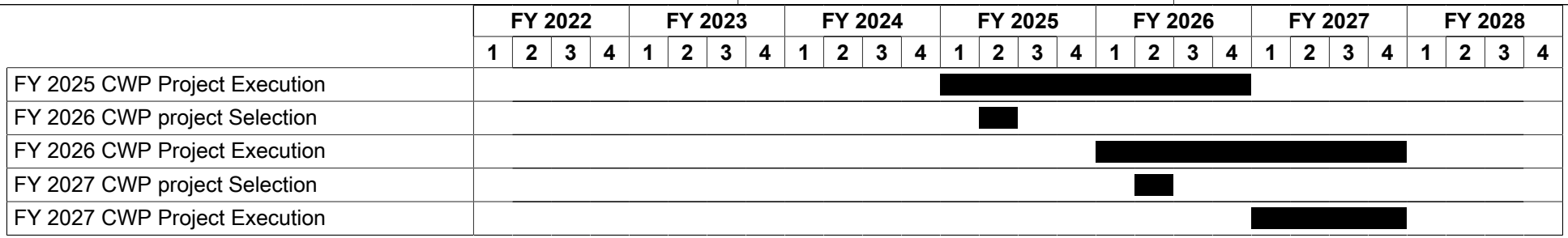


Exhibit R-4A, RDT&E Schedule Details: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603923D8Z / *Coalition Warfare Program (CWP)*	**Project (Number/Name)** 923 / *Coalition Warfare*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
FY 2021 CWP Project Execution	1	2021	4	2022
FY 2022 CWP Project Selection	3	2021	3	2021
FY 2022 CWP Project Execution	1	2022	4	2023
FY 2023 CWP Project Selection	2	2022	2	2022
FY 2023 CWP Project Execution	1	2023	4	2024
FY 2024 CWP Project Selection	2	2023	2	2023
FY 2024 CWP Project Execution	1	2024	4	2025
FY 2025 CWP Project Selection	2	2024	2	2024
FY 2025 CWP Project Execution	1	2025	4	2026
FY 2026 CWP project Selection	2	2025	2	2025
FY 2026 CWP Project Execution	1	2026	4	2027
FY 2027 CWP project Selection	2	2026	2	2026
FY 2027 CWP Project Execution	1	2027	4	2027

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0604011D8Z / *Next Generation Information Communications Technology (5G)*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	-	327.714	248.466	179.278	-	179.278	159.467	88.423	71.569	73.125	Continuing	Continuing
724: *Dual Use 5G Use Cases*	-	203.323	44.447	149.600	-	149.600	99.240	42.904	44.486	45.420	Continuing	Continuing
725: *Congested/Congested Spectrum*	-	122.791	181.840	23.423	-	23.423	53.785	37.328	18.243	18.625	Continuing	Continuing
726: *External Engagement*	-	0.100	19.679	6.255	-	6.255	6.442	8.191	8.840	9.080	Continuing	Continuing
729: *5G Cross Functional Team*	-	1.500	2.500	-	-	-	-	-	-	-	-	-

Note

New Start (Y/N): No

Funding realigned from Project 725 to Project 724 to support expanded efforts of Open Radio Access Network (Open RAN), distributed multi-input multi-output (MIMO), dynamic spectrum access (DSA), software-defined radio (SDR). Administratively requested funding in the amount $7.000 million for 5G Cross Functional Team under Project 724 in FY 2024.

A. Mission Description and Budget Item Justification

This program supports the Department's initiatives to Defend the Homeland, Build Sustainable and Long-Term Advantage, and Build a Resilient Joint Force and Defense Ecosystem.

The Department of Defense (DoD) Next Generation (NextG) Information Communications Technologies (ICT) program will conduct large-scale experimentation and prototyping of dual-use (military and commercial) fifth-generation (5G) cellular network technology for military uses. The program will develop and deploy 5G networks at DoD sites to evaluate and enhance 5G systems and technologies for CONUS and OCONUS DoD missions. This will include both the direct use of commercially available capabilities and DoD-specific technology enhancements and applications that highly leverage commercial capabilities. The program will also develop, test, and evaluate technology solutions to identify and mitigate the security challenges that 5G and NextG technologies will present in order to enable the military to operate through untrusted networks.

The program will:

• Deploy flexible 5G infrastructure at twelve or more U.S. military facilities to enable varied applications and networking prototypes,
• Evaluate at least twenty different DoD 5G applications at DoD facilities across the Services based on parallel commercial applications and technologies,
• Demonstrate the capacity to “operate through” existing commercial 5G infrastructure throughout the globe, leveraging existing infrastructure to meet DoD mission needs and learning how to utilize untrusted 5G networks through automated security techniques.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0604011D8Z *I Next Generation Information Communications Technology (5G)*

The program will deliver fieldable prototype capabilities that will remain in place at designated DoD locations as well as lessons learned to promulgate 5G knowledge and tradecraft. This will ensure that both near-term and future generations of information and communications technologies will be capable of supporting US military and national security objectives.

The program will be executed through established support agreements with DoD Service laboratories and through existing DoD and Government-Wide Acquisition Contracts (GWACs), to include General Services Administration (GSA, contracts) that are suitable and cost-effective for 5G technology prototyping and telecommunications network equipment procurement and integration.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	336.485	249.591	182.428	-	182.428
Current President's Budget	327.714	248.466	179.278	-	179.278
Total Adjustments	-8.771	-1.125	-3.150	-	-3.150
• Congressional General Reductions	-	-1.125			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-8.720	-			
• Program Adjustments	-0.051	-	-3.150	-	-3.150

Change Summary Explanation

FY 2024 reduction of $3.150 million is comprised of a realignment of $3.970 million to support the Historically Black Colleges and Universities/Minority Serving Institutions program, which is a priority of the Under Secretary of Defense for Research and Engineering (USD(R&E)), and $0.190 million to support departmental priorities and an economic assumption increase of $1.010 million.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604011D8Z / *Next Generation Information Communications Technology (5G)*	Project (Number/Name) 724 / *Dual Use 5G Use Cases*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
724: *Dual Use 5G Use Cases*	-	203.323	44.447	149.600	-	149.600	99.240	42.904	44.486	45.420	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Develop and evaluate “dual-use” applications that demonstrate direct use of commercial systems and applications that use a large fraction of commercial capabilities that are augmented with DoD enhancements. Dual-use applications will be evaluated within a deployed 5G infrastructure with operationally relevant numbers of users and geographic scale.

These use cases include:

• Mission Planning/Training: Develop and evaluate ultra-high reliability, low latency, high bandwidth communications, as well as augmented and virtual reality (AV/VR) technologies that enable high fidelity mission planning and training in realistic environments over 5G networks.
• Depot Operations: Leverage 5G technologies to upgrade depots for “smart” operations including autonomous repair and maintenance activities as well as warehouse movement via driverless forklifts, pallets, and tactical trucks.
• Global Asset/Supply Chain Management: Leverage emerging 5G enterprise solutions to provide real time, optimum, continuous asset visibility and movement tracking, supply status, movement and resupply, and reduce inventory control costs.
• Smart Installations (e.g., logistics bases, ports): Develop and evaluate 5G enabled massive machine-to-machine communications, cloud and edge computing, and autonomy to enhance installation operations to maximize logistics traffic throughput.

Dual-use 5G research, development, and experimentation activities will deliver operational prototype capabilities that will remain in place at designated DoD locations. Those that do not perform sufficiently well will still provide lessons learned to promulgate 5G knowledge and tradecraft. These deliverables will inform base/camp/station modernization and recapitalization investments as prototypes transition to enduring infrastructure.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Dual Use 5G Use Cases	203.323	44.447	142.600
Description: Demonstrate use cases of both commercial and military value, while also assessing and developing mitigations to their security vulnerabilities.			
FY 2023 Plans: The DoD will conclude a number of Smart Warehouse prototyping and experimentation activities at Marine Corpse Logistics Base - Albany, and Naval Base Coronado; and will finish Augmented Reality/Virtual Reality (AR/VR) Mission Training prototyping and			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604011D8Z / *Next Generation Information Communications Technology (5G)*	**Project (Number/Name)** 724 / *Dual Use 5G Use Cases*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
experimentation activities at JBLM. Experimentation with autonomous warehouse operations and AR/VR mission training activities will conclude. The program will begin technology transitions and start transferring sites to services. The DoD will continue dual-use prototyping and experimentation projects at Joint Base Pearl Harbor - Hickam, Naval Station Norfolk, Camp Pendleton, the National Training Center, and Joint Base San Antonio. Localized full scale 5G mobile cellular networks will continue to support the dual-use military application experimentation at these DoD Service sites. The sites will continue experimentation with AR/VR for aircraft readiness, ship-wide and pier-side connectivity, rapidly deployable 5G for tactical command and control centers, and AR/VR for medical applications to include training. ***FY 2024 Plans:*** The DoD will conclude remaining Smart Warehouse prototyping and experimentation activities at sites. The program will continue technology transitions and transferring sites to services. Dual-use prototyping and experimentation projects at Joint Base Pearl Harbor - Hickam, Naval Station Norfolk, Camp Pendleton, the National Training Center, and Joint Base San Antonio will continue. Localized full scale 5G mobile cellular networks will continue to support the dual-use military application experimentation at these DoD Service sites. The sites will continue experimentation with AR/VR for aircraft readiness, ship-wide and pier-side connectivity, rapidly deployable 5G for tactical command and control centers, and AR/VR for medical applications to include training. DoD will further development of Open RAN standards and technologies that accelerate the adoption of open interfaces, interoperable subsystems, and modular, multi-vendor solutions, as well as leverage new technology components (e.g., distributed MIMO, DSA, SDR) to create new ICT systems. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The increase of $98.153 million between FY 2023 to FY 2024 reflects realignment of funds from Project 725 to Project 724 to support expanded efforts of Open Radio Access Network (Open RAN), distributed multi-input multi-output (MIMO), dynamic spectrum access (DSA), software-defined radio (SDR). Funding for the 5G CFT requested from Project 724 will be realigned to Project 729 during the year of execution.			
Title: 5G Cross Functional Team (CFT) Support ***Description:*** Provide coordination of joint warfighting concepts, research and development, policy and program integration, acquisition and transition, and secure operations of 5G in DoD. ***FY 2024 Plans:***	-	-	7.000

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604011D8Z / *Next Generation Information Communications Technology (5G)*	**Project (Number/Name)** 724 / *Dual Use 5G Use Cases*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Provide coordination of joint warfighting concepts, research and development, policy and program integration, acquisition and transition, and secure operations of 5G in DoD. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The increase of $7.000 million from FY 2023 to FY 2024 will be realigned to Project 729 from Project 724 during the year of execution to continue support of the 5G Cross Functional Team (CFT).			
Accomplishments/Planned Programs Subtotals	203.323	44.447	149.600

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604011D8Z / *Next Generation Information Communications Technology (5G)*	Project (Number/Name) 724 / *Dual Use 5G Use Cases*	

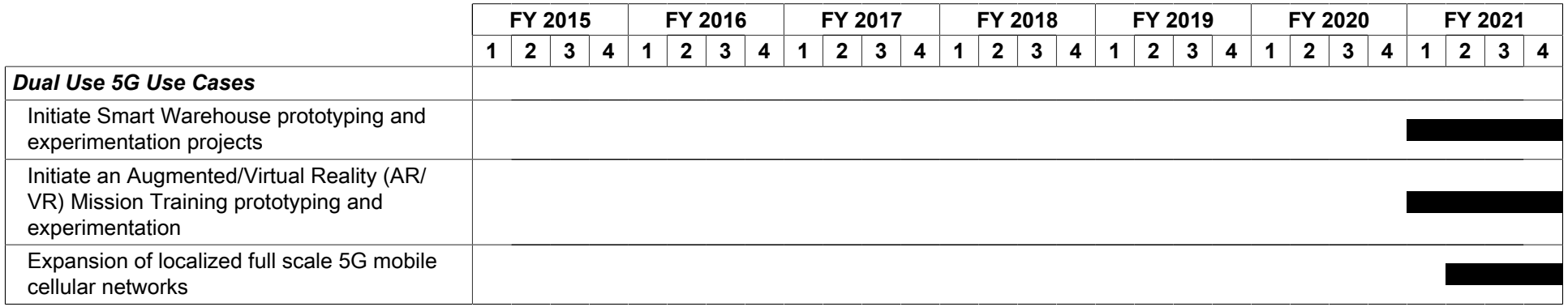
Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Dual Use 5G Use Cases	MIPR	Army, Navy, Air Force, etc. : Various	-	203.323	Jun 2022	44.447	Jun 2023	149.600	Jun 2024	-		149.600	Continuing	Continuing	-
		Subtotal	-	203.323		44.447		149.600		-		149.600	Continuing	Continuing	N/A

	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	203.323		44.447		149.600		-		149.600	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604011D8Z / *Next Generation Information Communications Technology (5G)*	**Project (Number/Name)** 724 / *Dual Use 5G Use Cases*



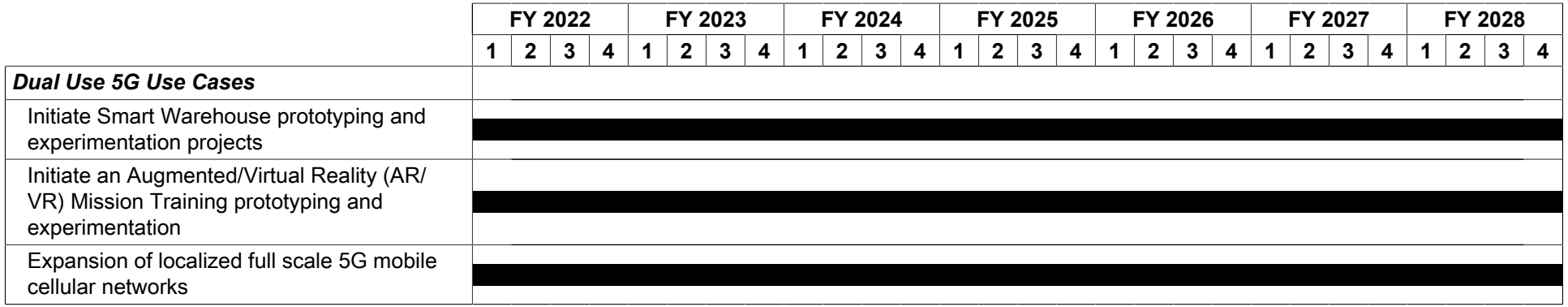


Exhibit R-4A, RDT&E Schedule Details: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604011D8Z / *Next Generation Information Communications Technology (5G)*	**Project (Number/Name)** 724 / *Dual Use 5G Use Cases*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Dual Use 5G Use Cases				
Initiate Smart Warehouse prototyping and experimentation projects	1	2021	4	2028
Initiate an Augmented/Virtual Reality (AR/VR) Mission Training prototyping and experimentation	1	2021	4	2028
Expansion of localized full scale 5G mobile cellular networks	2	2021	4	2028

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604011D8Z / *Next Generation Information Communications Technology (5G)*	Project (Number/Name) 725 / *Congested/Congested Spectrum*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
725: *Congested/Congested Spectrum*	-	122.791	181.840	23.423	-	23.423	53.785	37.328	18.243	18.625	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Demonstrate the capacity to “operate through” existing commercial 5G infrastructure throughout the globe, leveraging existing infrastructure to meet DoD mission needs using dynamic spectrum utilization and controlled manipulation of 5G network security architectures. These capabilities will be based on technologies such as dynamic spectrum utilization to maximize availability and resilience for wireless connectivity, multi-networking across wired and wireless systems for finding and exploiting alternate paths and redundant paths to ensure secure and reliable communication, network monitoring including new artificial intelligence (AI) techniques that use both passive and active measurements to assess security threats and identify potential mitigations. Develop tactical, operational, and strategic networking prototypes to demonstrate capabilities to dynamically balance use of congested spectrum between military systems and commercial wireless networks.

Capabilities will be prototyped and evaluated at-scale within highly dynamic and contested radio frequency (RF) environments. The Congested/Contested Spectrum research, development, and experimentation activities will deliver fieldable prototype capabilities that will remain in place at designated DoD locations. Those that do not perform sufficiently well will still provide lessons learned to promulgate 5G knowledge and tradecraft. These deliverables will inform base/camp/station modernization and recapitalization investments as prototypes transition to enduring infrastructure.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Congested/Contested Spectrum	122.791	181.840	23.423
Description: Demonstrate the capacity to “operate through” in congested/contested environments using dynamic spectrum utilization and by prototyping technologies to both defend and exploit 5G networks.			
FY 2023 Plans: Continue congested/contested spectrum prototyping and experimentation activities at Hill AFB. Continue the evaluation of the impact of the 5G network on the airborne radar systems and the radar’s impact on the 5G network to enable co-use or coexistence. Continue development of a network to disaggregate and mobilize command and control architectures at Nellis AFB, to include experimentation with 5G-enabled disaggregated command and control capabilities. The DoD will continue congested/contested spectrum prototyping and experimentation at Tinker AFB, and experimentation with 5G Core security and interoperability in the project centered at Joint Base San Antonio.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604011D8Z / *Next Generation Information Communications Technology (5G)*	**Project (Number/Name)** 725 / *Congested/Congested Spectrum*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
The DoD will continue investments in key technologies for use in contested environments, to enable "operating through" adversary impediments on 5G networks. ***FY 2024 Plans:*** Continue congested/contested spectrum prototyping and experimentation activities at Hill AFB. Continue the evaluation of the impact of the 5G network on the airborne radar systems and the radar's impact on the 5G network to enable co-use or coexistence. Continue development of a network to disaggregate and mobilize command and control architectures at Nellis AFB, to include experimentation with 5G-enabled disaggregated command and control capabilities. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The decrease of $158.417 between FY 2023 and FY 2024 reflects realignment of funds from Project 725 to Project 724 to support expanded efforts of Open Radio Access Network (Open RAN), distributed multi-input multi-output (MIMO), dynamic spectrum access (DSA), software-defined radio (SDR).			
Accomplishments/Planned Programs Subtotals	122.791	181.840	23.423

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604011D8Z / *Next Generation Information Communications Technology (5G)*	Project (Number/Name) 725 / *Congested/Congested Spectrum*	

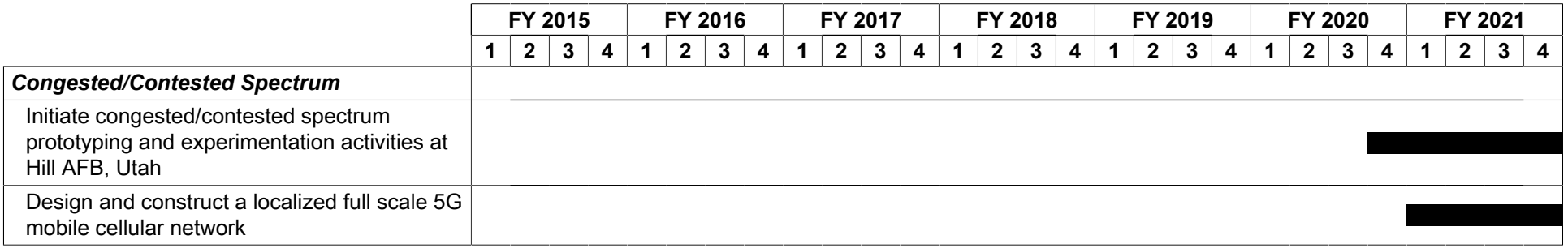
Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Congested/Contested Spectrum	MIPR	Army, Navy, Air Force, Marine Corps, etc. : Various	-	122.791	Mar 2022	181.840	Mar 2023	23.423	Mar 2024	-		23.423	Continuing	Continuing	-
		Subtotal	-	122.791		181.840		23.423		-		23.423	Continuing	Continuing	N/A

	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	122.791		181.840		23.423		-		23.423	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604011D8Z / *Next Generation Information Communications Technology (5G)*	**Project (Number/Name)** 725 / *Congested/Congested Spectrum*



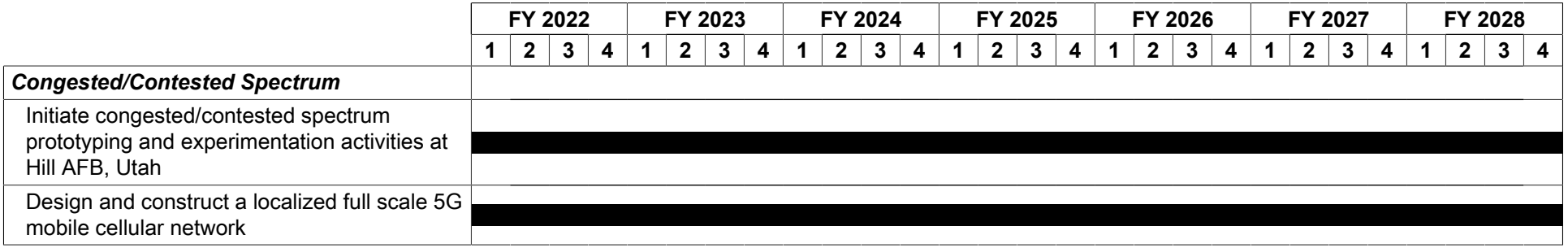


Exhibit R-4A, RDT&E Schedule Details: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604011D8Z / *Next Generation Information Communications Technology (5G)*	**Project (Number/Name)** 725 / *Congested/Congested Spectrum*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Congested/Contested Spectrum				
Initiate congested/contested spectrum prototyping and experimentation activities at Hill AFB, Utah	4	2020	4	2028
Design and construct a localized full scale 5G mobile cellular network	1	2021	4	2028

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604011D8Z / *Next Generation Information Communications Technology (5G)*	Project (Number/Name) 726 / *External Engagement*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
726: *External Engagement*	-	0.100	19.679	6.255	-	6.255	6.442	8.191	8.840	9.080	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Funding from this project will be used to externally engage across Government and beyond to influence statutes, policies, regulations, and standards within DoD, the U.S. Government, and international bodies for the global deployment and use of 5G to Next G technologies. DoD will conduct active and passive security vulnerability assessments of 5G prototypes in order to support zero-trust security designs for military 5G applications.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: External Engagement	0.100	19.679	6.255
Description: Develop policies, regulations, and standards for streamlined deployment of protected, resilient Government and commercial networks. Conduct active and passive security vulnerability assessments to support 5G security capabilities. ***FY 2023 Plans:*** Continue to engage across government and beyond to inform and influence statutes, policies, regulations, and standards within DoD, the U.S. Government, and international bodies supporting a forward-thinking Next-G position. DoD will continue to conduct security vulnerability assessments and coalition partnership efforts during FY 2023. ***FY 2024 Plans:*** Maintain efforts to inform and influence statutes, policies, regulations, and standards within DoD, the U.S. Government, and international bodies supporting a forward-thinking Next-G position. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The decrease of $13.424 between FY 2023 and FY 2024 reflects realignment of funds from Project 725 to Project 724 to support expanded efforts of Open Radio Access Network (Open RAN), distributed multi-input multi-output (MIMO), dynamic spectrum access (DSA), software-defined radio (SDR).			
Accomplishments/Planned Programs Subtotals	0.100	19.679	6.255

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604011D8Z / *Next Generation Information Communications Technology (5G)*	**Project (Number/Name)** 726 / *External Engagement*

D. Acquisition Strategy

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604011D8Z / *Next Generation Information Communications Technology (5G)*	Project (Number/Name) 726 / *External Engagement*	

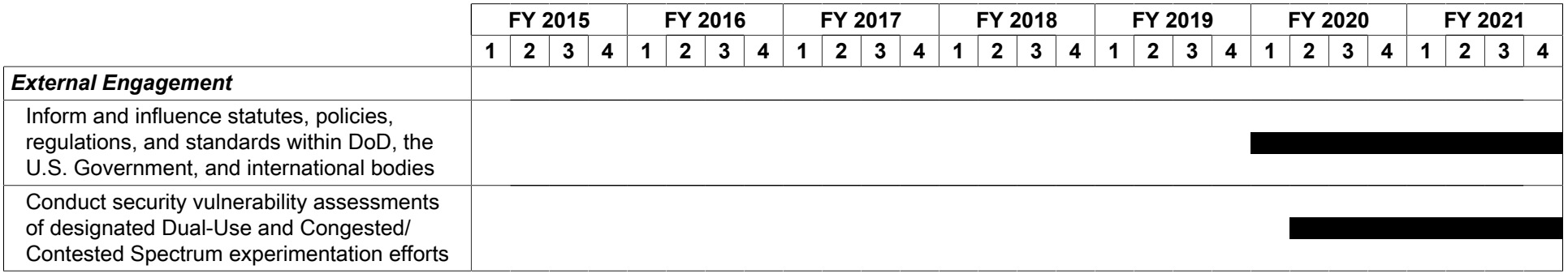
Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
External Engagement	MIPR	Army, Navy, Air Force, Marine Corps, etc. : Various	-	0.100	Mar 2022	19.679	Mar 2023	6.255	Mar 2024	-		6.255	Continuing	Continuing	-
		Subtotal	-	0.100		19.679		6.255		-		6.255	Continuing	Continuing	N/A

	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	0.100		19.679		6.255		-		6.255	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604011D8Z / *Next Generation Information Communications Technology (5G)*	**Project (Number/Name)** 726 / *External Engagement*



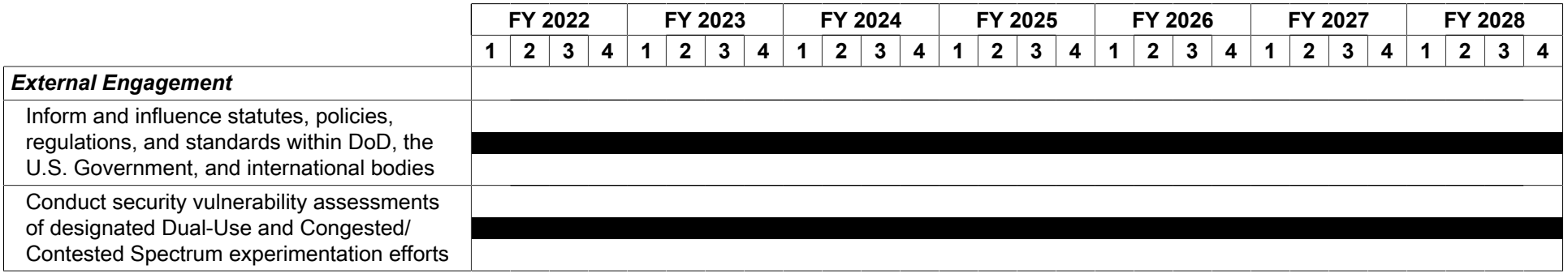


Exhibit R-4A, RDT&E Schedule Details: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604011D8Z / *Next Generation Information Communications Technology (5G)*	**Project (Number/Name)** 726 / *External Engagement*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
External Engagement				
Inform and influence statutes, policies, regulations, and standards within DoD, the U.S. Government, and international bodies	1	2020	4	2028
Conduct security vulnerability assessments of designated Dual-Use and Congested/ Contested Spectrum experimentation efforts	2	2020	4	2028

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604011D8Z / *Next Generation Information Communications Technology (5G)*	Project (Number/Name) 729 / *5G Cross Functional Team*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
729: *5G Cross Functional Team*	-	1.500	2.500	-	-	-	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

New start Project Code in FY 2023.

A. Mission Description and Budget Item Justification

The 5G Cross Functional Team will provide coordination of joint warfighting concepts, research and development, policy and program integration, acquisition and transition, and secure operations of 5G in DoD.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: 5G Cross Functional Team (CFT) Support	1.500	2.500	-
FY 2023 Plans: Provide coordination of joint warfighting concepts, research and development, policy and program integration, acquisition and transition, and secure operations of 5G in DoD.			
FY 2023 to FY 2024 Increase/Decrease Statement: $7.000 million will be realigned from Project 724 during the year of execution (FY 2024).			
Accomplishments/Planned Programs Subtotals	1.500	2.500	-

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604011D8Z / *Next Generation Information Communications Technology (5G)*	Project (Number/Name) 729 / *5G Cross Functional Team*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
5G Cross Functional Team (CFT) Support	MIPR	TBD : TBD	-	1.500		2.500	Mar 2023	-		-		-	Continuing	Continuing	-
		Subtotal	-	1.500		2.500		-		-		-	Continuing	Continuing	N/A

	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	1.500		2.500		-		-		-	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604011D8Z / *Next Generation Information Communications Technology (5G)*	**Project (Number/Name)** 729 / *5G Cross Functional Team*

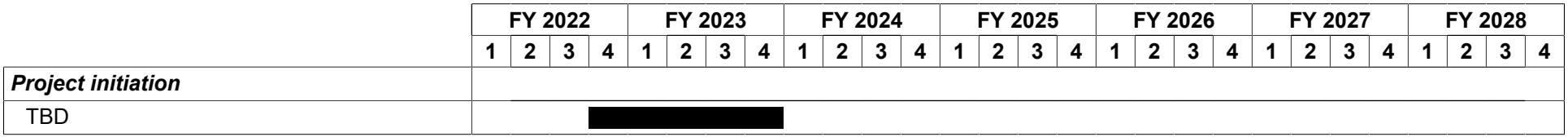


Exhibit R-4A, RDT&E Schedule Details: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604011D8Z / *Next Generation Information Communications Technology (5G)*	**Project (Number/Name)** 729 / *5G Cross Functional Team*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Project initiation				
TBD	4	2022	4	2023

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0604016D8Z / *Department of Defense Corrosion Program*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	150.547	3.168	3.166	3.185	-	3.185	3.215	3.210	3.210	3.279	Continuing	Continuing
015: *Corrosion Protection Projects*	150.547	3.168	3.166	3.185	-	3.185	3.215	3.210	3.210	3.279	Continuing	Continuing

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

The Department of Defense (DoD) initiated the Corrosion Program in 2003 in response to 10 U.S.C. 2228, requiring the Secretary of Defense to accomplish a number of actions including the implementation of a corrosion prevention/mitigation strategic plan for DoD equipment and infrastructure. The DoD Corrosion Prevention and Control Strategy was revised and signed in January 2021.

Corrosion continues to be a significant contributor to maintenance costs for DoD equipment and facilities. The average annual cost of corrosion by Service and Major Weapon System Platform between 2004 and 2020 was greater than $16 billion, and between 16% and 25% of all maintenance costs are attributable to corrosion, depending on the type of system. GAO reports 18-678 and 21-101SP analyzed the DoD aviation weapon system segment where corrosion was specifically attributed to the reduced reliability and maintainability of 33% of the systems. Four of the systems were noted in both reports.

Additionally, GAO-20-296, Defense Nuclear Enterprise Faces Sustainment Challenges, the Air Force attributes corrosion as a degrading factor on at least 3 weapon systems. In GAO-22-105032, the Navy allocates a 6% minimum growth factor for corrosion repairs in its annual shipyard work estimates, resulting in part due to deferred corrosion maintenance. Corrosion remains a direct contributor to reduced system availability.

The overall strategic goal of the DoD Corrosion Program is to demonstrate the ability to improve military readiness through the implementation of targeted and effective material and nonmaterial solutions that reduce the corrosion impacts on availability and affordability of DoD weapon systems and infrastructure. This goal can be achieved by focusing RDT&E efforts into two categories: Research Studies and Technology Development and Implementation. Technology development and implementation includes demonstrating and validating mature technologies and advanced research on technologies aimed at reducing cost and increasing availability of DoD weapon systems and facilities.

Demonstration/validation projects are specific corrosion prevention/mitigation efforts funded by the CPO with the objective of developing, testing, qualifying, and implementing new technologies. A number of low-risk, high-payoff technologies promise to vastly improve the service life, significantly reduce the maintenance costs, and improve the availability and safety of weapon systems and facilities essential to maintain support for the warfighter. A total of 85 projects have been completed including a follow-on assessment of their return-on-investment estimates. The overall return on investment as estimated by the Military Departments is approximately 17:1.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0604016D8Z / *Department of Defense Corrosion Program*

Advanced research includes Test and Evaluation projects, research studies, and research performed by academic institutions to include the Armed Forces' Academies. The primary objectives are: (1) generate products that contribute to the scientific understanding of material degradation and protection mechanisms, (2) explore the feasibility of technologies or processes for future demonstration/implementation projects, (3) generate knowledge products that contribute to ability to make data-driven decisions to prioritize corrosion prevention investments. Research areas include:

- Improved and validated data analytics and predictive modeling
- Accelerated corrosion test method development
- Improved surface treatments and coatings
- New materials and materials processing techniques

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	3.241	3.166	3.185	-	3.185
Current President's Budget	3.168	3.166	3.185	-	3.185
Total Adjustments	-0.073	0.000	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	-0.073	-	-	-	-

Change Summary Explanation

No funding change for FY 2024.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense											Date: March 2023	
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0604016D8Z / *Department of Defense Corrosion Program*				Project (Number/Name) 015 / *Corrosion Protection Projects*			
COST ($ in Millions)	**Prior Years**	**FY 2022**	**FY 2023**	**FY 2024 Base**	**FY 2024 OCO**	**FY 2024 Total**	**FY 2025**	**FY 2026**	**FY 2027**	**FY 2028**	**Cost To Complete**	**Total Cost**
015: *Corrosion Protection Projects*	150.547	3.168	3.166	3.185	-	3.185	3.215	3.210	3.210	3.279	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Department of Defense (DoD) initiated the Corrosion Program in 2003 in response to 10 U.S.C. 2228, requiring the Secretary of Defense to accomplish a number of actions including the implementation of a corrosion prevention/mitigation strategic plan for DoD equipment and infrastructure. The DoD Corrosion Prevention and Control Strategy was revised and signed in January 2021.

Corrosion continues to be a significant contributor to maintenance costs for DoD equipment and facilities. GAO reports 18-678 and 21-101SP analyzed the DoD aviation weapon system segment, corrosion was specifically attributed to the reduced reliability and maintainability of 33% of the systems. Four of the systems were noted in both reports.

Additionally, GAO-20-296, Defense Nuclear Enterprise Faces Sustainment Challenges, the Air Force attributes corrosion as a degrading factor on at least 3 weapon systems. In GAO-22-105032, the Navy allocates a 6% minimum growth factor for corrosion repairs in its annual shipyard work estimates, resulting in part due to deferred corrosion maintenance.

The overall strategic goal of the DoD Corrosion Program is to demonstrate the ability to improve military readiness through the implementation of targeted and effective material and nonmaterial solutions that reduce the corrosion impacts on availability and affordability of DoD weapon systems and infrastructure. This goal can be achieved by focusing RDT&E efforts into two categories: Research Studies and Technology Development and Implementation. Technology development and implementation includes demonstrating and validating mature technologies and advanced research on technologies aimed at reducing cost and increasing availability of DoD weapon systems and facilities.

Demonstration/validation projects are specific corrosion prevention/mitigation efforts funded by the CPO with the objective of developing, testing, qualifying, and implementing new technologies. A number of low-risk, high-payoff technologies promise to vastly improve the service life and significantly reduce the maintenance costs and improve the availability and safety of weapon systems and facilities essential to maintain support for the warfighter. A total of 85 projects have been completed including a follow-on assessment of their return-on-investment estimates. The overall return on investment as estimated by the Military Departments is approximately 17:1.

Advanced research includes Test and Evaluation projects, research studies, and research performed by academic institutions to include the Armed Forces' Academies. The primary objectives are: (1) generate products that contribute to the scientific understanding of material degradation and protection mechanisms, (2) explore the feasibility of technologies or processes for future demonstration/implementation projects, (3) generate knowledge products that contribute to ability to make data-driven decisions to prioritize corrosion prevention investments. Research areas include:

- Improved and validated data analytics and predictive modeling
- Accelerated corrosion test method development
- Improved surface treatments and coatings
- New materials and materials processing techniques

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Corrosion Prevention and Control Projects and Activities	3.168	3.166	3.185
Description: Corrosion prevention and control projects and activities are conducted in support of the support of the strategic plan to reduce the impact of corrosion on the cost and availability of DoD equipment and facilities. FY 2020 RDT&E Projects still in-progress include: •Zinc-rich Aerosol Products for Touch-up Painting of Steel Substrates – Increased efficiency of maintenance processes •Improved Surface Preparation and Coatings for Corrosion Control of Aluminum Substrates – Extending intervals between coating applications •Pressure Sensitive Adhesive Appliques for Quick Field Repair of Topcoat Damage – Improved field-level maintenance •Weld-Through Coatings for Prevention of Crevice Corrosion in Skip-Welded Joints – Service life extension for ground vehicles Support for advanced research in the areas of improving the accuracy of the algorithm for extracting corrosion information from maintenance data, aircraft structural repair using additive manufacturing, optimizing aircraft washdown intervals, corrosion sensor development, analytical corrosion prediction methods, mitigation of biologically induced corrosion, and prediction of environmentally assisted cracking was continued. FY 2021 RDT&E Projects still in-progress include: •Environmentally Friendly Coating Assessment for Non-Immersed Marine Environment for structures located in coastal environments. --Successfully Completed in FY 2022 will be implemented in facilities criteria updates. •Gentoo Coating Application to HH-60G Tail Landing Gear Yoke to reduce corrosion inspection requirements and improve the durability of the yoke between inspection cycles; improving HH-60 readiness. •Improved Landing Gear Durability for F/A-18E/F Super Hornet evaluating the application of multiple corrosion prevention technologies to improve the landing gear system to improve readiness and reduce cost. •Ship Class Topside Corrosion Control Configuration (CT3C) Implementation multiple corrosion prevention technologies to improve the improve ship operational sustainment and reduce cost --Technologies will be implemented on 2 demonstration ships in FY 2023 •Property-driven determination of acceptable criteria in MIL-DTL-46027 (weldable aluminum armor) for enhanced sustainability and readiness to evaluate the corrosion susceptibility characteristics and impact due desensitization of aluminum alloys. --Successfully completed.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604016D8Z / *Department of Defense Corrosion Program*	**Project (Number/Name)** 015 / *Corrosion Protection Projects*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
•Evaluating aerospace applications for Zn-Ni coatings as an alternative to Cd coatings to improve corrosion performance while reducing environmental and human safety impacts. --Effort has expanded the implementation of Zn-Ni on multiple components processed at NAVAIR Depots, reducing the overall Cd usage while improving corrosion protection. Activities executed included: • Delivery of corrosion control and coatings training to field- and depot-level workforce provided over 22 different CPC training courses to over 800 DoD workforce personnel • Posted CLM 038 Computer Based CPC Overview Training on DAU for the DAWIA Certified workforce professionals • Expanded scope of Cost of Corrosion data for Navy Surface Ships -- Identified the top 10 corrosion drivers and top 10 maintenance labor drivers • Supported the technical revisions to corrosion-related military specifications ***FY 2023 Plans:*** •Year 3 increment funding for FY 2021 long term Corrosion Demonstration/Validation Projects •Initiate FY 2023 Demonstration and Implementation Project process and/or Initiate a CPC Test and Evaluation project or studies, Quarter 3. •Develop a corrosion dashboard concept for Navy Surface Ships Corrosion Metrics. ***FY 2024 Plans:*** Fund year 3 of 3 for the following projects: •Gentoo Coating Application to HH-60G Tail Landing Gear Yoke to reduce corrosion inspection requirements and improve the durability of the yoke between inspection cycles; improving HH-60 readiness. (note: project delayed due to COVID restriction limitations) Fund year 4 for the following projects: •Improved Landing Gear Durability for F/A-18E/F Super Hornet evaluating the application of multiple corrosion prevention technologies to improve the landing gear system to improve readiness and reduce cost. •Ship Class Topside Corrosion Control Configuration (CT3C) Implementation multiple corrosion prevention technologies to improve the improve ship operational sustainment and reduce cost Initiate FY 2024 Demonstration and Implementation Project process and/or Initiate a CPC Test and Evaluation project or studies. ***FY 2023 to FY 2024 Increase/Decrease Statement:***			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604016D8Z / *Department of Defense Corrosion Program*	**Project (Number/Name)** 015 / *Corrosion Protection Projects*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
No significant change.			
Accomplishments/Planned Programs Subtotals	3.168	3.166	3.185

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604016D8Z / *Department of Defense Corrosion Program*	**Project (Number/Name)** 015 / *Corrosion Protection Projects*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Corrosion Policy and Oversight	MIPR	Various (Army, Navy, Air Force) : Various	120.019	0.492	Oct 2022	1.427	Oct 2023	1.629	Oct 2024	0.000		1.629	Continuing	Continuing	-
		Subtotal	120.019	0.492		1.427		1.629		0.000		1.629	Continuing	Continuing	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Research Studies	C/FFP	Various : Various	2.402	1.142	Sep 2022	0.100	Sep 2023	0.100	Sep 2024	0.000		0.100	Continuing	Continuing	-
Technical Support	MIPR	Various (Army, Navy, Air Force) : Various	0.325	0.158	Jun 2022	0.158	Jun 2023	0.158	Jun 2024	0.000		0.158	Continuing	Continuing	-
Technical Support	Option/ FFP	Leidos, Inc. : Virginia	0.496	-		-		0.000		0.000		0.000	Continuing	Continuing	-
Technical Support	C/FFP	Excet Inc. : Maryland	0.210	0.221	Jun 2022	0.210	Jun 2023	0.210	Jun 2024	0.000		0.210	Continuing	Continuing	-
Research Studies	MIPR	Various (Army, Navy, Air Force) : Various	-	-		0.292	Mar 2023	0.200	Oct 2024	-		0.200	Continuing	Continuing	-
		Subtotal	3.433	1.521		0.760		0.668		0.000		0.668	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Critical Compatibility Testing - COVID19 (FY20 Congressional-Add)	MIPR	Various (Army, Navy, Air Force) : Various	2.691	-		-		-		-		-	Continuing	Continuing	-
		Subtotal	2.691	-		-		-		-		-	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604016D8Z / *Department of Defense Corrosion Program*	**Project (Number/Name)** 015 / *Corrosion Protection Projects*

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Corrosion Policy and Oversight	C/FFP	Logistics Management Institute : McLean, VA	23.194	0.956	Feb 2022	0.791	Feb 2023	0.686	Feb 2024	0.000		0.686	Continuing	Continuing	-
Corrosion Policy and Oversight	Option/ FFP	LMI : McLean, VA	1.023	-		-		0.000		0.000		0.000	Continuing	Continuing	-
SBIR/STTR Funding	Allot	OSD : Virginia	0.123	0.120	Jun 2022	0.046	Jun 2023	0.123	Jun 2024	0.000		0.123	Continuing	Continuing	-
USD(A&S) Management Reserve	Allot	USD(A&S) : Virginia	0.064	0.064	Jun 2022	0.064	Jun 2023	0.064	Jun 2024	0.000		0.064	Continuing	Continuing	-
Corrosion Policy and Oversight Mgmt Services	Allot	Corrosion Policy and Oversight : Alexandria, VA	-	0.015	Oct 2022	0.015	Oct 2023	0.015	Oct 2024	0.000		0.015	Continuing	Continuing	-
Senior Leadership Directive	Allot	OSD : Virginia	-	0.000		0.063	Feb 2023	0.000		0.000		0.000	Continuing	Continuing	-
		Subtotal	24.404	1.155		0.979		0.888		0.000		0.888	Continuing	Continuing	N/A

	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	150.547	3.168		3.166		3.185		0.000		3.185	Continuing	Continuing	N/A

Remarks

N/A

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604016D8Z / *Department of Defense Corrosion Program*	**Project (Number/Name)** 015 / *Corrosion Protection Projects*

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604016D8Z / *Department of Defense Corrosion Program*	**Project (Number/Name)** 015 / *Corrosion Protection Projects*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Corrosion Policy and Oversight				
Zinc-rich aerosol products for touch-up painting of steel substrates	3	2020	4	2021
Improved surface preparation and coatings for corrosion control of aluminum substrates	3	2020	4	2021
Pressure sensitive adhesive appliques for quick field repair of topcoat damage	3	2020	4	2021
Weld-through coatings for prevention of crevice corrosion in skip-welded joints	3	2020	4	2021
Implementation of Zinc-Nickel (1Z-C17 +Zn-Ni) Electroplating as an Alternative to Cadmium (extended)	3	2016	4	2023
GentooTM Coating Application to HH-60G Tail Landing Gear Yoke	2	2021	1	2023
Improved Landing Gear Durability for F/A-18E/F Super Hornet	2	2021	4	2024
Ship Class Topside Corrosion Control Configuration (CT3C) Implementation	2	2021	4	2024
Environmentally Friendly Coating Assessment for Non-Immersed Marine Environment	2	2021	4	2022
Aircraft structural repair using additive manufacturing	4	2018	1	2023
Optimizing aircraft washdown intervals	4	2018	1	2021
Corrosion sensor development	4	2018	4	2020
Analytical corrosion prediction methods	4	2018	1	2023
Mitigation of biologically induced corrosion	4	2018	1	2023
Prediction of environmentally assisted cracking	4	2018	1	2022

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0604124D8Z / *Chief Digital Artificial Intelligence Officer*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	0.000	0.000	70.790	34.350	-	34.350	38.500	40.750	31.050	31.671	Continuing	Continuing
068: *Intelligence Support*	0.000	0.000	70.790	34.350	-	34.350	38.500	40.750	31.050	31.671	Continuing	Continuing

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

The Chief Digital and Artificial Intelligence Officer (CDAO) supports the Department's initiatives to build enduring advantage and build a resilient Joint Force and defense ecosystem. The CDAO is responsible for strengthening and integrating data, artificial intelligence, and digital solutions in the Department in support of the National Defense Strategy and Section 1513 of the National Defense Authorization Act (NDAA) for FY 2023.

The functions of the CDAO are as follows: lead and oversee the DoD's strategy development and policy formulation for data, analytics, and AI; break down barriers to data and AI adoption within DoD institutional processes; create enabling digital infrastructure and services that support Components' development and deployment of data, analytics, AI, and digital-enabled solutions; selectively scale proven digital and AI-enabled solutions focused on enterprise and joint use cases; and surge digital services for rapid response to crises and emergent challenges. The CDAO will continue priority projects that align to the mission. This includes expanding the AI integration between the DoD and Intelligence Community (IC); enterprise data repository; establishing a responsible AI ecosystem; executing the AI and Data Accelerator (ADA) initiative; and developing a Data, Analytics, and AI Adoption Strategy. These various lines of effort will support the overarching mission of accelerating the Department's adoption of data, analytics, and AI to preserve decision advantage across the Joint Force.

The CDAO's DoD and IC Integration Division was chartered to create joint interoperability and to harness and scale AI across the DoD and IC jointly, especially within the Defense Intelligence Enterprise. The organizational purpose is to improve coordination and interoperability between DoD and the IC, minimize duplication while maximizing a common approach, and develop an innovated joint AI operational concept and capability, where appropriate. This funding is assigned to support algorithm development, data preparation, and integration experimentation to create joint DoD and IC capabilities. Further details are classified and available upon request.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0604124D8Z *I Chief Digital Artificial Intelligence Officer*

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	0.000	33.950	34.350	-	34.350
Current President's Budget	0.000	70.790	34.350	-	34.350
Total Adjustments	0.000	36.840	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	36.840			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2022	FY 2023
Project: 068: *Intelligence Support*		
Congressional Add: *Chief Digital and Artificial Intelligence Officer (CDAO) - MIP*	-	36.840
Congressional Add Subtotals for Project: 068	-	36.840
Congressional Add Totals for all Projects	-	36.840

Change Summary Explanation

No change in FY 2024 funding.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604124D8Z / *Chief Digital Artificial Intelligence Officer*	Project (Number/Name) 068 / *Intelligence Support*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
068: *Intelligence Support*	0.000	0.000	70.790	34.350	-	34.350	38.500	40.750	31.050	31.671	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The CDAO's DoD and IC Integration Division was chartered to create joint interoperability and to harness and scale AI across the DoD and IC jointly, especially within the Defense Intelligence Enterprise. The organizational purpose is to improve coordination and interoperability between DoD and the IC, minimize duplication while maximizing a common approach, and develop an innovated joint AI operational concept and capability, where appropriate. This funding is assigned to support algorithm development, data preparation, and integration experimentation to create joint DoD and IC capabilities. Further details are classified and available upon request.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Project Maven	-	33.950	34.350
Description: The CDAO's DoD and IC Integration Division is chartered to create joint interoperability and to harness and scale AI across the DoD and IC jointly, especially within the Defense Intelligence Enterprise in support of the National Defense Strategy. The organizational purpose is to improve coordination and interoperability between DoD and the IC, minimize duplication while maximizing a common approach, and develop an innovated joint AI operational concept and capability, where appropriate. This funding is assigned to support algorithm development, data preparation, and integration experimentation to create joint DoD and IC capabilities. Further details are classified and available upon request. ***FY 2023 Plans:*** FY 2023 plans are classified and available upon request. ***FY 2024 Plans:*** FY 2024 plans are classified and available upon request. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2024 minimal increase is due to programmatic adjustments.			
Accomplishments/Planned Programs Subtotals	-	33.950	34.350

	FY 2022	FY 2023
Congressional Add: Chief Digital and Artificial Intelligence Officer (CDAO) - MIP	-	36.840
FY 2023 Plans: FY 2023 plans are classified and available upon request.		
Congressional Adds Subtotals	-	36.840

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604124D8Z / *Chief Digital Artificial Intelligence Officer*	**Project (Number/Name)** 068 / *Intelligence Support*

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

N/A

D. Acquisition Strategy

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604124D8Z / *Chief Digital Artificial Intelligence Officer*	**Project (Number/Name)** 068 / *Intelligence Support*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Product Development	C/Various	TBD : TBD	-	-		70.790		34.350		-		34.350	Continuing	Continuing	N/A
		Subtotal	-	-		70.790		34.350		-		34.350	Continuing	Continuing	N/A

	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	-		70.790		34.350		-		34.350	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604124D8Z / *Chief Digital Artificial Intelligence Officer*	**Project (Number/Name)** 068 / *Intelligence Support*

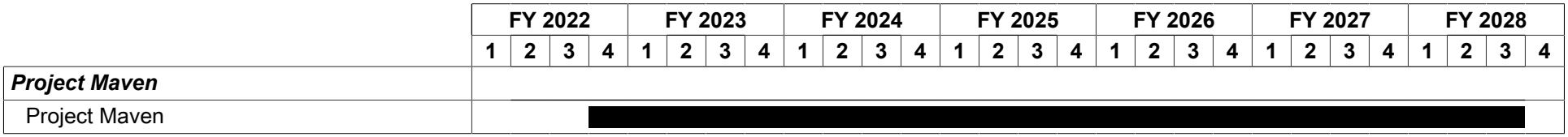


Exhibit R-4A, RDT&E Schedule Details: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604124D8Z / *Chief Digital Artificial Intelligence Officer*	**Project (Number/Name)** 068 / *Intelligence Support*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Project Maven				
Project Maven	4	2022	3	2028

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0604250D8Z / *Advanced Innovative Technologies*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	5,840.663	756.117	1,147.555	1,085.826	-	1,085.826	777.791	521.062	519.650	530.639	Continuing	Continuing
250: *Advanced Innovative Technologies*	5,840.663	756.117	1,147.555	1,085.826	-	1,085.826	777.791	521.062	519.650	530.639	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Strategic Capabilities Office (SCO) develops, demonstrates, and transitions game-changing capabilities and effects to shape and counter emerging threats and increase the lethality of the Joint Force in contested environments. The SCO combines innovation with concepts of operation to develop novel capabilities solving critical national security challenges in partnership with the Services, Defense Agencies, Combatant Commands (CCMDS), Joint Chiefs of Staff, Intelligence Community, and the Office of the Secretary of Defense (OSD).

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	777.199	1,145.358	1,036.754	-	1,036.754
Current President's Budget	756.117	1,147.555	1,085.826	-	1,085.826
Total Adjustments	-21.082	2.197	49.072	-	49.072
• Congressional General Reductions	-	-0.553			
• Congressional Directed Reductions	-	-57.250			
• Congressional Rescissions	-	-			
• Congressional Adds	-	60.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-20.964	-			
• Program Adjustments	-0.118	-	49.072	-	49.072

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2022	FY 2023
Project: 250: *Advanced Innovative Technologies*		
Congressional Add: *Pele Mobile Nuclear Microreactor*	60.000	17.000
Congressional Add: *Pele Second Source*	-	20.000
Congressional Add: *Seaman's Eye*	3.000	8.000
Congressional Add: *Service Tactical Signal Intelligence Upgrades*	-	10.000
Congressional Add: *LIDAR C-UAS automated target Recognition*	-	5.000

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0604250D8Z *I Advanced Innovative Technologies*

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2022	FY 2023
Congressional Add Subtotals for Project: 250	63.000	60.000
Congressional Add Totals for all Projects	63.000	60.000

Change Summary Explanation

The FY 2024 increase of $49.072 million is comprised of a $47.0 million increase to Classified projects, a realignment of $3.784 million to support other DoD and departmental priorities and an economic assumption increase of $5.856 million.

SCO's FY 2024 Pacific Deterrence Initiative (PDI) spending under Exercises, Training, Experimentation, and Innovation has increased by $22.2 million to $970.5 million, as five new capability projects transition into Execution in FY 2024.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604250D8Z / *Advanced Innovative Te chnologies*	Project (Number/Name) 250 / *Advanced Innovative Technologies*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
250: *Advanced Innovative Technologies*	5,840.663	756.117	1,147.555	1,085.826	-	1,085.826	777.791	521.062	519.650	530.639	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Strategic Capabilities Office (SCO) develops, demonstrates, and transitions game-changing capabilities and effects to shape and counter emerging threats and increase the lethality of the Joint Force in contested environments. The SCO combines innovation with concepts of operation and information management to develop novel capabilities solving critical national security challenges in partnership with the Services, Defense Agencies, Combatant Commands (CCMDS), Joint Chiefs of Staff, Intelligence Community, and the Office of the Secretary of Defense (OSD).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Advanced Innovative Technologies Project Management	53.158	41.516	49.044
Description: SCO has a small WHS-funded government civilian workforce, and relies on this project to fund the required additional labor for subject matter experts and programmatic support teams to help centrally manage the execution of the SCO prototype development portfolio. In addition this project funds the travel for civil service employees, detailed staff, Inter-governmental Personnel Act participants, and Systems Engineering and Technical Assistance (SETA) contract staff that manage SCO's projects, studies, and test support. This staff annually supports 20-24 prototype project teams, the on-going study and development of additional concepts, and the office support functions like: program security representatives, intelligence, Information Technology, and finance and accounting support staff required to enable the project teams. ***FY 2023 Plans:*** These funds provide for SCO labor and travel to support the 20-24 project teams that are active each fiscal year. ***FY 2024 Plans:*** These funds provide for SCO labor and travel to support the 20-24 project teams that are active each fiscal year. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2024 increase due to forward funding from FY 2022 to allocate a higher budget to the facility and IT modifications in FY 2023 under the Mission Support Infrastructure project.			
Title: Athena	-	-	6.000
Description: Due to the classified nature of this project, specific applications and details are available at a higher classification level.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604250D8Z / *Advanced Innovative Technologies*	**Project (Number/Name)** 250 / *Advanced Innovative Technologies*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
FY 2024 Plans: Due to the classified nature of this project, specific applications and details are available at a higher classification level. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Athena enters the prototyping phase in FY 2024.			
Title: Aurora ***Description:*** The Aurora project provides mission planning and execution aids to support fleet operations. Specific applications and detailed plans are available at a higher classification level. The project was completed with FY22 funding.	17.589	-	-
Title: Avatar ***Description:*** The Avatar project develops enhanced manned-unmanned capabilities. Due to the nature of this project, specific applications and detailed plans are available at a higher classification level. ***FY 2023 Plans:*** The project will be completed with FY 2023 funding. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The project will be completed with FY 2023 funding.	38.890	11.151	-
Title: Bedlam ***Description:*** Due to the classified nature of this project, specific applications and details are available at a higher classification level. ***FY 2024 Plans:*** Due to the classified nature of this project, specific applications and details are available at a higher classification level. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The change is consistent with the planned project phasing which is available at higher classification levels.	-	-	15.500
Title: Black Hole Sun ***Description:*** Due to the classified nature of this project, specific applications and details are available at a higher classification level. ***FY 2024 Plans:***	-	-	8.200

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604250D8Z / *Advanced Innovative Technologies*	**Project (Number/Name)** 250 / *Advanced Innovative Technologies*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Due to the classified nature of this project, specific applications and details are available at a higher classification level. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Black Hole Sun enters the prototyping phase in FY 2024.			
Title: Classified Projects ***Description:*** Due to the classified nature of these projects, specific applications and details are available at a higher classification level. ***FY 2023 Plans:*** Due to the classified nature of these projects, specific applications and details are available at a higher classification level. ***FY 2024 Plans:*** Due to the classified nature of these projects, specific applications and details are available at a higher classification level. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The change is consistent with the planned projects phasing which are available at higher classification levels.	350.686	583.671	599.030
Title: Complete Pivot ***Description:*** Complete Pivot develops and demonstrates tactical command, control and communication capability in relevant combat environments. Due to the nature of this project, specific applications and detailed plans are available at a higher classification. ***FY 2023 Plans:*** Completes a planned transition. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The project will be completed with FY 2023 funding.	-	2.830	-
Title: Eclipse ***Description:*** The Eclipse project accelerates the maturation and fielding of emerging disruptive technologies. Specific applications and detailed plans are available at a higher classification level. ***FY 2023 Plans:*** Due to the classified nature of this project, specific applications and details are available at a higher classification level. ***FY 2023 to FY 2024 Increase/Decrease Statement:***	20.800	11.500	-

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604250D8Z / *Advanced Innovative Technologies*	**Project (Number/Name)** 250 / *Advanced Innovative Technologies*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
The project will be completed with FY 2023 funding.			
Title: Emerging Opportunities ***Description:*** Implementation of small new capabilities or augmentations as a result of latest intelligence and threats analysis. Highest impact projects will be selected in the execution year based upon the most recent intelligence to accelerate capabilities by up to 2 years. ***FY 2023 Plans:*** Opportunities will be selected during the execution year. ***FY 2024 Plans:*** Opportunities will be selected during the execution year. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Budget increases due to inflationary growth.	-	11.400	11.500
Title: Equinox ***Description:*** Due to the classified nature of this project, specific applications and details are available at a higher classification level. ***FY 2024 Plans:*** Due to the classified nature of this project, specific applications and details are available at a higher classification level. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Equinox enters the prototyping phase in FY 2024.	-	-	8.800
Title: Galaxian ***Description:*** Due to the classified nature of this project, specific applications and details are available at a higher classification level. ***FY 2023 Plans:*** Galaxian entered the prototyping phase in FY 2023. Due to the classified nature of this project, specific applications and details are available at a higher classification level. ***FY 2024 Plans:*** Due to the classified nature of this project, specific applications and details are available at a higher classification level. ***FY 2023 to FY 2024 Increase/Decrease Statement:***	-	11.100	15.400

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604250D8Z / *Advanced Innovative Technologies*	**Project (Number/Name)** 250 / *Advanced Innovative Technologies*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
The change is consistent with the planned project phasing which is available at higher classification levels.			
Title: Ghost Fleet ***Description:*** SCO will develop and demonstrate fleet integrated, operational prototype unmanned maritime vehicles to fill existing mission requirements for Combatant Commanders. Due to the classified nature of this project, specific applications and details are available at a higher classification level. This project was completed with FY 2021 funding, except for small transition tasks requiring FY22 funds.	0.466	-	-
Title: Gollum ***Description:*** Due to the classified nature of this project, specific applications and details are available at a higher classification level. ***FY 2024 Plans:*** Due to the classified nature of this project, specific applications and details are available at a higher classification level. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Gollum enters the prototyping phase in FY 2024	-	-	4.300
Title: Hoover ***Description:*** The Hoover project applies machine learning algorithms and techniques in order to reduce operator workload and data throughput requirements. Due to the classified nature of this project, specific applications and detailed plans are available at a higher classification. ***FY 2023 Plans:*** This projects is completed with FY 2023 funding. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The decrease is due to planned completion of the project.	27.030	12.500	-
Title: Hurt Locker ***Description:*** The Hurt Locker project demonstrates feasibility and utility of alternative system deployment. This program will retire risks associated with cross platform integration of existing weapons control systems. Due to the nature of this project, specific applications and detailed plans are available at a higher classification. ***FY 2023 Plans:***	19.924	37.750	12.000

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604250D8Z / *Advanced Innovative Technologies*	**Project (Number/Name)** 250 / *Advanced Innovative Technologies*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Due to the classified nature of this project, specific applications and details are available at a higher classification level. ***FY 2024 Plans:*** Due to the classified nature of this project, specific applications and details are available at a higher classification level. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The change is consistent with the planned project phasing which is available at higher classification levels.			
Title: Hypervelocity Gun Weapon System (HGWS) ***Description:*** Cost-effective, large magazine small area defense will be demonstrated by closing the fire control loop between sensors and prototype projectiles launched from existing families of powder gun cannons. Due to the nature of this project, specific applications and detailed plans are available at a higher classification level. ***FY 2023 Plans:*** The HGWS project will support initiation of the Engineering & Manufacturing Development (EMD) phase in preparation for transition efforts. ***FY 2024 Plans:*** The HGWS project will continue the EMD phase and conduct an advanced threat engagement(s) test event in support of production and transition assessments. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The change supports the EMD phase.	27.025	127.870	194.300
Title: Mission Support Infrastructure ***Description:*** These funds provide facility and information technology support costs for the Strategic Capabilities Office. Costs include: building lease payments, utilities, upkeep and refurbishment; physical security; supplies, office furnishings and communications equipment; video teleconferencing suites across multiple security levels; and information technology hardware systems and software licenses across multiple levels of security for the entire SCO staff. ***FY 2023 Plans:*** SCO's main operating facility is undergoing an extensive refurbishment, updating the security, safety, and information technology infrastructure of a 30-year old facility. ***FY 2024 Plans:***	12.307	24.000	17.152

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604250D8Z / *Advanced Innovative Technologies*	**Project (Number/Name)** 250 / *Advanced Innovative Technologies*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
SCO's main operating facility continues undergoing an extensive refurbishment, updating the security, safety, and information technology infrastructure of a 30-year old facility. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Primary costs for facility mods were scheduled to be paid in FY 2023.			
Title: Pele ***Description:*** Develop a prototype transportable nuclear microreactor to be demonstrated by FY 2025 that can generate 1-5 MW of electric power, is transportable in standard shipping containers, and meets safety, legal, and regulatory requirements to minimize risk of radiation exposure, nuclear proliferation, and environmental impact. In addition, testing, modeling, and analysis will be performed to prepare for future service transition decisions. ***FY 2023 Plans:*** Complete baseline design and then complete the ensuing Preliminary Safety Analysis Report (PSAR), performed by the Department of Energy. Hardware will be procured and manufacturing of the prototype reactor will begin, as will the corresponding work toward a Final Safety Analysis Report (FSAR). Pele will also begin fabrication of the HALEU TRISO particles and compacts for the reactor core, and will prepare those compacts for shipment to the assembly site, Idaho National Laboratory (INL), to include regulatory approval for that shipment. The project will also support the prime contractor, BWXT, in seeking regulatory approval for U.S. highway transportation of the post-operation reactor. Survivability testing will be performed with sub-scale systems and components in order to validate modeling and simulation. Operational doctrine and training concepts will be studied and developed in order to inform a future service transition. Specific applications and details are available at a higher classification level. ***FY 2024 Plans:*** Complete necessary work to receive Department of Energy approval of the Final Safety Analysis Report (FSAR). Manufacture major reactor components and prepare to complete the reactor build and integration testing in early FY25. Complete fabrication of the HALEU TRISO particles and compacts for the reactor core and ship them to INL, where they will be placed in storage. The project will continue to support BWXT in seeking regulatory approval for U.S. highway transportation of the post-operation reactor. Pele will facilitate and support the development of requirements for future Service transition, and training of operators to support prototype testing at INL. Survivability testing will continue, with specific tests and details available at a higher classification level. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The decrease of $45.3 million supports a development cycle with the Pele reactor delivered in FY 2025.	57.000	130.500	85.200
Title: Point Break	28.600	39.700	23.900

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604250D8Z / *Advanced Innovative Technologies*	**Project (Number/Name)** 250 / *Advanced Innovative Technologies*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Description: Due to the classified nature of this project, specific applications and details are available at a higher classification level. ***FY 2023 Plans:*** Due to the classified nature of this project, specific applications and details are available at a higher classification level. ***FY 2024 Plans:*** Due to the classified nature of this project, specific applications and details are available at a higher classification level. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The change is consistent with the planned project phasing which is available at higher classification levels.			
Title: Quiet Riot ***Description:*** The Quiet Riot project will leverage previous investments to demonstrate the feasibility of providing Combatant Commanders additional options. Due to the classified nature of this project, specific applications and detailed plans are available at a higher classification. ***FY 2023 Plans:*** Quiet Riot is completed with FY 2023 funding. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The decrease is due to completion of the project.	5.458	1.060	-
Title: Scornful Mustang ***Description:*** Due to the classified nature of this project, specific applications and details are available at a higher classification level. ***FY 2024 Plans:*** Due to the classified nature of this project, specific applications and details are available at a higher classification level. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Scornful Mustang enters the prototyping phase in FY 2024.	-	-	5.400
Title: Sea Dragon	0.884	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604250D8Z / *Advanced Innovative Technologies*	**Project (Number/Name)** 250 / *Advanced Innovative Technologies*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Description: A cost-effective capability will be demonstrated by integrating an existing weapon system with an existing platform. Due to the classified nature of this project, specific applications and detailed plans are available at a higher classification level. This project was completed in FY 2021, with FY 2022 funding required to support a small transition activity.			
Title: Shawshank ***Description:*** The Shawshank program provides Special Operations Forces new and enhanced capabilities. Specific applications and detailed plans are available at a higher classification level. ***FY 2023 Plans:*** Shawshank is completed with FY 2023 funding. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The decrease is consistent with the planned project completion.	32.300	9.250	-
Title: Small Business Innovative Research (SBIR)/Small Business Technology Transfer (STTR) ***Description:*** Each year, 3.2% of SCO's extramural R&D budget is transferred to the Department's SBIR program to fund small businesses through the SBIR program. An additional 0.45% of SCO's extramural R&D budget is transferred for the STTR program. This project is a placeholder for the budget prior to transfer, based upon SCO's estimated share of extramural research and development. FY 2022 was already reduced to transfer 20.964 million to the SBIR/STTR programs. ***FY 2023 Plans:*** Estimated transfer based upon planned extramural research and development funding. ***FY 2024 Plans:*** Estimated transfer based upon planned extramural research and development funding. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Change reflects change in planned extramural research and development funding	0.000	31.757	30.100
Title: Wildcat ***Description:*** The Wildcat project will demonstrate the feasibility and operational utility of enhanced weapon capability. Due to the classified nature of this project, specific applications and detailed plans are available at a higher classification. This project was completed in FY 2021, with a final activity completed with FY 2022 funding.	1.000	-	-
Accomplishments/Planned Programs Subtotals	693.117	1,087.555	1,085.826

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604250D8Z / *Advanced Innovative Technologies*	**Project (Number/Name)** 250 / *Advanced Innovative Technologies*

	FY 2022	FY 2023
Congressional Add: Pele Mobile Nuclear Microreactor ***FY 2022 Accomplishments:*** FY 2022 Accomplishments are shown under Project Pele above. ***FY 2023 Plans:*** FY 2023 Plans are shown under Project Pele above.	60.000	17.000
Congressional Add: Pele Second Source ***FY 2023 Plans:*** Modify and develop design of a second micro nuclear reactor able to generate 1-5 MW of electric power meeting safety, legal, and regulatory requirements for military applications. This reactor will be designed to be complementary to the Pele reactor whose fabrication is already underway, with greater power levels and lower costs per unit energy sought, in exchange for decreased mobility.	-	20.000
Congressional Add: Seaman's Eye ***FY 2022 Accomplishments:*** Seaman's Eye is developing a prototype of an affordable system to assess the wave and wind environment for an unmanned surface vessel (USV) platform using a fusion of passive sensors, physics-based modeling, and artificial intelligence. The system will support autonomous mission and navigation planning and will provide distributed sensing of the ocean environment to remote users. ***FY 2023 Plans:*** Seaman's Eye will develop new projects to support autonomous mission and navigation planning .	3.000	8.000
Congressional Add: Service Tactical Signal Intelligence Upgrades ***FY 2023 Plans:*** Due to the classified nature of this project, specific applications and details are available at a higher classification level.	-	10.000
Congressional Add: LIDAR C-UAS automated target Recognition ***FY 2023 Plans:*** Under development	-	5.000
Congressional Adds Subtotals	63.000	60.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604250D8Z / *Advanced Innovative Technologies*	Project (Number/Name) 250 / *Advanced Innovative Technologies*	

Product Development ($ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Athena	Various	Various : Various	-	-		-		6.000		-		6.000	39.000	45.000	-
Aurora	Various	Various : Various	35.511	17.589		-		-		-		-	0.000	53.100	-
Avatar	Various	Various : Various	218.383	38.890		11.151		-		-		-	0.000	268.424	-
Bedlam	Various	Various : Various	-	-		10.000		15.500		-		15.500	10.500	36.000	-
Black Hole Sun	Various	Various : Various	-	-		-		8.200		-		8.200	43.300	51.500	-
Classified Projects	Various	Various : Various	420.690	350.686		583.671		599.030		-		599.030	Continuing	Continuing	-
Complete Pivot	Various	Various : Various	-	-		2.830		-		-		-	0.000	2.830	-
Eclipse	Various	Various : Various	41.041	20.800		11.500		-		-		-	0.000	73.341	-
Emerging Opportunities	Various	Various : Various	-	-		11.400		11.500		-		11.500	Continuing	Continuing	-
Equinox	Various	Various : Various	-	-		-		8.800		-		8.800	44.300	53.100	-
Galaxian	Various	Various : Various	-	-		11.100		15.400		-		15.400	9.500	36.000	-
Ghost Fleet	Various	Various : Various	373.344	0.466		-		-		-		-	0.000	373.810	-
Gollum	Various	Various : Various	-	-		-		4.300		-		4.300	44.800	49.100	-
Hoover	Various	Various : Various	234.873	27.030		12.500		-		-		-	0.000	274.403	-
Hurt Locker	Various	Various : Various	175.576	19.924		37.750		12.000		-		12.000	0.000	245.250	-
HGWS	Various	Various : Various	775.611	27.025		127.870		194.300		-		194.300	145.350	1,270.156	-
Pele	Various	Various : Various	133.000	117.000		147.500		85.200		-		85.200	125.000	607.700	-
Point Break	Various	Various : Various	-	28.600		39.700		23.900		-		23.900	0.000	92.200	-
Quiet Riot	Various	Various : Various	19.475	5.458		1.060		-		-		-	0.000	25.993	-
Scornful Mustang	Various	Various : Various	-	-		-		5.400		-		5.400	41.600	47.000	-
Sea Dragon	Various	Various : Various	747.282	0.884		-		-		-		-	0.000	748.166	-
Shawshank	Various	Various : Various	156.403	32.300		9.250		-		-		-	0.000	197.953	-
Wildcat	Various	Various : Various	144.092	1.000		-		-		-		-	0.000	145.092	-
Completed Projects	Various	Various : Various	2,365.382	-		-		-		-		-	Continuing	Continuing	-
Seaman's Eye	Various	Various : Various	-	3.000		8.000		-		-		-	0.000	11.000	-
Pele Second Source	Various	Various : Various	-	-		20.000		-		-		-	0.000	20.000	-
LIDAR C-UAS ATR	Various	Various : Various	-	-		5.000		-		-		-	0.000	5.000	-
		Subtotal	5,840.663	690.652		1,050.282		989.530		-		989.530	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604250D8Z / *Advanced Innovative Technologies*	**Project (Number/Name)** 250 / *Advanced Innovative Technologies*

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Mission Support	Option/ Various	Facility and IT support to SCO : Chantilly VA, Arlington VA	-	12.307		24.000		17.152		-		17.152	Continuing	Continuing	-
SBIR/STTR	Various	SBIR/STTR transfer funds : Various	-	-		31.757		30.100		-		30.100	Continuing	Continuing	-
		Subtotal	-	12.307		55.757		47.252		-		47.252	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Advanced Innovative Technologies Project Management	Option/ Various	Labor and Travel : Various	-	53.158		41.516		49.044		-		49.044	Continuing	Continuing	-
		Subtotal	-	53.158		41.516		49.044		-		49.044	Continuing	Continuing	N/A

	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	5,840.663	756.117		1,147.555		1,085.826		-		1,085.826	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604250D8Z / *Advanced Innovative Technologies*	**Project (Number/Name)** 250 / *Advanced Innovative Technologies*

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604250D8Z / *Advanced Innovative Technologies*	**Project (Number/Name)** 250 / *Advanced Innovative Technologies*

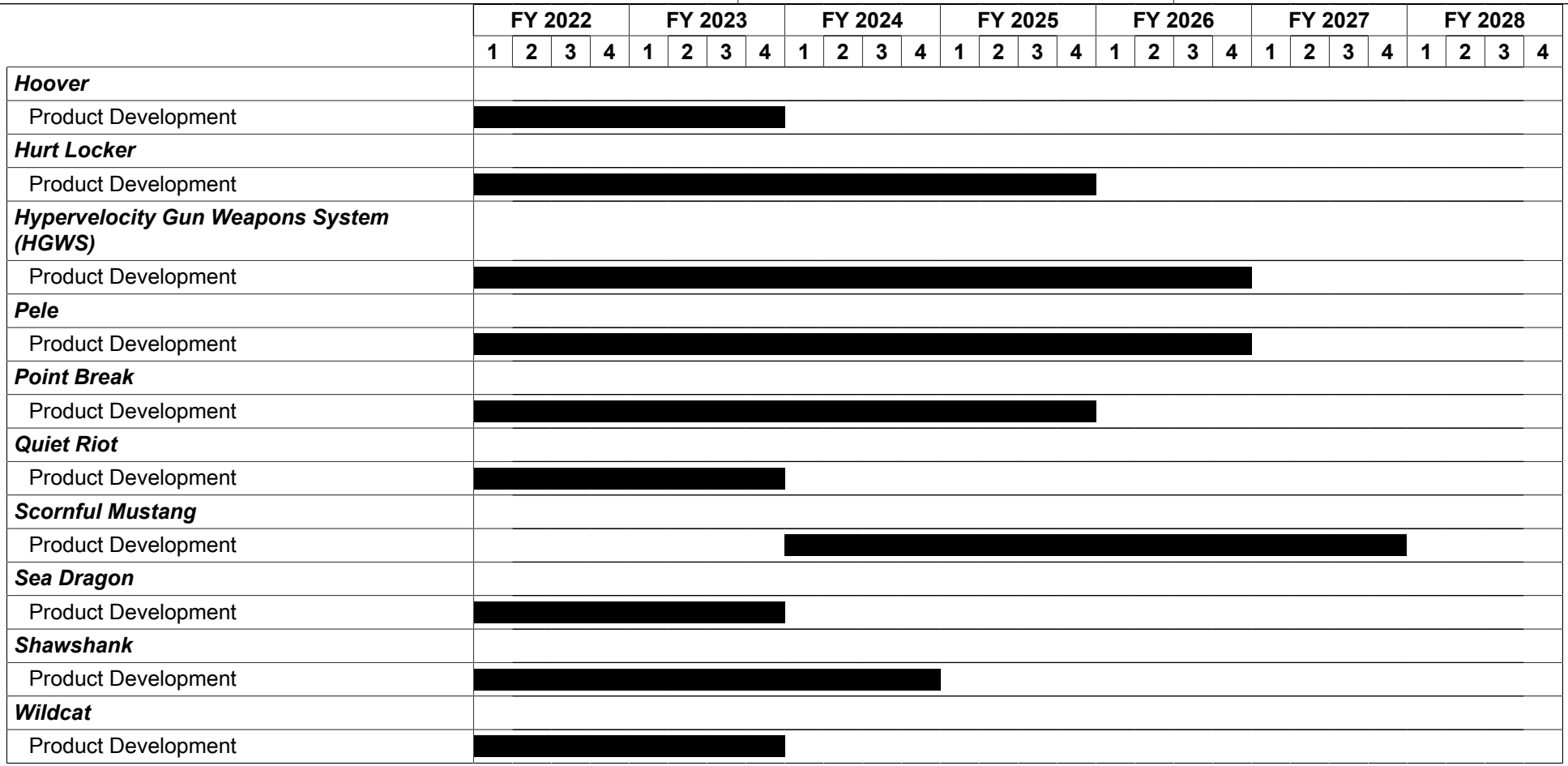


Exhibit R-4A, RDT&E Schedule Details: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604250D8Z / *Advanced Innovative Technologies*	**Project (Number/Name)** 250 / *Advanced Innovative Technologies*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Athena				
Product Development	1	2024	4	2027
Aurora				
Product Development	1	2022	4	2023
Avatar				
Product Development	1	2022	4	2024
Bedlam				
Product Development	1	2023	4	2026
Black Hole Sun				
Product Development	1	2024	4	2027
Classified Projects				
Product Development	1	2022	4	2027
Complete Pivot				
Product Development	1	2022	4	2023
Eclipse				
Product Development	1	2022	4	2024
Equinox				
Product Development	1	2024	4	2027
Galaxian				
Product Development	1	2023	4	2026
Ghost Fleet				
Product Development	1	2022	4	2023

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604250D8Z / *Advanced Innovative Technologies*	**Project (Number/Name)** 250 / *Advanced Innovative Technologies*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Gollum				
Product Development	1	2024	4	2027
Hoover				
Product Development	1	2022	4	2023
Hurt Locker				
Product Development	1	2022	4	2025
Hypervelocity Gun Weapons System (HGWS)				
Product Development	1	2022	4	2026
Pele				
Product Development	1	2022	4	2026
Point Break				
Product Development	1	2022	4	2025
Quiet Riot				
Product Development	1	2022	4	2023
Scornful Mustang				
Product Development	1	2024	4	2027
Sea Dragon				
Product Development	1	2022	4	2023
Shawshank				
Product Development	1	2022	4	2024
Wildcat				
Product Development	1	2022	4	2023

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0604294D8Z / *Trusted and Assured Microelectronics*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	1,688.428	682.139	644.326	810.839	-	810.839	749.010	675.491	588.703	570.444	Continuing	Continuing
907: *Access to State-of-the-Art (SOTA) Microelectronics - Development*	1,480.946	403.724	286.658	311.120	-	311.120	222.989	220.365	220.076	224.906	Continuing	Continuing
908: *Access to Advanced Packaging and Testing - Development*	81.438	72.343	56.118	90.199	-	90.199	94.129	92.660	64.766	66.127	Continuing	Continuing
911: *Address DoD Unique Needs - Radiation Hardening and non-CMOS*	50.500	169.072	180.003	279.416	-	279.416	298.759	231.083	170.770	143.404	Continuing	Continuing
912: *Create a Quantifiably Assured-Microelectronics Pipeline*	75.544	37.000	113.547	126.081	-	126.081	133.133	131.383	133.091	136.007	Continuing	Continuing
913: *Defense Microelectronics Cross-Functional Team Funding*	0.000	0.000	8.000	4.023	-	4.023	0.000	0.000	0.000	0.000	Continuing	Continuing

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

This Program Element (PE) supports microelectronics modernization activities that enable defense systems to keep pace with commercial microelectronics technological advances, reduce reliance on obsolete microelectronics, and mitigate the Department's reliance on sole source foundries for assured state-of-the-art (SOTA) microelectronics. It addresses the challenges of 1) having enduring access to a multiplicity of modern manufacturing processes that require commercial volumes to maintain long term viability and 2) protecting the intellectual property (IP) of the microelectronic parts that are manufactured.

Microelectronics technology is a critical enabler for the development of new systems and sustainment of fielded systems required for all four 2022 National Defense Strategy (NDS) priorities. In addition, this PE directly supports the NDS priority of building a resilient Joint Force and defense ecosystem through modernization of key capabilities and fostering pathways to adapt SOTA commercial and dual-use technologies to Defense needs. This PE also supports the NDS objective of Making the Right Technology Investments by supporting the domestic microelectronics innovation ecosystem and partnering with industry to quickly incorporate market-driven commercial advances with military-relevant capabilities.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0604294D8Z *I Trusted and Assured Microelectronics*

This PE supports the OUSD(R&E) Microelectronics Modernization Roadmap. The primary areas of focus of this roadmap include the following: access to state-of-the-art microelectronics technology, access to advanced packaging and test; access to the best commercial design technology; quantifiable assurance and secure design; foundry access; policies, standards, and Joint Federated Assurance Center (JFAC) governing body; access to radiation hardened microelectronics; access to non-complementary metal oxide semiconductor state-of-the-art (SOTA) microelectronics for radio frequency and optoelectronic applications; education and workforce development; and supply chain awareness and security.

Recognizing that an assured supply of microelectronics is a U.S. Government (USG)-wide concern, this activity will interface with interagency partners to take into account interagency requirements, opportunities for collaboration, and strategic decisions that can be made to limit the overall cost of these requirements to the USG.

This activity is being led by the Under Secretary of Defense for Research and Engineering.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	704.091	647.226	662.282	-	662.282
Current President's Budget	682.139	644.326	810.839	-	810.839
Total Adjustments	-21.952	-2.900	148.557	-	148.557
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-79.400			
• Congressional Rescissions	-	-			
• Congressional Adds	-	76.500			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-21.952	-			
• Program Adjustments	-	-	148.557	-	148.557

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2022	FY 2023
Project: 907: *Access to State-of-the-Art (SOTA) Microelectronics - Development*		
Congressional Add: *Design Acceleration*	100.000	-
Congressional Add Subtotals for Project: 907	100.000	-
Project: 911: *Address DoD Unique Needs - Radiation Hardening and non-CMOS*		
Congressional Add: *GaN and GaAs RFIC technology*	25.000	25.000
Congressional Add: *Radiation-Hardened Fully-Depleted Silicon-on-Insulator Microelectronics*	18.000	38.000
Congressional Add: *Advanced Node Radiation-Hardened Fully-Depleted Silicon-on-Insulator Technology*	43.500	10.000
Congressional Add: *Magnetoresistive Random Access Memory (MRAM)*	-	3.500

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0604294D8Z / *Trusted and Assured Microelectronics*

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2022	FY 2023
Congressional Add Subtotals for Project: 911	86.500	76.500
Project: 912: *Create a Quantifiably Assured-Microelectronics Pipeline*		
Congressional Add: *Trusted Artificial Intelligence*	10.000	-
Congressional Add Subtotals for Project: 912	10.000	-
Congressional Add Totals for all Projects	196.500	76.500

Change Summary Explanation

FY 2024 increase of $148.557 million is comprised of an increase of Project 911 within this PE of $160.000 million, a realignment of $14.411 million to support the Historically Black Colleges and Universities/Minority Serving Institutions program, which is a priority of the Under Secretary of Defense for Research and Engineering (USD(R&E)), a realignment of $0.692 million to support departmental priorities, and an economic assumption increase of $3.660 million.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense											Date: March 2023	
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0604294D8Z / *Trusted and Assured Microelectronics*				Project (Number/Name) 907 / *Access to State-of-the-Art (SOTA) Microelectronics - Development*			
COST ($ in Millions)	**Prior Years**	**FY 2022**	**FY 2023**	**FY 2024 Base**	**FY 2024 OCO**	**FY 2024 Total**	**FY 2025**	**FY 2026**	**FY 2027**	**FY 2028**	**Cost To Complete**	**Total Cost**
907: *Access to State-of-the-Art (SOTA) Microelectronics - Development*	1,480.946	403.724	286.658	311.120	-	311.120	222.989	220.365	220.076	224.906	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Microelectronics are critical technologies that drive the modern economy and enable the defense systems that allow warfighters to accomplish their missions. Other nations recognize the need to control the microelectronics supply chain and indigenous state-of-the-art (SOTA) manufacturing. Aggressive investments and licit and illicit actions by peer nations threaten U.S. leadership. China alone purports investment of $150 billion and a national strategy to achieve dominance in all major areas of microelectronics by 2030. Russia and China have publicly stated that advanced microelectronics, AI, and machine learning (ML) are the keys to economic and military dominance.

This project funds the operation software assurance(SwA) support to DoD programs and organizations of the Joint Federated Assurance Center (JFAC), established in National Defense Authorization Act (NDAA) Sec 937, to increase DoD's SwA by providing engineering tools, technical services, best practices, innovative technologies and other assistance to programs to detect, assess, prioritize, and mitigate vulnerabilities from malicious software and assurance against supply chain exploitation vulnerabilities. The JFAC will provide capabilities for programs to keep assessment findings throughout the life cycle of their systems for data mining (e.g., documentation on rationale for previous mitigation decisions). The collaboration between the JFAC and program offices will help mitigate existing and emerging critical threats and vulnerabilities in software to all DoD programs.

The project supports the implementation of Executive Order 14028 Improving the Nation's Cybersecurity for software assurance for critical software such as software bill of materials, and information communications technology supply chain risk management, and the PD, Cyber Roadmap for mitigation of software vulnerabilities that are cyber related.

This project includes establishment of new strategic partnerships with existing commercial state-of-the-art (SOTA) domestic foundries to develop a data-driven, risk-based approach to supply chain protection and develop the assured access, secure design, and manufacture of advanced microelectronics technology and electronic components.

Successful implementation will transition these technologies to use in DoD programs, obtain access to multiple commercial microelectronics facilities, establish secure design capabilities, and solidify a data-driven approach to supply chain protection. It also includes keeping pace with the rapid advancements in microelectronics technology and the globalization of this industry sector. It will provide the basics for updating and strengthening DoD assurance policy and includes collaborating with industry to develop data driven quantifiable standards.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 907 / *Access to State-of-the-Art (SOTA) Microelectronics - Development*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Joint Federated Assurance Center (JFAC)	9.000	10.820	6.956
Description: This project's activities will advance the state of the art for trust and assurance by the federated assurance labs for both hardware and software assurance for the DoD enterprise to both accelerate the development of assurance technologies and to ensure the integrity of DoD weapon systems, information systems, and national security systems in direct support of program offices across the life cycle. JFAC is the center that bridges the various federated DoD organizations together across the Joint Services and NSA. JFAC advances the development of assurance technologies, offers scalable enterprise assurance capabilities, fosters a thriving assurance ecosystem, and provides access to leading assurance solutions to include policies, guidance, best practices, training, resources, tools, assessments, personnel, source code, and data. ***FY 2023 Plans:*** • Continue to select and procure quantities of state-of-the-art software assurance (SwA) tools; innovate and advance technology for vulnerability and subverted code detection of binary code in DoD embedded systems; evaluate high payoff open source components required to move DoD systems to the cloud using containers; technology and infrastructure support to programs to determine and mitigate exploitable vulnerabilities; map vulnerabilities and threats to SwA tool capabilities and provide assessments of how well SwA tools and techniques function directly to programs. • Execute enterprise license program procurement of SwA tools. • Continue to align expanding JFAC infrastructure to cloud native environments to support hardware assurance, deploy SwA tools, training, shared experiences, and best tool-use practice directly to programs and organizations. • Develop and make directly available to programs and organizations beyond leading edge acquisition software vulnerability mitigations, standards and technical implementation guidance, workforce training packages, and subject matter expertise. • Continue efforts to support implementation of Executive Order 14028 Improving the Nation's Cybersecurity for software assurance for critical software, and the software bill of materials. • Continue to implement Section 1655 of the FY2019 NDAA - Mitigation of risks to national security posed by providers of information technology products and services who have obligations to foreign governments. ***FY 2024 Plans:*** • Continue to Select and procure quantities of state-of-the-art software assurance (SwA) tools; innovate and advance technology for vulnerability and subverted code detection of binary code in DoD embedded systems; evaluate high payoff open source components required to move DoD systems to the cloud using containers; technology and infrastructure support to programs to determine and mitigate exploitable vulnerabilities; map vulnerabilities and threats to SwA tool capabilities and provide assessments of how well SwA tools and techniques function directly to programs. • Execute enterprise license program procurement of SwA tools. • Continue to align expanding JFAC infrastructure to cloud native environments to support hardware assurance, deploy SwA tools, training, shared experiences, and best tool-use practice directly to programs and organizations.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 907 / *Access to State-of-the-Art (SOTA) Microelectronics - Development*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
• Develop and make directly available to programs and organizations beyond leading edge acquisition software vulnerability mitigations, standards and technical implementation guidance, workforce training packages, and subject matter expertise. • Continue efforts to support implementation of Executive Order 14028 Improving the Nation's Cybersecurity for software assurance for critical software, and the software bill of materials. • Continue to implement FY2019 NDAA Section 1655 - Mitigation of risks to national security posed by providers of information technology products and services who have obligations to foreign governments ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The decrease of $3.864 million between FY 2023 and FY 2024 is due to reallocation of funding from this project to other microelectronics assurance efforts covered in Project 912 of this PE.			
Title: Access to State-of-the-Art (SOTA) Microelectronics - Development	294.724	275.838	304.164
Description: Foundry Access: This activity implements multiple foundries process design kit (PDK) environments ensuring the government is not dependent on one single source for critical components. Demonstrate hardware through dedicated and multi-project wafer runs at multiple foundries. Commercial foundries generate enormous amounts of data on their processes as a best practice for quality assurance to improve reliability and increase yield. The Foundry program collects and utilizes this data to generate and allow quantitative comparison of performance and security metrics in the design and test stage of the microelectronics lifecycle, thereby mitigating risk. Rapid Access to Microelectronic Prototypes (RAMP): This activity includes verifying the ability to fabricate classified and/or export-controlled designs in on-shore commercial foundries. Funding will establish multiple strategic partnerships with existing commercial domestic microelectronics design vendors and foundries to develop a data-driven, risk-based approach to supply chain protection and demonstrate the assured manufacture of advanced electronic components. This project demonstrates the technical means for protecting IP and obfuscating the final user function from the supply chain will be realized using personalization, programmability and software, following application specific integrated circuit (ASIC) manufacturing. Efforts are on-going to update International Traffic in Arms Regulations (ITAR) and Export Administration Regulations (EAR) policy in this area. Funding supports activities to enhance the export control regime so that it maintains or strengthens current protections while enabling access to commercial capabilities, products, and IP.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 907 / *Access to State-of-the-Art (SOTA) Microelectronics - Development*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024

Rapid Access to Microelectronic Prototypes – Commercial (RAMP-C):

This project enables the DoD and the defense industrial base to collaborate with the commercial microelectronics industry to increase prototype development, demonstration, and address the war fighter's need to maintain and modernize weapon systems as the threat landscape shifts.

This project enables T&AM program to demonstrate, by FY 2025, full access to U.S. commercial SOTA design, foundry, and advanced packaging capability and meet DoD's unique needs within two to three years for modernization, including for RH and photonics applications. The capability will reduce the time needed to replace microelectronics components that are generations behind the commercial sector, move away from off-shore sources for SOTA commercial integrated circuits, and accelerate the demonstration and adoption of quantifiable assurance methods throughout the microelectronics lifecycle and supply chain. Reducing the timeline by up to two years not only benefits export control and classified system protection, but also the requirements of Section 224 in FY 2020 National Defense Authorization Act for the DoD to implement commercial standards for the acquisition of assured microelectronics products.

FY 2023 Plans:
Foundry Access:

• Continue to enhance access to SOTA fabrication ecosystem.
• Maintain program of record access to assured fabrication flow and fund multi-project wafer production runs at multiple SOTA domestic sources.

RAMP:

Complete the RAMP prototype and establish a RAMP system operator that will allow Government acquisition programs access to a secure design and cloud capability. The RAMP operational platform will:
• Continue to enhance secure design and cloud capability with new tools/techniques.
• Continue to utilize traceability and provenance mechanisms to verify and vet data sources in a zero-trust architecture and enhance ability of DoD/Defense Industrial Base to design SOTA microelectronics.
• Continue to quantify transition of designs to prototypes and programs of record and maintain persistence in lifecycle assurance data and intellectual property.

RAMP-C:

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 907 / *Access to State-of-the-Art (SOTA) Microelectronics - Development*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Continue to develop and mature a leading edge (<7nm), commercially-viable, U.S.-located domestic wafer foundry ecosystem access capability on the order of of > 26,000 wafer starts per month for design and manufacturing of quantifiably assured, dual-use commercial and DoD custom integrated circuits. This project will enable the following: • Access to a SOTA U.S. wafer foundry. • Access to commercial and critical quantifiably assured dual-use COTS integrated circuits. • Access to capabilities necessary to develop quantifiably assured custom DoD integrated circuits. • The jump-start in commercial use of the domestic foundry by key U.S. fabless companies. • Establishment of a viable design ecosystem including access to 3rd party design modules. • The reduction in the cost differential of building a U.S.-located wafer foundry verses off-shore. • The enablement of commercially-supported and enduring U.S. logic foundry capability. Design Acceleration and Transition: Accelerate DoD access to a microelectronics quantifiable assured (MQA) design and manufacturing ecosystem leveraging commercial capabilities for long-term sustainability. The following activities could be included: • Expand and accelerate Development and insertion of IP for ASIC and Chiplet security including authentication, Firmware Attestation and Decryption and SOC Interface encryption. Investments include: Providing MPW runs, EDA, simulation, and 1.) emulation tools to small business to lower barriers to access and stimulate innovation with favorable DoD intellectual properties rights and agreements 2.) Developing IP capture models and repositories to document and maintain DoD funded IP to be made accessible to future DoD programs 3.) Further maturation and demonstration of ME Commons deliverables • Development and insertion of tools and techniques for Protect of silicon IP during manufacturing and test phase, including multi-chip package (MCP) with full lifecycle MQA demonstration and maturation. • Demonstration of using COTS parts in more critical DoD applications utilizing MQA ant the inherent personalization features of the COTS device. • Accelerate MQA for DoD utilizing pilot programs for maturation of process, procedures and required technical capabilities for threat mitigation. This includes development of next generation ideas to increase the effectiveness of mitigations implemented in future updates to the LoA-1, LoA-2, or LoA-3 MQA standards.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 907 / *Access to State-of-the-Art (SOTA) Microelectronics - Development*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
• Accelerate the development and transition of secure ASIC design for DoD unique applications			
FY 2024 Plans: Foundry Access: • Continue to enhance access to SOTA fabrication ecosystem. • Maintain program of record access to assured fabrication flow and fund multi-project wafer production runs at multiple SOTA domestic sources. RAMP: Continue to mature the RAMP operational capability that will: • Continue to enhance secure design and cloud capability with new tools/techniques. • Continue to utilize traceability and provenance mechanisms to verify and vet data sources in a zero-trust architecture and enhance ability of DoD/Defense Industrial Base to design SOTA microelectronics. • Continue to quantify transition of designs to prototypes and programs of record and maintain persistence in lifecycle assurance data and intellectual property. • Continue to demonstrate rapid transition of DoD-relevant field programmable gate array-based capabilities to structured ASICs, with security capabilities to protect DoD intellectual property (IP) during manufacture. RAMP-C: A leading edge (<7nm), commercially-viable, U.S.-located domestic wafer foundry ecosystem access is established. The ecosystem will have capability on the order of > 26,000 wafer starts per month for design and manufacturing of quantifiably assured, dual-use commercial and DoD custom integrated circuits. This project will enable the following: • Access to a SOTA U.S. wafer foundry. • Access to commercial and critical quantifiably assured dual-use COTS integrated circuits. • Access to capabilities necessary to develop quantifiably assured custom DoD integrated circuits. • The jump-start in commercial use of the domestic foundry by key U.S. fabless companies. • Establishment of a viable design ecosystem including access to 3rd party design modules. • The reduction in the cost differential of building a U.S.-located wafer foundry verses off-shore. • The enablement of commercially-supported and enduring U.S. logic foundry capability. • Leverage the expertise of commercial industry to develop and demonstrate novel capabilities for design of State-of-the Art (SOTA) with assurance.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 907 / *Access to State-of-the-Art (SOTA) Microelectronics - Development*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Design Acceleration and Transition: Continue to accelerate DoD access to a microelectronics quantifiable assured (MQA) design and manufacturing ecosystem leveraging commercial capabilities for long-term sustainability. The following activities could be included: • Continue to expand and accelerate Development and insertion of IP for ASIC and Chiplet security including authentication, Firmware Attestation and Decryption and SOC Interface encryption. • Continue to develop and insert tools and techniques for Protect of silicon IP during manufacturing and test phase, including multi-chip package (MCP) with full lifecycle MQA demonstration and maturation. • Continue demonstration of using COTS parts in more critical DoD applications utilizing MQA ant the inherent personalization features of the COTS device. • Continue to accelerate MQA for DoD utilizing pilot programs for maturation of process, procedures and required technical capabilities for threat mitigation. This includes development of next generation ideas to increase the effectiveness of mitigations implemented in future updates to the LoA-1, LoA-2, or LoA-3 MQA standards. • Continue to accelerate the development and transition of secure ASIC design for DoD unique applications. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Increase is due to continued development of the RAMP and RAMP-C programs and expansion of funding for design acceleration and transition for emerging capabilities with DoD applications.			
Accomplishments/Planned Programs Subtotals	303.724	286.658	311.120

	FY 2022	FY 2023
Congressional Add: Design Acceleration	100.000	-
FY 2022 Accomplishments: Accelerated DoD access to a microelectronics quantifiable assured (MQA) design and manufacturing ecosystem leveraging commercial capabilities for long-term sustainability.		
Congressional Adds Subtotals	100.000	-

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604294D8Z / *Trusted and Assured Microelectronics*	Project (Number/Name) 907 / *Access to State-of-the-Art (SOTA) Microelectronics - Development*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Access to SOTA Microelectronics - Development	MIPR	Defense Advanced Research Projects Agency, Air Force, Army, Navy, National Security Agency : Various	1,480.946	403.724	Mar 2022	286.658	Mar 2023	311.120	Mar 2024	-		311.120	Continuing	Continuing	-
		Subtotal	1,480.946	403.724		286.658		311.120		-		311.120	Continuing	Continuing	N/A

	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	1,480.946	403.724		286.658		311.120		-		311.120	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 907 / *Access to State-of-the-Art (SOTA) Microelectronics - Development*

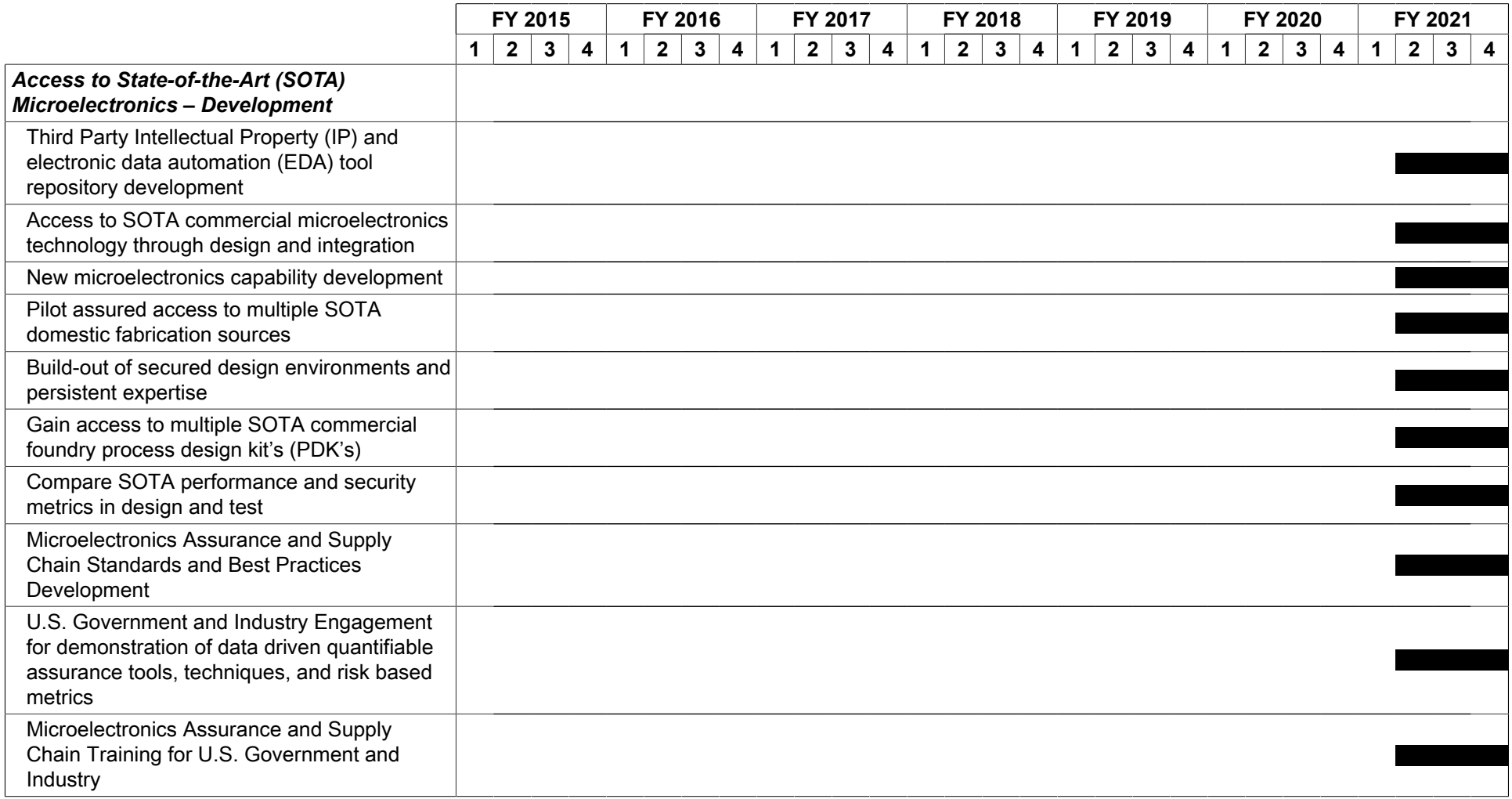
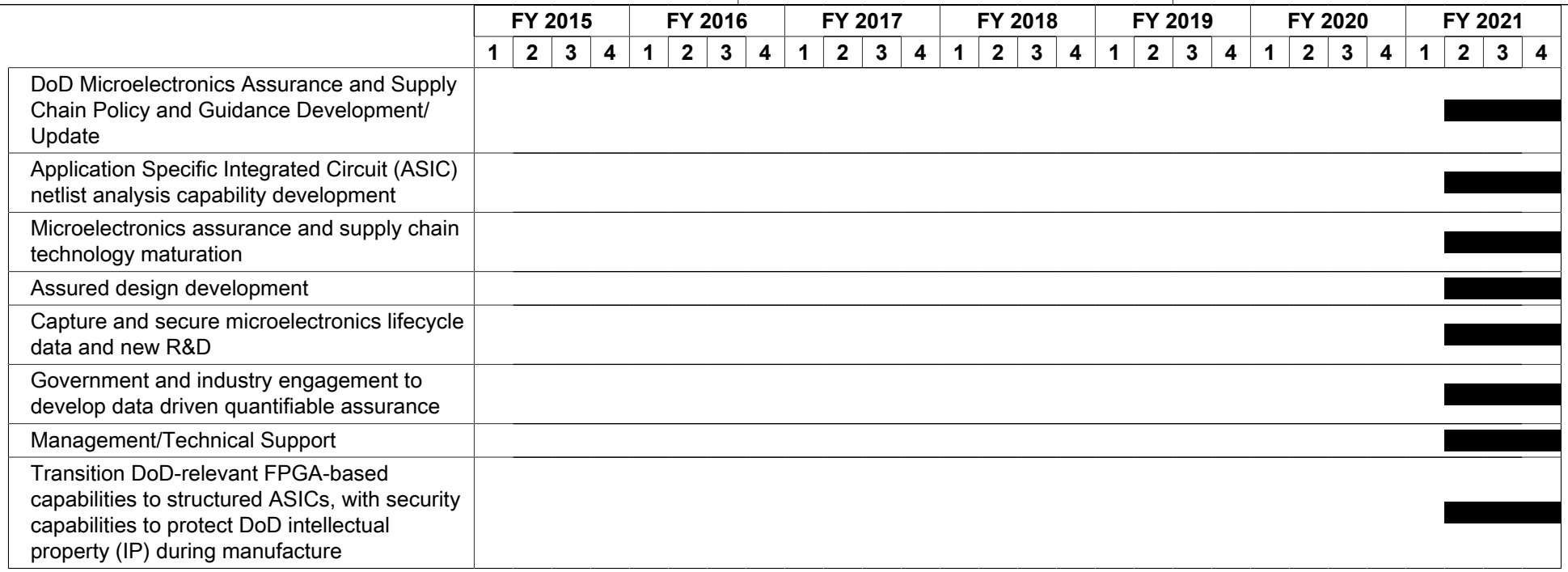


Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 907 / *Access to State-of-the-Art (SOTA) Microelectronics - Development*



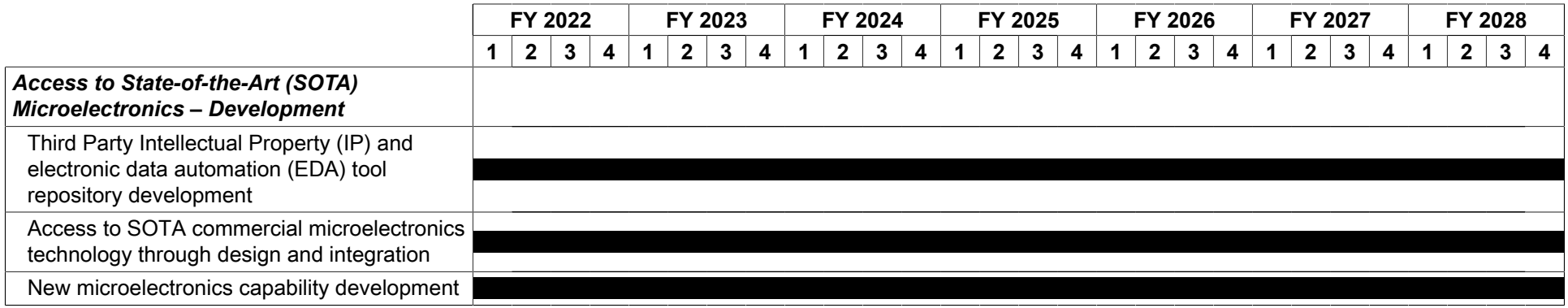


Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 907 / *Access to State-of-the-Art (SOTA) Microelectronics - Development*

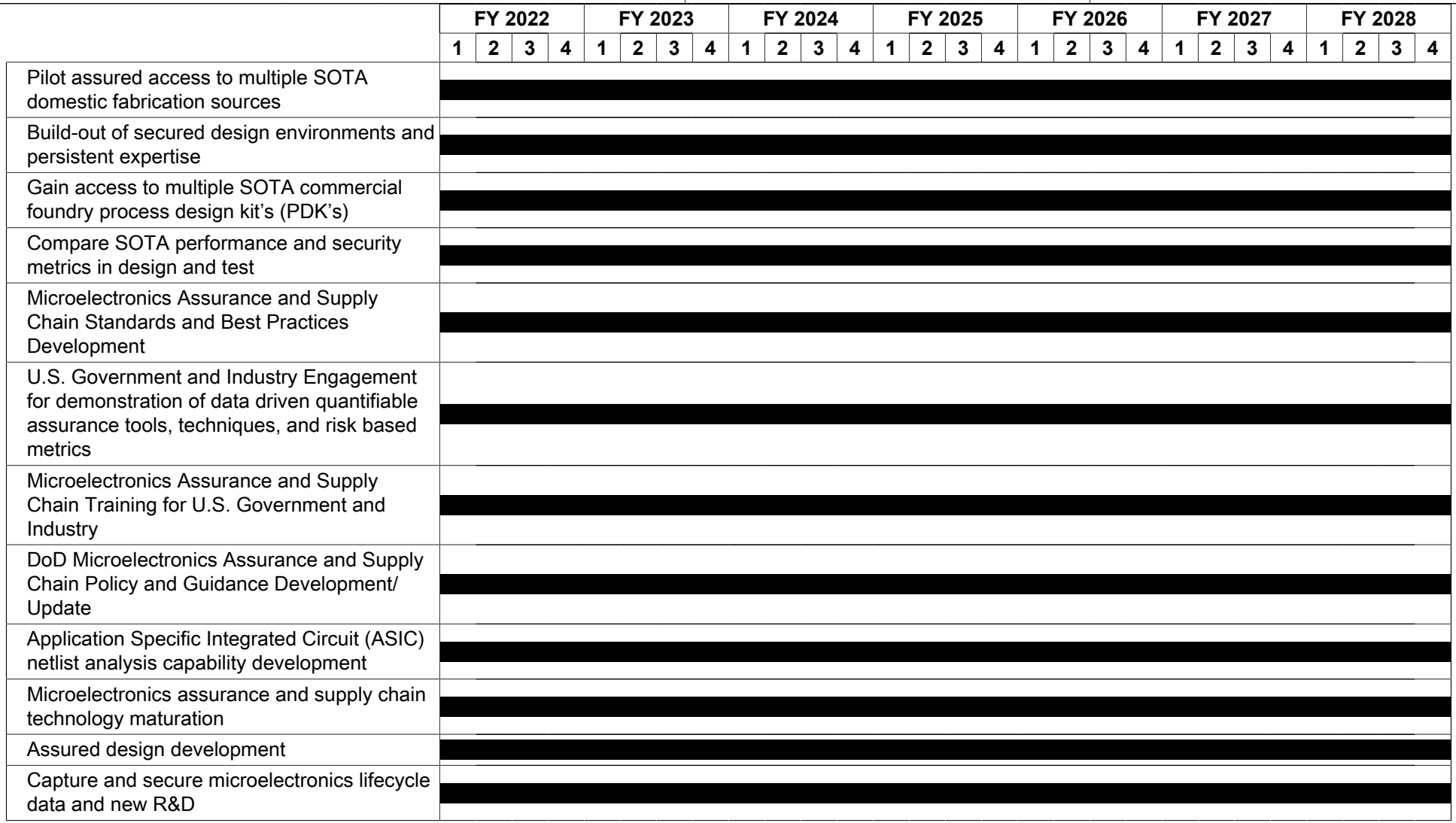


Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 907 / *Access to State-of-the-Art (SOTA) Microelectronics - Development*

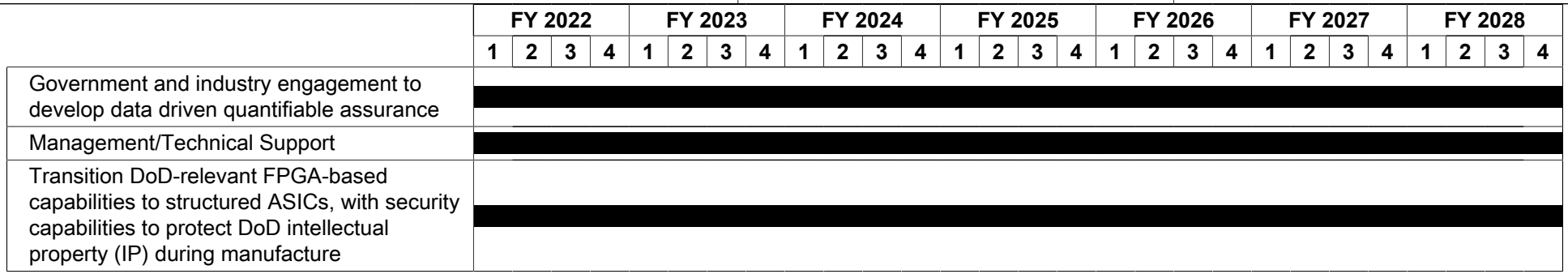


Exhibit R-4A, RDT&E Schedule Details: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 907 / *Access to State-of-the-Art (SOTA) Microelectronics - Development*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Access to State-of-the-Art (SOTA) Microelectronics – Development				
Third Party Intellectual Property (IP) and electronic data automation (EDA) tool repository development	2	2021	4	2028
Access to SOTA commercial microelectronics technology through design and integration	2	2021	4	2028
New microelectronics capability development	2	2021	4	2028
Pilot assured access to multiple SOTA domestic fabrication sources	2	2021	4	2028
Build-out of secured design environments and persistent expertise	2	2021	4	2028
Gain access to multiple SOTA commercial foundry process design kit’s (PDK’s)	2	2021	4	2028
Compare SOTA performance and security metrics in design and test	2	2021	4	2028
Microelectronics Assurance and Supply Chain Standards and Best Practices Development	2	2021	4	2028
U.S. Government and Industry Engagement for demonstration of data driven quantifiable assurance tools, techniques, and risk based metrics	2	2021	4	2028
Microelectronics Assurance and Supply Chain Training for U.S. Government and Industry	2	2021	4	2028
DoD Microelectronics Assurance and Supply Chain Policy and Guidance Development/Update	2	2021	4	2028
Application Specific Integrated Circuit (ASIC) netlist analysis capability development	2	2021	4	2028
Microelectronics assurance and supply chain technology maturation	2	2021	4	2028
Assured design development	2	2021	4	2028
Capture and secure microelectronics lifecycle data and new R&D	2	2021	4	2028
Government and industry engagement to develop data driven quantifiable assurance	2	2021	4	2028
Management/Technical Support	2	2021	4	2028

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 907 / *Access to State-of-the-Art (SOTA) Microelectronics - Development*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Transition DoD-relevant FPGA-based capabilities to structured ASICs, with security capabilities to protect DoD intellectual property (IP) during manufacture	2	2021	4	2028

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604294D8Z / *Trusted and Assured Microelectronics*	Project (Number/Name) 908 / *Access to Advanced Packaging and Testing - Development*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
908: *Access to Advanced Packaging and Testing - Development*	81.438	72.343	56.118	90.199	-	90.199	94.129	92.660	64.766	66.127	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project will leverage existing commercially available expertise and capability to deliver self-sustaining digital and Radio Frequency (RF) state-of-the-art (SOTA) heterogeneous integrated packaging (SHIP), assembly, and test capability.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Access to Advanced Packaging and Testing - Development	72.343	56.118	90.199

Description: This project will utilize specialized DoD chiplets (small specialized die) in a heterogeneous integrated (HI) assembly, allowing the DoD to accelerate adoption of the most advanced microelectronics available. Working with world-class industrial partners will provide early access to proprietary information related to these technologies, giving DoD an asymmetrical advantage.

This project will deliver an on-shore microelectronic device package design, assembly, and test capability. It will provide access to dual-use SOTA heterogeneous packaged microelectronics and manufacturing processes. It will enable personalization of, and customization for supporting DoD programs. It will enable a revolutionary leap in system performance that will greatly reduce size, weight and power (SWaP) by incorporating the immense advances in SOTA commercial off the shelf (COTS) processing technologies, such as field programmable gate arrays (FPGAs), microprocessors, and Graphic Processing Units (GPUs).

FY 2023 Plans:

Establishment of a SOTA packaging and test facility capable of packaging, testing and personalization of integrated circuits in which the fully assembled and operationally functional MCP can contain ITAR regulated and/or classified information. Expand and accelerate development:

- Continue to collaborate with the Defense Industrial Base for prototype design requirements and device transition planning.
- Implementation of post-assembly personalization and operational test capabilities.
- Implement Multi-Chip Package (MCP) finish capability for additional security to protect DoD specific IP and CPI in the fully functional MCP.
- Accelerate DoD access to advanced packaging capability.
- Enable re-shoring mature manufacturing, assembly, and test from commercial product lines such as high-volume flip-chip capabilities.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 908 / *Access to Advanced Packaging and Testing - Development*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
• Enable access to advanced RF packages by providing a full suite of design tools, advanced packaging platforms, and a wide selection of material choices. • Accelerate DIB and DoD maturation leveraging commercial design using developed PDKs and ADKs to design custom devices. • Accelerate DoD access to SOTA MCP products utilizing commercial packaging, assembly, and test. • Create a catalog of designs, die, chiplets, package types, etc. • Ensure Reuse and Standardization for sustainability and costs. • Accelerate and expand adoption and use in military systems to design, packaging, and assembly as a service. • Continue to enhance secure design and packaging capability with new tools/techniques. • Continued development of secure, accessible, and cost effective SOTA heterogeneous integration design, assembly and test capability. • Continue to develop advanced HI prototype platforms for productization and qualification test. • Develop packaging processes that source materials from domestic microelectronics ecosystem. • Prototype microelectronics quantitative assurance guidance for microelectronics heterogeneous integrated packaging.			
FY 2024 Plans: Continue the establishment of a SOTA packaging and test facility capable of packaging, testing and personalization of integrated circuits in which the fully assembled and operationally functional MCP can contain ITAR regulated and/or classified information. Continue to expand and accelerate development: • Continue to collaborate with the Defense Industrial Base for prototype design requirements and device transition planning. • Continue Implementation of post-assembly personalization and operational test capabilities. • Continue to Implement MPC finish capability for additional security to protect DoD specific IP and CPI in the fully functional MCP. • Continue to accelerate access. • Continue to Enable re-shoring mature manufacturing, assembly, and test from commercial product lines such as high-volume flip-chip capabilities. • Continue to enable access to advanced RF packages by providing a full suite of design tools, advanced packaging platforms, and a wide selection of material choices. • Continue to Accelerate DIB and DoD maturation leveraging commercial design using developed PDKs and ADKs to design custom devices. • Continue to Accelerate DoD access to SOTA MCP products utilizing commercial packaging, assembly, and test. • Continue to create a catalog of designs, die, chiplets, package types, etc. • Continue to Ensure Reuse and Standardization for sustainability and costs. • Continue to Accelerate and expand adoption & Use in military systems to design, packaging, and assembly as a service. • Continue to enhance secure design and packaging capability with new tools/techniques.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 908 / *Access to Advanced Packaging and Testing - Development*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
• Continued development of secure, accessible, and cost effective SOTA heterogeneous integration design, assembly and test capability. • Continue to develop Advanced HI Prototype Platforms for Productization and Qualification test. • Continue to develop, and initiate qualifications of, packaging processes that source materials from domestic microelectronics ecosystem. • Continue to prototype microelectronics quantitative assurance guidance for microelectronics heterogeneous integrated packaging. • Mature readiness of advanced HI packaging processes for initial production capability. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The increase of $34.081 million between FY 2023 and FY 2024 will mature readiness for initial production in an on-shore microelectronic device package design, assembly, and test capability, providing access to dual use SOTA heterogeneous packaged microelectronics and manufacturing processes and enabling customization for supporting DoD programs.			
Accomplishments/Planned Programs Subtotals	72.343	56.118	90.199

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 908 / *Access to Advanced Packaging and Testing - Development*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Access to Advanced Packaging and Testing - Development	MIPR	Defense Advanced Research Projects Agency, Air Force, Army, Navy, National Security Agency : Various	81.438	72.343	Mar 2022	56.118	Mar 2023	90.199	Mar 2024	-		90.199	Continuing	Continuing	-
		Subtotal	81.438	72.343		56.118		90.199		-		90.199	Continuing	Continuing	N/A

	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	81.438	72.343		56.118		90.199		-		90.199	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 908 / *Access to Advanced Packaging and Testing - Development*

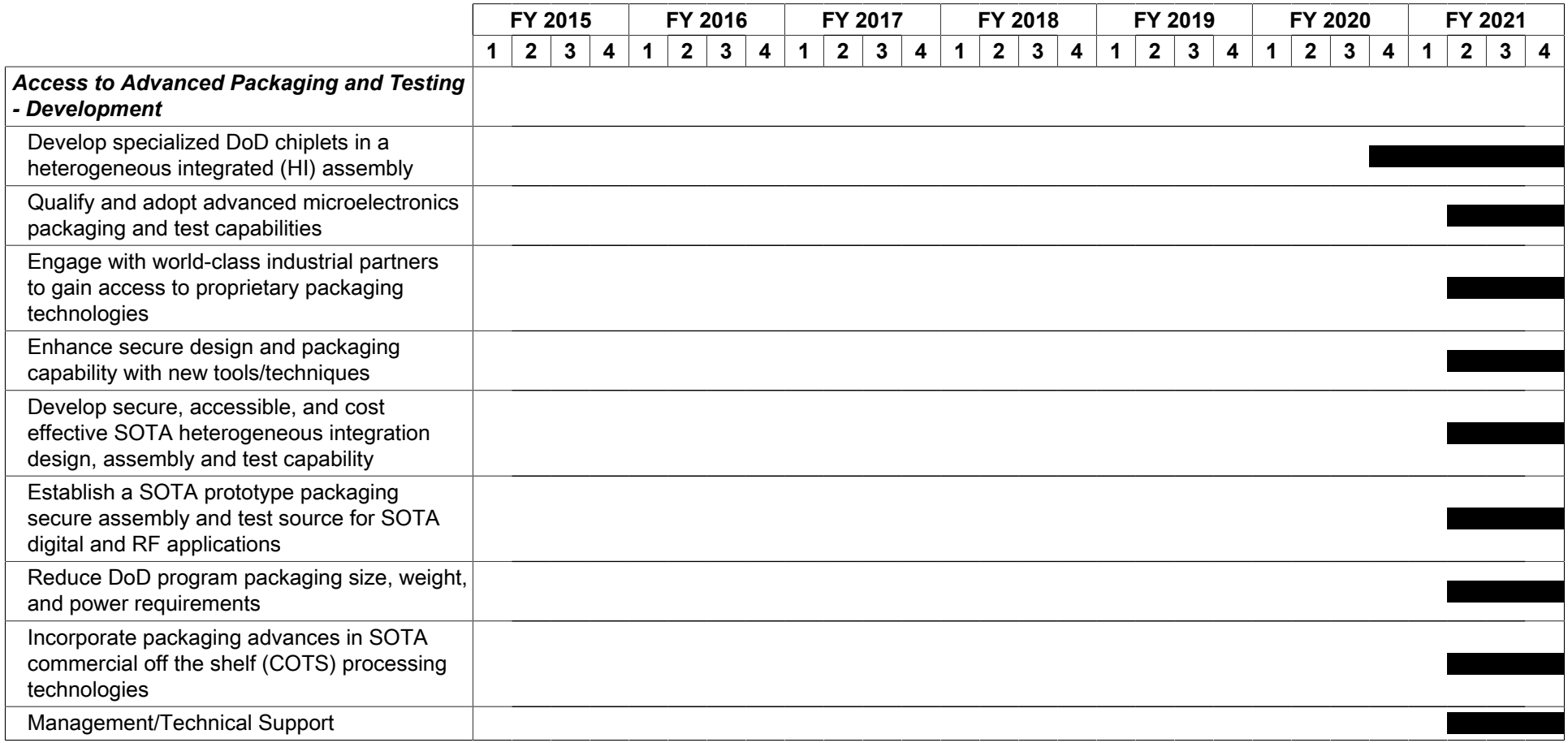


Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 908 / *Access to Advanced Packaging and Testing - Development*

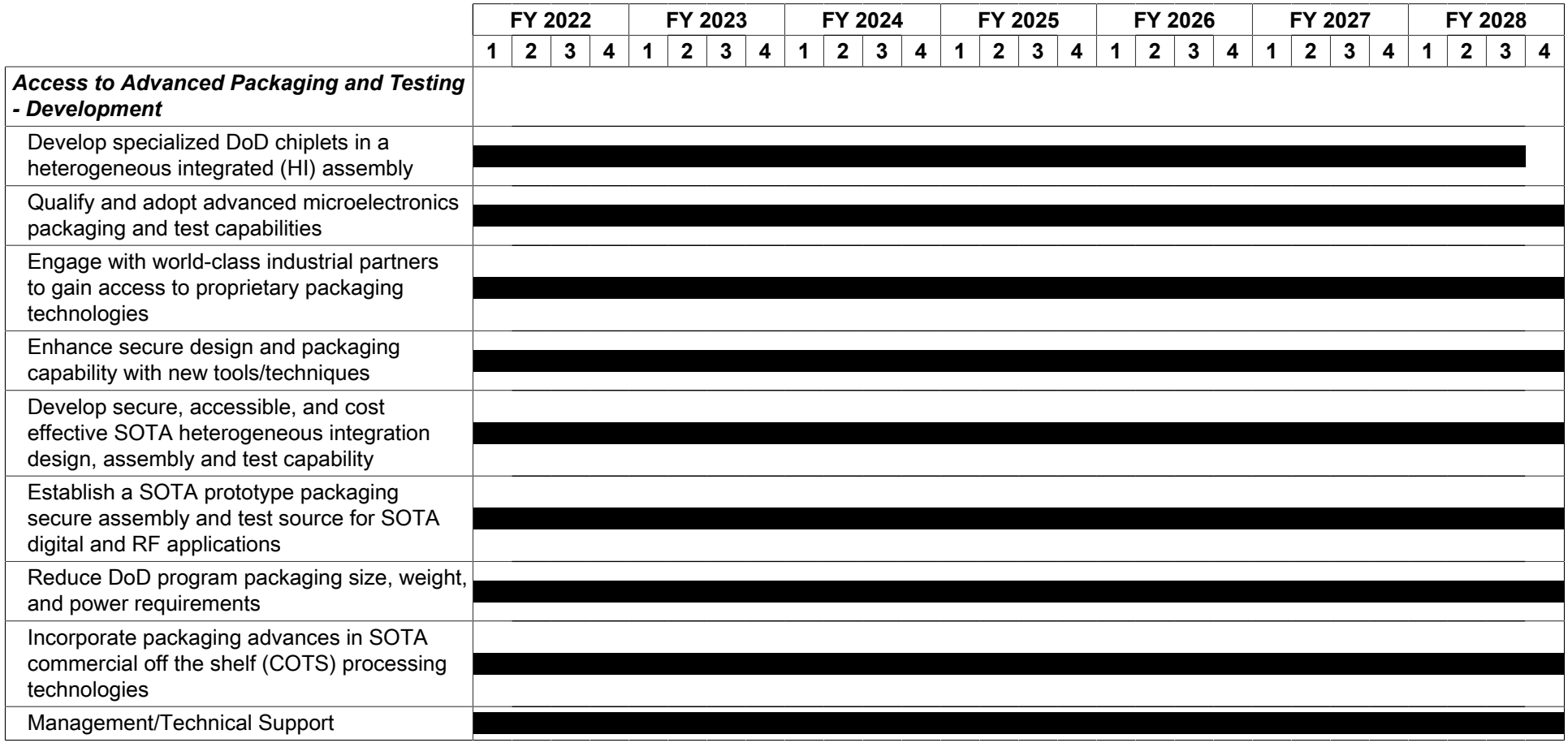


Exhibit R-4A, RDT&E Schedule Details: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 908 / *Access to Advanced Packaging and Testing - Development*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Access to Advanced Packaging and Testing - Development				
Develop specialized DoD chiplets in a heterogeneous integrated (HI) assembly	4	2020	3	2028
Qualify and adopt advanced microelectronics packaging and test capabilities	2	2021	4	2028
Engage with world-class industrial partners to gain access to proprietary packaging technologies	2	2021	4	2028
Enhance secure design and packaging capability with new tools/techniques	2	2021	4	2028
Develop secure, accessible, and cost effective SOTA heterogeneous integration design, assembly and test capability	2	2021	4	2028
Establish a SOTA prototype packaging secure assembly and test source for SOTA digital and RF applications	2	2021	4	2028
Reduce DoD program packaging size, weight, and power requirements	2	2021	4	2028
Incorporate packaging advances in SOTA commercial off the shelf (COTS) processing technologies	2	2021	4	2028
Management/Technical Support	2	2021	4	2028

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604294D8Z / *Trusted and Assured Microelectronics*	Project (Number/Name) 911 / *Address DoD Unique Needs - Radiation Hardening and non-CMOS*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
911: *Address DoD Unique Needs - Radiation Hardening and non-CMOS*	50.500	169.072	180.003	279.416	-	279.416	298.759	231.083	170.770	143.404	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project addresses the dual problems of commanding only a small market share while requiring an expansive range of unique microelectronics needs, from boutique and legacy components to state-of-the-art (SOTA) technologies. The Government must sustain specialty suppliers, given their criticality to national security. In particular, DoD needs access to a diverse microelectronics ecosystem to develop and acquire the application specific integrated circuits (ASICs) and personalized commercial off the shelf (COTS) components required for military radiation hardened and radio frequency (RF) and optoelectronic (OE) needs.

The Department frequently relies on commercial suppliers to optimize performance and reduce costs for sophisticated weapon system and secure network functionality. It is critical that DoD has reliable access to subject matter expertise, technology, and manufacturing.

In addition to Rad Hard needs, the DoD requires access to RF and opto-electronic materials, foundries, and packaging facilities, in order to enable next generation sensors and communications. The DoD must leverage state-of-the-art microelectronic technologies driven by mega-trends such as 5G wireless and datacenters in order to combat emerging threats and deliver overmatch technology to the warfighter. At the same time, the DoD must fill the gaps which are left unaddressed by these dual-use mega-trends to satisfy mission requirements. By partnering in the maturation of state-of-the-art material sources, foundries, and packaging facilities, the DoD is able to develop the ability to tailor the dual use technology towards unique DoD applications and encourage open access design, which stimulates innovation and drives affordability. Additionally, critical investments must be made in the domestic supply chains supporting both RF Gallium Nitride (GaN) and integrated photonics in order to maintain the integrity and security of the Defense Industrial Base.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Address DoD Unique Needs Especially - Radiation Hardening and non-CMOS - Development	82.572	103.503	279.416
Description: Government-unique trusted design and manufacturing flows have been developed to enable a tier of trust for select ASIC parts; however, this approach addresses only a small subset of DoD microelectronics requirements (e.g., processors, memory, microcontrollers, field programmable gate arrays (FPGAs), and radiation-tolerant processors). DoD will partner with the intelligence community, the Department of Energy, and the National Aeronautics and Space Administration to develop radiation hardened components that permit systems to operate in space and other harsh environments. state-of-the-practice (SOTP) and state-of-the-art (SOTA) technologies will be characterized and developed in support of Radiation Hardened By Process (RHBP) and Radiation Hardened By Design (RHBD) activities in support DoD modernization			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 911 / *Address DoD Unique Needs - Radiation Hardening and non-CMOS*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
programs with radiation hardened requirements. A similar situation exists for radio frequency and optical applications. These two applications reflect only a small market with unique costs and specifications, which does not inherently create incentive for industrial investment. Within RF and opto-electronics, investments will be made in RF GaN and integrated photonic material sources, foundries, and packaging facilities in order to enable low-size, weight, and power devices which broadly access the millimeter wave spectrum, while providing high-bandwidth data transmission. ***FY 2023 Plans:*** • Continue development of RHBD techniques in SOTA technologies with validated PDKs • Transition developed RH technologies into space and strategic programs. • Continue to mature large-diameter Nitrogen-Polar RF GaN material source and off-axis Silicon Carbide substrate. Foundries will assess epiwafers and provide feedback critical to baselining the N-Polar recipe. • Continue to mature towards MRL-6 multiple state-of-the-art RF GaN foundries offering open access to millimeter wave device design and advanced interconnect services. • Continue to mature towards MRL-6 multiple co-packaged optical chiplets offering high-bandwidth data transfer capabilities. • Continue to mature towards MRL-5 advanced semiconductor material production and baseline for insertion into multiple millimeter wave foundries. • Act upon industrial base assessment of the integrated photonics foundry ecosystem and mature strategic components of the domestic integrated photonics supply chain. • Demonstrate access to state-of-the-art RF GaN and integrated photonic foundries via advanced prototype demonstrators. • Mature RHBP techniques in a SOTP foundry. • Establish the first domestic production source of N-Polar GaN material, and demonstrates production of mmW devices with maximum RF power and efficiency. • Demonstrate design and process capability with radiation hard by design tested chip, TRL-6. • Two new sources of radiation hard by design enabling onboard processing capability with 100x capability improvement. • Establish a mature portfolio of domestic RF GaN foundries, which offers open access to millimeter wave technology and product transition via the DoD Advanced Packaging ecosystem. • Demonstrate advanced integrated photonics prototypes via secure access to state-of-the-art domestic foundries. • Initiate characterization, development, and demonstration of space and strategic radiation hard microelectronics technology in support of DoD modernization efforts. ***FY 2024 Plans:*** Planned activities are as follows:			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 911 / *Address DoD Unique Needs - Radiation Hardening and non-CMOS*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
• Continue development of RHBD techniques in SOTA technologies with validated radiation aware PDKs and radiation hardened cell libraries • Transition developed RH technologies into space and strategic programs. • Begin to mature towards MRL-7 multiple state-of-the-art RF GaN foundries offering open access to millimeter wave device design and advanced interconnect services. • Continue to mature towards MRL-6 multiple co-packaged optical chiplets offering high-bandwidth data transfer capabilities. • Continue to mature towards MRL-5 advanced semiconductor material production and baseline for insertion into multiple millimeter wave foundries. • Establish workforce development program for RF, power, and photonics. • Demonstrate access to state-of-the-art RF GaN and integrated photonic foundries via advanced prototype demonstrators. • Continue to mature RHBP techniques in a SOTP foundry. • Increase capacity for RHBD technologies to support additional DoD programs. • Add second contractor to development effort for a strategic radiation-hardened Field Programmable Gate Array (FPGA) capability for DoD • Increase funding for Government Radiation Hardened System-on-a- Chip (GRADSoC) Phases 2 and 3 • Maintain the first domestic production source of N-Polar GaN material, and demonstrates production of mmW devices with maximum RF power and efficiency. • Demonstrate design and process capability with radiation hard by design tested chip, TRL-6. • Two new sources of radiation hard by design enabling onboard processing capability with 100x capability improvement. • Maintain a mature portfolio of domestic RF GaN foundries, which offers open access to millimeter wave technology and product transition via the DoD Advanced Packaging ecosystem. • Demonstrate advanced integrated photonics prototypes via secure access to state-of-the-art domestic foundries. • Initiate development of next generation RF GaN power technologies to increase RF power efficiency and dramatically improve thermal efficiency and management, decreasing the power load on DoD platforms. These technical advances will give superior performance in a host of critical areas including C4ISR and weapons engagement with improved probability of kill for DoD. • Initiate development of next generation RF GaN prototypes with improved performance at an affordable cost for drop in Line Replaceable Units (LRUs) in existing systems potentially without major architectural and structural redesign. • Leverage commercial developments in next generation RF GaN power technologies to adapt for DoD applications. • Initiate effort to transition emerging memory architectures for AI applications, benefiting existing Programs of Record and emerging DoD electronics systems. • Develop emerging memory architectures for future DoD edge applications for AI, with more severe power constraints as AI models grow in size and the need for rapid response means always-on is required. • Develop a two level memory (2LM) system where weights are stored in persistent memory to substantially reduce leakage power and allow larger AI models.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 911 / *Address DoD Unique Needs - Radiation Hardening and non-CMOS*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
• Initiate development of a custom intelligent data cache to enable rapid innovation for DoD workloads, freed from the memory access assumptions driven by the commercial market. • Initiate development of high voltage silicon carbide (SiC) technology for dense power delivery and high power (high voltage & high current) devices in ultra-compact, reliable, and efficient form factors. Successful development of this technology will enable improvements in output & efficiency (better power conversion with less loss for use in ship-to-shore power, DC transmission, and other integrated power systems), speed (reducing charging time for vehicles, aircraft, and other platforms from hours to minutes), and size (reducing size of high-voltage converters, drives and substations to a fraction of current volumes). • Develop capability to deliver of thick epitaxial SiC wafers at scale to enable high voltage, high current device development. • Research techniques to optimize advanced packaging design and testing for high power SiC technology. • Lay groundwork for device integration of high power SiC technology, including working with application and platform developers to integrate into higher level assemblies and mission-critical systems that require robust, energy-dense solid state power switching solutions. Continued characterization, development, and demonstration of space and strategic radiation hard microelectronics technology in support of DoD modernization efforts. These investments fund projects in the following rad hard technology areas: radiation hardened by process (RHBP) and radiation hardened by design (RHBD) to support space and strategic ASIC requirements, standalone radiation hardened components for cross -service common parts needs, as well as lab modernization in support independent validation and verification of rad hard technology. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Increase of $172.413 million between FY 2023 and FY 2024 will fund significant new initiatives for developing next generation RF GaN power technologies, emerging memory architectures, and high power silicon carbide (SiC) technology, in addition to additional increased capacity for the RHBD effort, RH FPGA, GRADSoC, and other strategic RH microelectronics efforts.			
Accomplishments/Planned Programs Subtotals	82.572	103.503	279.416

	FY 2022	FY 2023
Congressional Add: GaN and GaAs RFIC technology	25.000	25.000
FY 2022 Accomplishments: • Demonstrate production of SOTA RF GaN devices and advanced interconnect components in a production relevant environment. • Demonstrate millimeter wave device designs/IP via open access to SOTA RF GaN nodes.		
FY 2023 Plans: • Continue production demonstration of SOTA RF GaN devices and advanced interconnect components in a production relevant environment.		

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 911 / *Address DoD Unique Needs - Radiation Hardening and non-CMOS*

	FY 2022	FY 2023
• Continue demonstration of millimeter wave device designs/IP via open access to SOTA RF GaN nodes.		
Congressional Add: Radiation-Hardened Fully-Depleted Silicon-on-Insulator Microelectronics ***FY 2022 Accomplishments:*** Complementary Metal Oxide Semiconductor (CMOS) Silicon On Insulator (SOI) technology maturation, demonstration, and qualification for use in Department of Defense Space and Strategic system applications to include radiation aware Process Development Kits (PDKs), radiation hardened cell libraries, device and circuit modeling and simulation, hardware demonstration and environmental test in DoD relevant radiation environments. ***FY 2023 Plans:*** Complementary Metal Oxide Semiconductor (CMOS) Silicon On Insulator (SOI) technology maturation, demonstration, and qualification for use in Department of Defense Space and Strategic system applications to include radiation aware Process Development Kits (PDKs), radiation hardened cell libraries, device and circuit modeling and simulation, hardware demonstration and environmental test in DoD relevant radiation environments.	18.000	38.000
Congressional Add: Advanced Node Radiation-Hardened Fully-Depleted Silicon-on-Insulator Technology ***FY 2022 Accomplishments:*** Advanced Complementary Metal Oxide Semiconductor (CMOS) Silicon On Insulator (SOI) research and development, technology maturation, and prototype demonstration for use in Department of Defense Space and Strategic system applications to include radiation aware Process Development Kits (PDKs), radiation hardened cell libraries, device and circuit modeling and simulation, hardware demonstration and environmental test in DoD relevant environments. Demonstrations to include use of advanced commercial CMOS SOI technology for use in hardened configurable logic and system in package prototypes. Development of design intellectual property (IP) generation models for critical semiconductor industrial base sustainment and growth, IP affordability, and asymmetric advantage for the DoD. ***FY 2023 Plans:*** Advanced Complementary Metal Oxide Semiconductor (CMOS) Silicon On Insulator (SOI) research and development, technology maturation, and prototype demonstration for use in Department of Defense Space and Strategic system applications to include radiation aware Process Development Kits (PDKs), radiation hardened cell libraries, device and circuit modeling and simulation, hardware demonstration and environmental test in DoD relevant environments. Demonstrations to include use of advanced commercial CMOS SOI technology for use in hardened configurable logic and system in package prototypes. Development of design intellectual property (IP) generation models for critical semiconductor industrial base sustainment and growth, IP affordability, and asymmetric advantage for the DoD.	43.500	10.000
Congressional Add: Magnetoresistive Random Access Memory (MRAM)	-	3.500

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 911 / *Address DoD Unique Needs - Radiation Hardening and non-CMOS*

	FY 2022	FY 2023
FY 2023 Plans: Magnetoresistive random access memory (or MRAM) technology has several aspects that make it attractive for DoD use, including a high inherent tolerance to radiation and nearly unlimited read and write endurance. Activities include: • Foster industrial competition of this technology • Accelerate ongoing development activities for MRAM, with a goal of creating more advanced and capable memory technology than is currently available.		
Congressional Adds Subtotals	86.500	76.500

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 911 / *Address DoD Unique Needs - Radiation Hardening and non-CMOS*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Address DoD Unique Needs - Development	MIPR	Defense Advanced Research Projects Agency, Air Force, Army, Navy, National Security Agency : Various	50.500	169.072	Mar 2022	180.003	Mar 2023	279.416	Mar 2024	-		279.416	Continuing	Continuing	-
		Subtotal	50.500	169.072		180.003		279.416		-		279.416	Continuing	Continuing	N/A

	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	50.500	169.072		180.003		279.416		-		279.416	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 911 / *Address DoD Unique Needs - Radiation Hardening and non-CMOS*

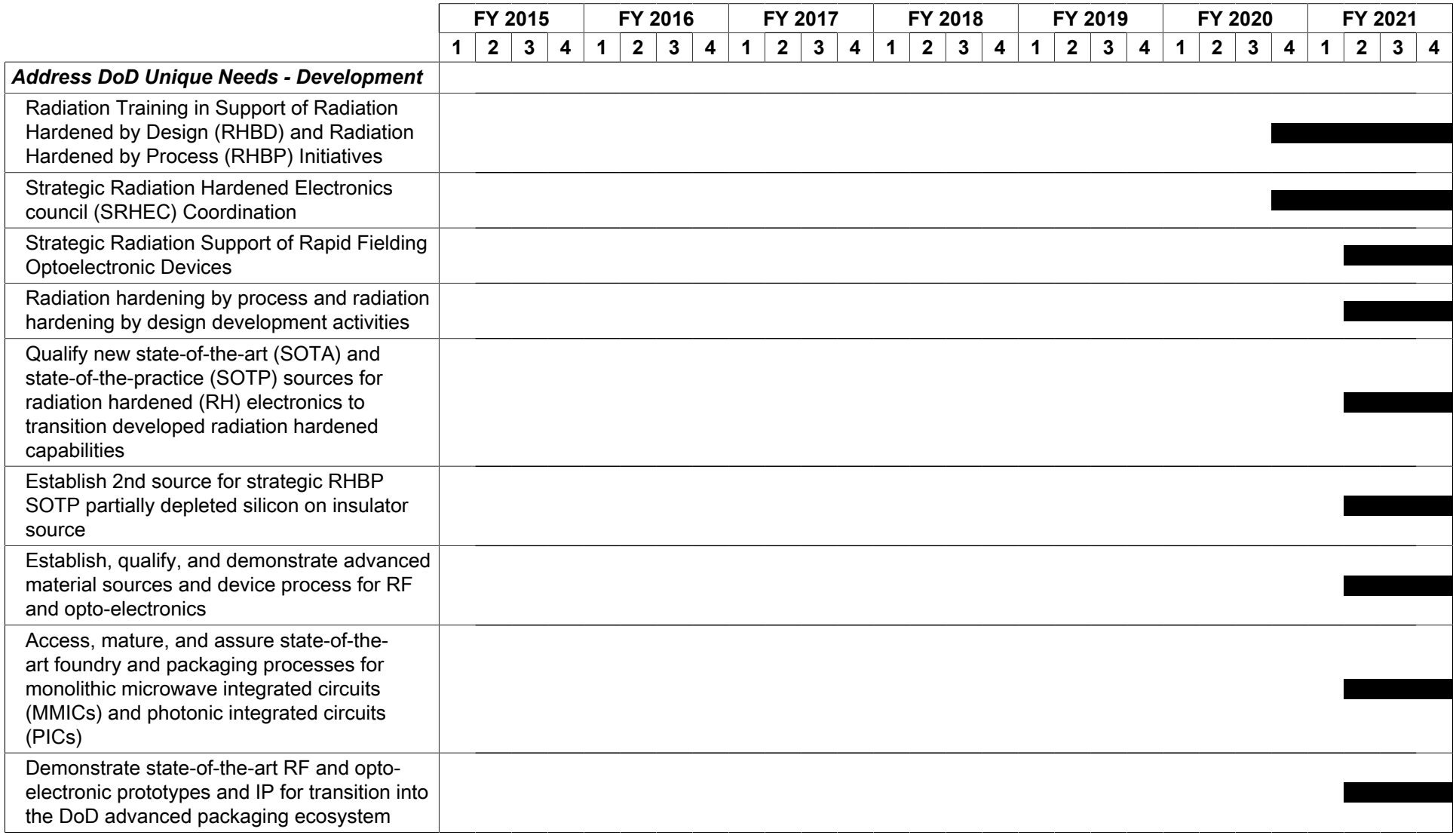


Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604294D8Z / *Trusted and Assured Micr oelectronics*	**Project (Number/Name)** 911 / *Address DoD Unique Needs - Radiation Hardening and non-CMOS*

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Management/Technical Support																										■	■	■

	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Address DoD Unique Needs - Development																												
Radiation Training in Support of Radiation Hardened by Design (RHBD) and Radiation Hardened by Process (RHBP) Initiatives	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Strategic Radiation Hardened Electronics council (SRHEC) Coordination	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Strategic Radiation Support of Rapid Fielding Optoelectronic Devices	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Radiation hardening by process and radiation hardening by design development activities	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Qualify new state-of-the-art (SOTA) and state-of-the-practice (SOTP) sources for radiation hardened (RH) electronics to transition developed radiation hardened capabilities		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Establish 2nd source for strategic RHBP SOTP partially depleted silicon on insulator source	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Establish, qualify, and demonstrate advanced material sources and device process for RF and opto-electronics	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Access, mature, and assure state-of-the-art foundry and packaging processes for monolithic microwave integrated circuits	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 911 / *Address DoD Unique Needs - Radiation Hardening and non-CMOS*

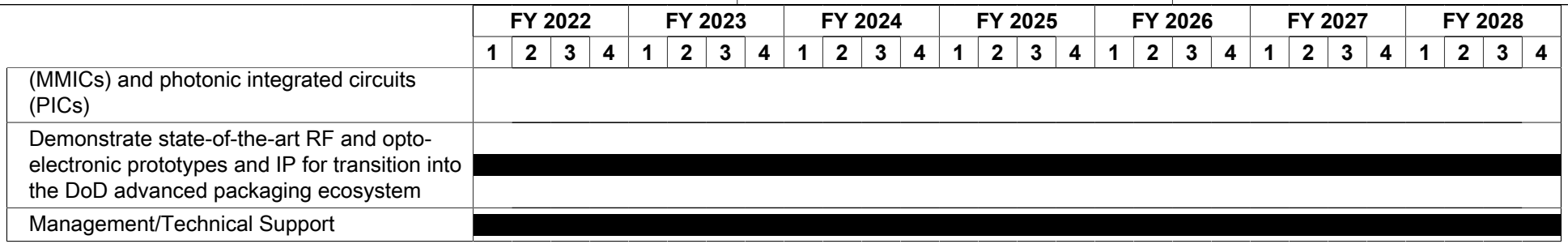


Exhibit R-4A, RDT&E Schedule Details: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 911 / *Address DoD Unique Needs - Radiation Hardening and non-CMOS*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Address DoD Unique Needs - Development				
Radiation Training in Support of Radiation Hardened by Design (RHBD) and Radiation Hardened by Process (RHBP) Initiatives	4	2020	4	2028
Strategic Radiation Hardened Electronics council (SRHEC) Coordination	4	2020	4	2028
Strategic Radiation Support of Rapid Fielding Optoelectronic Devices	2	2021	4	2028
Radiation hardening by process and radiation hardening by design development activities	2	2021	4	2028
Qualify new state-of-the-art (SOTA) and state-of-the-practice (SOTP) sources for radiation hardened (RH) electronics to transition developed radiation hardened capabilities	2	2021	4	2028
Establish 2nd source for strategic RHBP SOTP partially depleted silicon on insulator source	2	2021	4	2028
Establish, qualify, and demonstrate advanced material sources and device process for RF and opto-electronics	2	2021	4	2028
Access, mature, and assure state-of-the-art foundry and packaging processes for monolithic microwave integrated circuits (MMICs) and photonic integrated circuits (PICs)	2	2021	4	2028
Demonstrate state-of-the-art RF and opto-electronic prototypes and IP for transition into the DoD advanced packaging ecosystem	2	2021	4	2028
Management/Technical Support	2	2021	4	2028

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604294D8Z / *Trusted and Assured Microelectronics*	Project (Number/Name) 912 / *Create a Quantifiably Assured-Microelectronics Pipeline*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
912: *Create a Quantifiably Assured-Microelectronics Pipeline*	75.544	37.000	113.547	126.081	-	126.081	133.133	131.383	133.091	136.007	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project will promote microelectronics innovation and create a quantifiably-assured Microelectronics pipeline including continuing Joint Federated Assurance Center (JFAC) strategic partnerships, assuring field programmable gate array (FPGA) devices, supplier chain awareness and security, and workforce development. It will slow and in the long-term reverse offshoring trends by fostering commercial and Government alliances to preserve the U.S. ecosystem, lower barriers to innovation and adoption, strengthen workforce expertise, ensure DoD has access to the next generation of advanced technology with quantifiable assurance throughout the product pipeline, and maintain the United States as the global source for high- end, secure, and reliable microelectronics components.

In addition, this project will develop a new data driven quantifiable assurance paradigm for supply chain protection. It will strengthen security while improving access, exposing no sensitive intellectual property (IP) to the foundry and requiring post-manufacture validation of foundry products. The enhancement will develop quantifiably assured design concepts in manufactured systems, enabling a formal risk-based approach to protection techniques. Manufactured microelectronics will be tested to ensure that IP protections meet or exceed current National Security Agency standards for IP protection, and to develop DoD's ability to detect certain malicious supply chain attacks on DoD microelectronics.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Create a Quantifiably-Assured Microelectronics Pipeline – Development	27.000	113.547	126.081
Description: DoD is investing in next-generation disruptive technology, leveraging U.S. innovation, and transitioning materials, architectures, and designs into prototype capabilities for use by multiple industrial sectors. This and additional targeted investments in workforce will begin to address long-term talent needs. In addition, the Department will continue to enhance its partnership with industry to mitigate supply chain risks. Significant increases in assurance and protection of DoD technical data and components will be achieved through improvements in design practices, modern commercial security practices, and advanced packaging and chain of custody technologies. This activity, along with continued engagements and partnerships with industry will foster necessary security features in commercial products and infrastructure that will facilitate long-term assured access for the U.S. Government to commercial advanced SOTA technology providers.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 912 / *Create a Quantifiably Assured-Microelectronics Pipeline*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
This project funds the operation hardware assurance(HwA) support to DoD programs and organizations of the Joint Federated Assurance Center (JFAC), established in National Defense Authorization Act (NDAA) Sec 937, to increase DoD's HwA by providing engineering tools, technical services, best practices, innovative technologies and other assistance to programs to detect, assess, prioritize, and mitigate vulnerabilities from hardware attacks and assurance against supply chain exploitation vulnerabilities. The JFAC will provide capabilities for programs to keep assessment findings throughout the life cycle of their systems for data mining (e.g., documentation on rationale for previous mitigation decisions). The collaboration between the JFAC and program offices will help mitigate existing and emerging critical threats and vulnerabilities in hardware available to all DoD programs. DoD is required to establish assured supply chain and operational security standards for the purchase of all (Commercial and Custom) microelectronics and protection of Intellectual Property across the entire lifecycle. ME Assurance Framework addresses FY20 NDAA Sect 224 requirement for trusted supply chain and operational security standards. Accelerate the adoption of ME Assurance Framework utilizing microelectronics quantifiable assurance with multiple DoD pilot programs. This includes developing program guidance on baseline threats and mitigations per required level of assurance. This requires working closely with commercial industry, the defense industrial base and government JFAC subject matter experts. ***FY 2023 Plans:*** Development of DoD program relevant application prototypes. • Foster education and workforce development to include Industry-University Cooperative Research Centers Program (IUCRC) models with the National Science Foundation (NSF) and other partners. • Execute radiation hardened, heterogeneous integration/advanced packaging, and System On A Chip design Public-Private-Academic Partnership (PPAP) Models. Develop Supply Chain PPAP model. Expand PPAP partners and collaborators. • Stimulate rapid maturation and transition of emerging technologies and co-development with industry for assurance and security. • Continue development of industry outreach strategy to address critical technologies identified by DoD assurance and intelligence analysis. Sharing developed technical threat information with industry partners. • Enable and accelerate maturation and adoption of Microelectronics (ME) Assurance Framework. • Increase subject matter expertise of the ME Assurance Framework at service laboratories and contractor facilities. • Mature a regulatory and policy framework to enable long-term access to assured legacy and SOTA microelectronics. o Extend access. o Evaluate, mature, and improve assurance practices. • Ensure approach is aligned as part of DoD's comprehensive systems security engineering (SSE) framework. o Trusted Systems and Networks (TSN) Analysis. o Component level – FY20 NDAA Section 224 response for custom and commercial microelectronics.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 912 / *Create a Quantifiably Assured-Microelectronics Pipeline*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
• Use pilot projects to mature threat driven risk-based decision making models. • Leverages existing efforts. DoD policy, guidance, threat identification efforts, analysis and response, mitigations, technical efforts. Commercial standards and best practices. Proactive Technology Analysis. • Supports breadth of DoD microelectronics. Custom – Custom Integrated Circuit (CIC) and Field Programmable Gate Array (FPGA). Commercial – Commercial Off The Shelf (COTS) and modified commercial components.			
FY 2024 Plans: • Continue development of DoD program relevant application prototypes. • Foster education and workforce development to include Industry-University Cooperative Research Centers Program (IUCRC) models with the National Science Foundation (NSF) and other partners. • Execute radiation hardened, heterogeneous integration/advanced packaging, and System On A Chip design Public-Private-Academic Partnership (PPAP) Models. Develop Supply Chain PPAP model. Expand PPAP partners and collaborators. • Stimulate rapid maturation and transition of emerging technologies and co-development with industry for assurance and security. • Continue development of industry outreach strategy to address critical technologies identified by DoD assurance and intelligence analysis. Sharing developed technical threat information with industry partners. • Expand HwA laboratory tools and capabilities to keep pace with emerging commercial developments • Increase funding for supply chain analysis and engagement with the U.S. Semiconductor industry to mitigate supply chain threats • Enable and accelerate maturation and adoption of Microelectronics (ME) Assurance Framework. • Mature a regulatory and policy framework to enable long-term access to assured legacy and SOTA microelectronics. Extend access. Evaluate, mature, and improve assurance practices. • Ensure approach is aligned as part of DoD's comprehensive systems security engineering (SSE) framework. Trusted Systems and Networks (TSN) Analysis. Component level – FY20 NDAA Section 224 response for custom and commercial microelectronics. • Use pilot projects to mature threat driven risk-based decision making models. • Leverages existing efforts. DoD policy, guidance, threat identification efforts, analysis and response, mitigations, technical efforts. Commercial standards and best practices. Proactive Technology Analysis. • Supports breadth of DoD microelectronics.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 912 / *Create a Quantifiably Assured-Microelectronics Pipeline*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Custom – Custom Integrated Circuit (CIC) and Field Programmable Gate Array (FPGA). Commercial – Commercial Off The Shelf (COTS) and modified commercial components. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The increase of $12.534 million between FY 2023 and FY 2024 will fund additional capacity for hardware verification and validation in DoD labs, supply chain analysis, and HwA efforts.			
Accomplishments/Planned Programs Subtotals	27.000	113.547	126.081

	FY 2022	FY 2023
Congressional Add: Trusted Artificial Intelligence	10.000	-
FY 2022 Accomplishments: The overall goal of the public-private-academic partnership (PPAP) model is to develop the workforce around Embedded Systems Security/Artificial Intelligence (ESS/AI) and its intersection with Microelectronics, Embedded Systems, and Cybersecurity by training students in the emerging area of Trusted AI. Students will be trained through research projects that will address difficult problems in AI related to trust, verifiability, risk modeling, bias, fairness, human interaction, and feedback. Human-machine Pairing for Trustworthy AI. Develop a framework to evaluate the feedback loops between human operators and Artificial Intelligence / Machine Learning (AI/ML) systems that affect decision-making and final behavior. Statistical Analysis and Measurement of Neural Networks. Facilitate the development of techniques essential to the goals of the Trusted AI project and train students in the best practices that embody these techniques, ultimately providing a knowledgeable workforce for the defense ecosystem. AI Career-Cyber Coaching for US Workers: (1) AI Development of career cyber coaching algorithms and job maps that enable users to explore job risks and possible career paths in alignment with self-reported interests and preferences along with auto-assessed skills, with a special focus on microelectronics and the specialty areas of SCALE (including but not limited to radiation hardened technologies, heterogeneous integration/ advanced packaging, supply chain awareness, embedded systems security / artificial intelligence, and system on chip); and (2) Scale-up of training of coaches to prepare them to use the algorithm as part of career counseling services so they can guide workers with maximum effect, even and especially in times of increased demand, whether in response to regional and national labor market trends, plant closures, or a pandemic.		
Congressional Adds Subtotals	10.000	-

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 912 / *Create a Quantifiably Assured-Microelectronics Pipeline*

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604294D8Z / *Trusted and Assured Microelectronics*	Project (Number/Name) 912 / *Create a Quantifiably Assured-Microelectronics Pipeline*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Create a Resilient and Robust Microelectronics Pipeline	MIPR	Defense Advanced Research Projects Agency, Air Force, Army, Navy, National Security Agency : Various	75.544	37.000	Mar 2022	113.547	Mar 2023	126.081	Mar 2024	-		126.081	Continuing	Continuing	-
		Subtotal	75.544	37.000		113.547		126.081		-		126.081	Continuing	Continuing	N/A

	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	75.544	37.000		113.547		126.081		-		126.081	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 912 / *Create a Quantifiably Assured-Microelectronics Pipeline*

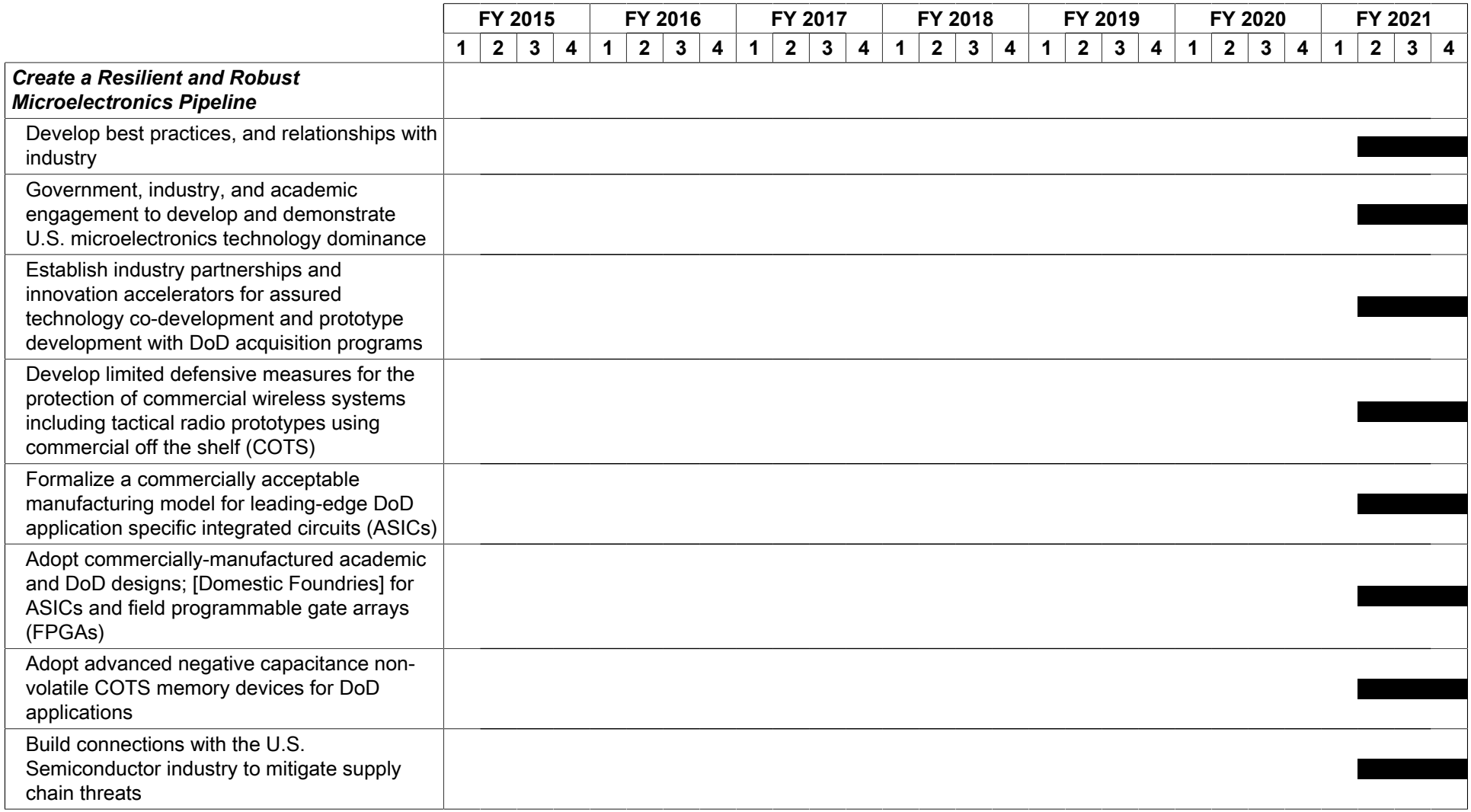


Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 912 / *Create a Quantifiably Assured-Microelectronics Pipeline*

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Develop tools to analyze the health of the supply chain and track the health of the U.S. industry																												
Management/Technical Support																												
Development of DoD program relevant application prototypes																												
Education and Workforce Development to include Industry-University Cooperative Research Centers Program (IUCRC) models with the National Science Foundation (NSF) and other partners																												
Stimulate rapid maturation and transition of emerging technologies and co-development with industry for assurance and security																												
Microelectronics Assurance and Supply Chain Standards and Best Practices Development																												
U.S. Government and Industry Engagement for demonstration of data driven quantifiable assurance tools, techniques, and risk based metrics																												
Microelectronics Assurance and Supply Chain Training for U.S. Government and Industry																												
DoD Microelectronics Assurance and Supply Chain Policy and Guidance Development/ Update																												
Application Specific Integrated Circuit (ASIC) netlist analysis capability development																												

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 912 / *Create a Quantifiably Assured-Microelectronics Pipeline*

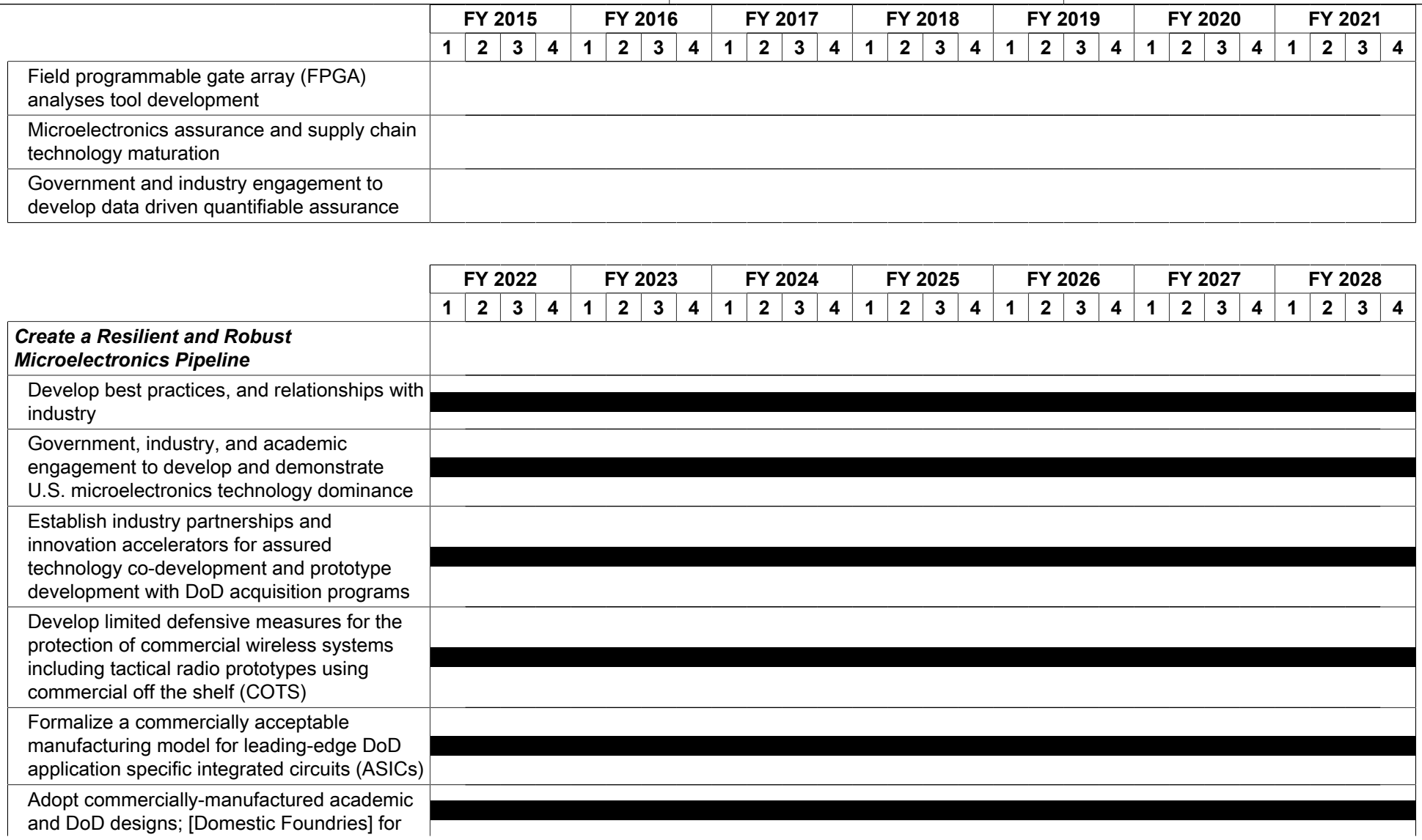


Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 912 / *Create a Quantifiably Assured-Microelectronics Pipeline*

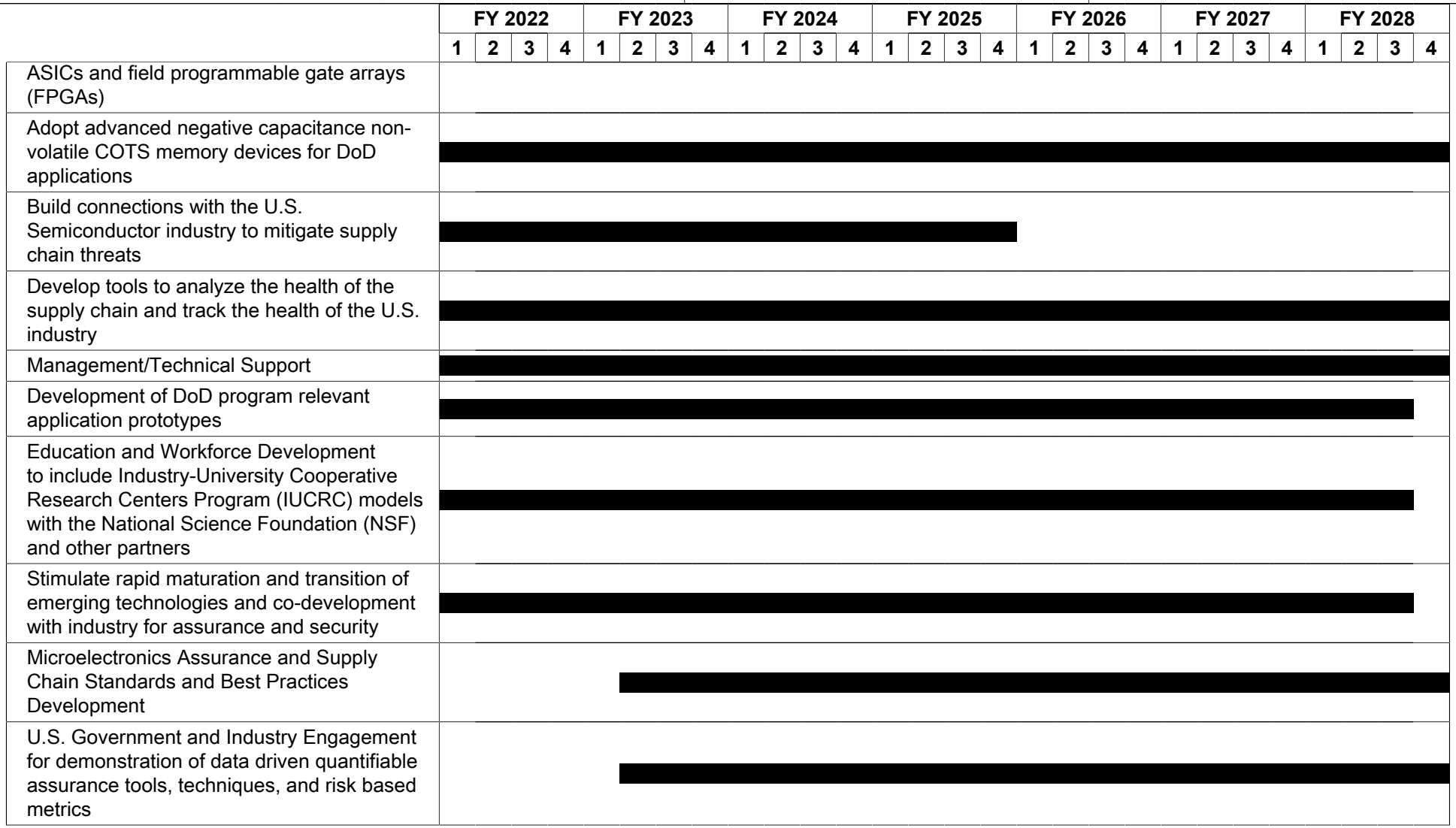


Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 912 / *Create a Quantifiably Assured-Microelectronics Pipeline*

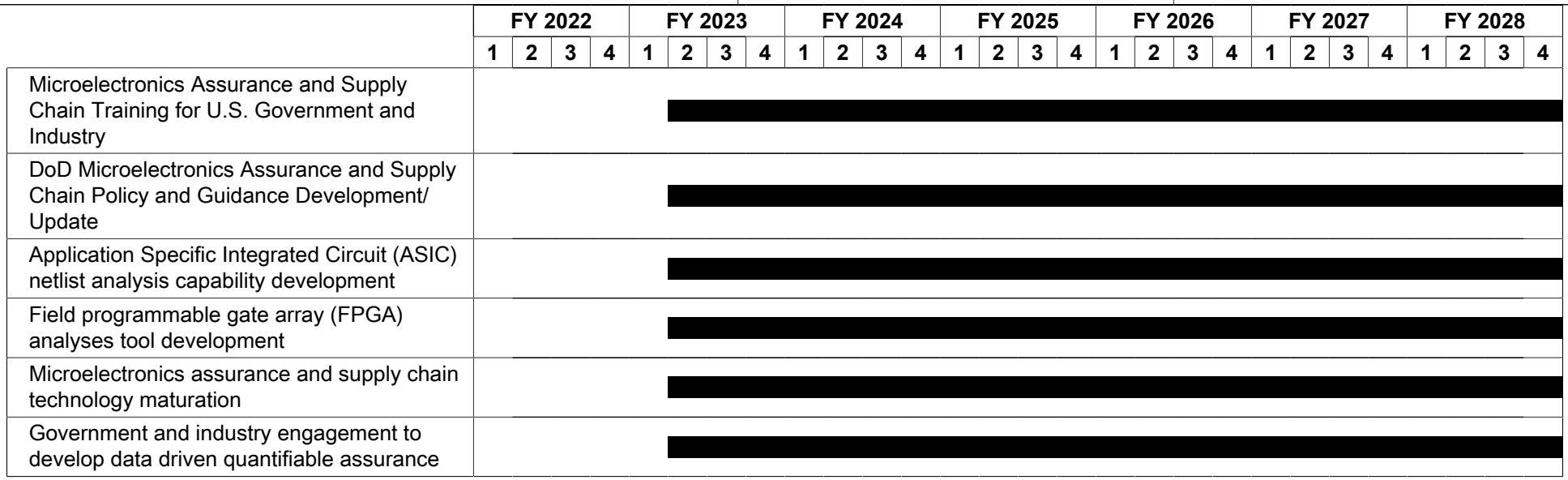


Exhibit R-4A, RDT&E Schedule Details: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 912 / *Create a Quantifiably Assured-Microelectronics Pipeline*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Create a Resilient and Robust Microelectronics Pipeline				
Develop best practices, and relationships with industry	2	2021	4	2028
Government, industry, and academic engagement to develop and demonstrate U.S. microelectronics technology dominance	2	2021	4	2028
Establish industry partnerships and innovation accelerators for assured technology co-development and prototype development with DoD acquisition programs	2	2021	4	2028
Develop limited defensive measures for the protection of commercial wireless systems including tactical radio prototypes using commercial off the shelf (COTS)	2	2021	4	2028
Formalize a commercially acceptable manufacturing model for leading-edge DoD application specific integrated circuits (ASICs)	2	2021	4	2028
Adopt commercially-manufactured academic and DoD designs; [Domestic Foundries] for ASICs and field programmable gate arrays (FPGAs)	2	2021	4	2028
Adopt advanced negative capacitance non-volatile COTS memory devices for DoD applications	2	2021	4	2028
Build connections with the U.S. Semiconductor industry to mitigate supply chain threats	2	2021	4	2025
Develop tools to analyze the health of the supply chain and track the health of the U.S. industry	2	2021	4	2028
Management/Technical Support	2	2021	4	2028
Development of DoD program relevant application prototypes	2	2021	3	2028
Education and Workforce Development to include Industry-University Cooperative Research Centers Program (IUCRC) models with the National Science Foundation (NSF) and other partners	2	2021	3	2028
Stimulate rapid maturation and transition of emerging technologies and co-development with industry for assurance and security	2	2021	3	2028

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 912 / *Create a Quantifiably Assured-Microelectronics Pipeline*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Microelectronics Assurance and Supply Chain Standards and Best Practices Development	2	2023	4	2028
U.S. Government and Industry Engagement for demonstration of data driven quantifiable assurance tools, techniques, and risk based metrics	2	2023	4	2028
Microelectronics Assurance and Supply Chain Training for U.S. Government and Industry	2	2023	4	2028
DoD Microelectronics Assurance and Supply Chain Policy and Guidance Development/Update	2	2023	4	2028
Application Specific Integrated Circuit (ASIC) netlist analysis capability development	2	2023	4	2028
Field programmable gate array (FPGA) analyses tool development	2	2023	4	2028
Microelectronics assurance and supply chain technology maturation	2	2023	4	2028
Government and industry engagement to develop data driven quantifiable assurance	2	2023	4	2028

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604294D8Z / *Trusted and Assured Microelectronics*	Project (Number/Name) 913 / *Defense Microelectronics Cross-Functional Team Funding*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
913: *Defense Microelectronics Cross-Functional Team Funding*	0.000	0.000	8.000	4.023	-	4.023	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Microelectronics components are the foundation of modern military systems. The Department of Defense (DoD) is exposed to various vulnerabilities that threaten the ability to source microelectronics needed to sustain programs of record. In order to prepare the Department for Great Power Competition, the DoD must take action to ensure access to the microelectronic components needed to sustain our defense programs and systems effectively and affordably. The Department also needs a better strategy to transition leading edge technology developed by both government and industry to DoD programs of record, to ensure the Department maintains a competitive edge.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Defense Microelectronics Cross-Functional Team Funding	-	8.000	4.023
Description: A Cross-Functional Team (CFT) was established effective January 2021 to develop a DoD strategy and implementation and transition plan to minimize vulnerabilities within the Department's microelectronic supply chain. The transition plan will be comprehensive, and include a budget plan. The CFT will function as an advisory body to the Deputy Secretary of Defense (DSD), the Under Secretary of Defense for Research and Engineering (USD(R&E)), the Under Secretary of Defense for Acquisition and Sustainment (USD(A&S)) to strengthen the domestic microelectronics supply chain. ***FY 2023 Plans:*** The CFT will continue to detail subject matter experts from the Services to the CFT, and execute contracts for studies to supply the analysis necessary to inform the DoD strategy development. The CFT will complete the development of the initial DoD strategy, and develop recommendations on roadmaps to execute. ***FY 2024 Plans:*** The CFT will continue to detail subject matter experts from the Services to the CFT, and execute contracts for studies to supply the analysis necessary to inform the DoD strategy development. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The decrease of $3.977 million between FY 2023 and FY 2024 is due to a scheduled ramp down of this project to complete operations in FY 2024.			
Accomplishments/Planned Programs Subtotals	-	8.000	4.023

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 913 / *Defense Microelectronics Cross-Functional Team Funding*

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 913 / *Defense Microelectronics Cross-Functional Team Funding*

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Defense Microelectronics Cross-Functional Team Funding	MIPR	TBD : TBD	-	-		8.000	Apr 2023	4.023	Apr 2024	-		4.023	Continuing	Continuing	-
		Subtotal	-	-		8.000		4.023		-		4.023	Continuing	Continuing	N/A

	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	-		8.000		4.023		-		4.023	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 913 / *Defense Microelectronics Cross-Functional Team Funding*

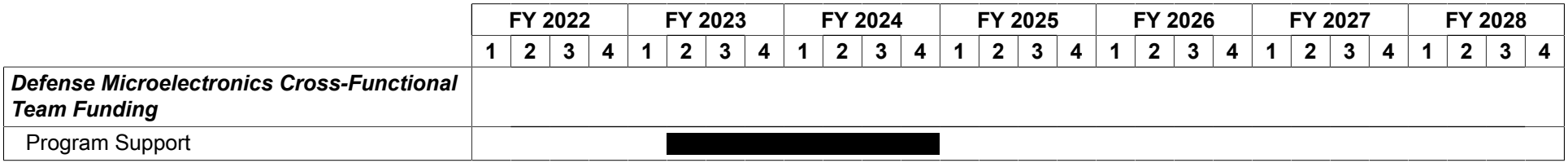


Exhibit R-4A, RDT&E Schedule Details: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 913 / *Defense Microelectronics Cross-Functional Team Funding*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Defense Microelectronics Cross-Functional Team Funding				
Program Support	2	2023	4	2024

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0604331D8Z / *Rapid Prototyping Program*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	402.725	133.317	109.189	110.291	-	110.291	112.483	114.925	117.328	119.886	-	-
638: *Rapid Prototyping Program*	402.725	99.298	109.189	110.291	-	110.291	112.483	114.925	117.328	119.886	-	-
073: *Rapid Defense Experimentation Reserve*	0.000	34.019	-	-	-	-	-	-	-	-	-	-

Note

New Start (Y/N): No

Project 073, Rapid Defense Experimentation Reserve (RDER), was added to the Rapid Prototyping Program (RPP) Program Element starting in FY 2022. The FY 2023 appropriation transferred RDER to a new Program Element, PE 0604790D8Z.

A. Mission Description and Budget Item Justification

This program supports the Department's initiatives to Defend the Homeland, Build Sustainable and Long-Term Advantage, and Build a Resilient Joint Force and Defense Ecosystem.

The Rapid Prototyping Program (RPP) supports the rapid development of prototypes required in 12-to-24 months (technical maturation TRL 7-9) to address urgent needs identified through ideation with the Joint Staff, Combatant Commands, or Secretary of Defense guidance. Prototype requirements are developed using threat-informed physics-based mission analyses and are evaluated under the Office of the Under Secretary for Research and Engineering (OUSD (R&E)) Mission Capabilities' (MC) campaign of experimentation, resulting in a military utility assessment. RPP may support the maturation of prototypes across the Department (to include those developed by the Strategic Capabilities Office (SCO), Defense Innovation Unit (DIU), Defense Advanced Research Projects Agency (DARPA), and the Services (TRL 5-6)) that have successfully demonstrated a required capability but have not been independently assessed in operational system of system architectures.

Overarching program goals include modernization of cross-cutting technology areas, providing fieldable end-to-end mission capabilities for Services and joint application, informing programs of record, and delivering capabilities more quickly than traditional acquisition. RPP develops prototypes that reduce technical and integration risk and accelerate capabilities to programs of record and future experimentation, including Rapid Defense Experimentation Reserve (RDER) Joint experiments. RPP project selection aligns to priority mission and technology areas including artificial intelligence / machine learning; autonomous systems; hypersonics; electronic warfare; sensors for intelligence, surveillance, and reconnaissance (ISR); and resilient communications. RPP rapidly develops and fields cross-cutting, prototype capabilities demonstrated in an operational environment to inform DoD and Service leadership.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0604331D8Z / *Rapid Prototyping Program*

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	137.349	179.189	183.231	-	183.231
Current President's Budget	133.317	109.189	110.291	-	110.291
Total Adjustments	-4.032	-70.000	-72.940	-	-72.940
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-70.000			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-4.011	-			
• Program Adjustment	-0.021	-	-1.940	-	-1.940
• RDER Re-alignment to 0604790D8Z, Project 790	-	-	-71.000	-	-71.000

Change Summary Explanation

FY 2023 and out-year funding of Project Code 073, Rapid Defense Experimentation Reserve (RDER) is transferred to a new Program Element and Project Code, 0604790D8Z, Project 790.

FY 2024 Program Adjustment is comprised of a re-alignment of $2.442 million to support the Historically Black Colleges and Universities/Minority Serving Institutions program, which is a priority of the Under Secretary of Defense for Research and Engineering (USD(R&E)), $0.118 million to support departmental priorities, and $0.620 million for an economic assumption inflation increase

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604331D8Z / *Rapid Prototyping Program*	Project (Number/Name) 638 / *Rapid Prototyping Program*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
638: *Rapid Prototyping Program*	402.725	99.298	109.189	110.291	-	110.291	112.483	114.925	117.328	119.886	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Rapid Prototyping Program (RPP) develops prototypes to deliver capabilities, inform requirements, and bridge the gap between RDT&E activities and fieldable solutions. RPP facilitates and accelerates joint, cross-cutting prototyping efforts within the Services and Defense Agencies. This program has the agility to select, fund, and implement projects in the year of execution as new opportunities or threats emerge. In consultation with the Service Science and Technology (S&T) executives, selected projects generally receive a single year of funding to accelerate capability transition to Services' and Agencies' programs of record. Projects deemed critical by the Under Secretary of Defense for Research and Engineering (USD(R&E)) receive higher amounts of funding across multiple years. Planned funding supports the Joint Warfighting Concept (JWC), the Office of the Under Secretary of Defense for Research and Engineering (OUSD(R&E)) critical technology areas, and Service and Agency needs to enable rapid response to emergent and time-sensitive threats.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Southern Cross Integrated Flight Research Experiment (SCIFIRE)	45.400	35.200	8.900
Description: SCIFIRE is a joint U.S.- Australia (AUS) partnership to develop and demonstrate an air-launched air-breathing hypersonic weapon prototype leveraging previous S&T investments in hypersonics. SCIFIRE will further mature hypersonic cruise missile technologies to engage time-critical, heavily defended, and high-value targets in a contested environment. The SCIFIRE form factor provides enhanced capability by allowing for integration on fighter aircraft. In FY 2022, a Weapons Open Systems Architecture (WOSA) framework was completed, enabling system evolution and modularity in a digital design environment. Systems architecture and preliminary design was completed, culminating in a successful Preliminary Design Review (PDR). Program risk assessments are complete. Program planning to progress from PDR design to detailed design, prototype build and testing is complete. ***FY 2023 Plans:*** Finalize detailed design and analysis of the prototype system. Complete integration design related to the F/A-18F aircraft. Complete wind tunnel testing on a subscale test article. Complete ground and flight test planning. Complete subsystem Critical Design Reviews (CDRs). Initiate parts and materials procurement. ***FY 2024 Plans:*** Transition project to U.S. Air Force Hypersonic Attack Cruise Missile (HACM) Program of Record for continued development and testing. ***FY 2023 to FY 2024 Increase/Decrease Statement:***			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604331D8Z / *Rapid Prototyping Program*	**Project (Number/Name)** 638 / *Rapid Prototyping Program*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
SCIFIRE ends in December 2023 and transitions to the U.S. Air Force for continued development.			
Title: Joint Affordable Kill-Chain Closure (JAKCC)	50.000	28.400	-
Description: JAKCC supports the National Defense Strategy's priorities to modernize key capabilities and evolve innovative operational concepts. This effort integrates the fully networked command, control, and communications (FNC3); autonomy; electronic warfare (EW); and intelligence, surveillance, and reconnaissance (ISR) prototypes developed on an autonomous platform. A series of incremental demonstration and experimentation activities are executed in coordination with the Services and Combatant Commands to validate the platform integrated prototype capability to accelerate development and adoption of cost effective and interoperable solutions for defense challenges. The JAKCC project leverages a government reference architecture developed in coordination with the Services and Combatant Commands to enable a Service agnostic prototype acquisition strategy. In FY 2022, the JAKCC project stood up a system integration laboratory (SIL) with an accredited project information technology (IT) network to complete prototype payload, mission software, platform software, and modeling and simulation development. Prototype hardware and software underwent testing in the SIL prior to integration onto the prototype autonomous platforms. The project completed the initial flight testing and executed two technology demonstrations. ***FY 2023 Plans:*** In FY 2023 the JAKCC project plans to conduct an additional technology demonstration in early FY 2023. The project will also be finalizing, in coordination with the Services and the Combatant Commands, the plans for the operational demonstration in the third quarter of FY 2023. Following the operational demonstration the findings will be compiled to define requirements that will inform the transition, and resulting acquisition plans, for multiple Service programs of record. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** JAKCC ends and transitions to the U.S. Air Force as lead Service for continued development.			
Title: Wolfpack	-	18.850	36.000
Description: Wolfpack will develop multi-domain prototypes that can deliver various payloads, both kinetic and non-kinetic, to a target from small, containerized launchers. Wolfpack leverages proven delivery platforms and integrates payloads to support ISR, kinetic, and decoy missions using attritable and swarming unmanned systems. ***FY 2023 Plans:*** Initiate effort and develop architecture for platform and payload integration. Conduct trade study and conceptual design of containerized system. ***FY 2024 Plans:***			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604331D8Z / *Rapid Prototyping Program*	**Project (Number/Name)** 638 / *Rapid Prototyping Program*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Continue system design and development. Integrate prototype payload with platform for system demonstration. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Increase funding between FY 2023 and FY 2024 is for system design towards initial demonstrations.			
Title: Stratospheric Payload Development and Maturation ***Description:*** This effort will mature platforms, and develop and integrate payloads, in support of stratospheric domain operations. High altitude payloads will enable and improve multi-domain communication and collaboration, and provide additional intelligence, surveillance, and reconnaissance (ISR) capabilities. ***FY 2023 Plans:*** Initial development of modular high frequency (HF) communication payload. ***FY 2024 Plans:*** Complete development and testing of three prototype payloads that to integrate into surrogate test platforms. Mature high altitude, long endurance platforms. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Increase funding between FY 2023 and FY 2024 is for system design towards initial demonstrations.	-	16.350	34.000
Title: Multifunction Radio Frequency Payload ***Description:*** Multifunction Radio Frequency Payload will develop and demonstrate non-kinetic effects from existing platforms. The multi-purpose payload development will advance aerial-delivered effects and capabilities to deceive, deny, degrade, disrupt and destroy adversary RF receivers and associated systems. This effort will leverage analysis of viable attack vectors on adversary systems from Defense Advanced Research Projects Agency (DARPA) and develop complimentary exploits. ***FY 2023 Plans:*** RPP anticipates supporting one additional waveform development and an in-flight waveform demonstration. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Payload development completes in FY 2023.	-	10.389	-
Title: Swarming Prototype Attack Unmanned Aerial Systems ***Description:*** This new start effort will develop and integrate novel payloads and capabilities into existing unmanned aerial systems (UAS) to aid in kill-chain closure at the tactical edge. Effects will focus on autonomous target recognition, identification, and terminal engagement. Prototypes will seek to provide identification, targeting, and battle damage assessment with kinetic and	-	-	15.771

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
non-kinetic effects. UAS will integrate swarm coordination and collaboration in multi-agent mission roles. Swarming Prototype Attack UAS will transition to the U.S. Navy. ***FY 2024 Plans:*** In FY 2024, the Swarming Prototype Attack UAS effort will develop and test three prototype payloads to aid in find, fix, track, target, engage, and assess mission. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Project starts in FY 2024 and will develop and test three prototype payloads to aid in find, fix, track, target, engage, and assess mission.			
Title: Asymmetric Air Defense ***Description:*** This effort will accelerate the development and maturation of modular payloads for ground launched effects in support of air defense. Prototypes will allow for distributed and layered air defense sub-systems operating against a range of threats. Small form factor interceptors will operate in contested environments against peer adversaries. ***FY 2024 Plans:*** In FY 2024, Asymmetric Air Defense will start payload and platform development, refining the modular architecture and prototyping first payload subsystem. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Project starts in FY 2024 and will start payload and platform development, refining the modular architecture and prototyping first payload subsystem.	-	-	15.620
Title: Advanced Prototyping to Support OUSD(R&E) Critical Technology Areas ***Description:*** This effort prototypes cutting-edge land, sea, undersea, air, and space capabilities critical to the Joint Warfighting Concept (JWC), critical technology areas and objectives of the Department of Defense (DoD). This effort matures and demonstrates with operationally representative prototypes of integrated network systems-of-systems; 5G; space; autonomy; hypersonics; cyber; directed energy; bio-technology; and machine learning systems to accelerate development and adoption of cost effective and interoperable solutions for defense challenges. Selected projects develop and demonstrate mature prototypes to Service programs of record; mitigate risk in DoD programs; and help characterize potential concepts of operations. Advanced prototyping activities seek to rapidly develop capabilities that can help maintain the U.S. technological edge. Demonstration of advanced prototypes will involve partnerships with the Services, industry, academia, and non-traditional DoD partners.	3.898	-	-
Accomplishments/Planned Programs Subtotals	99.298	109.189	110.291

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604331D8Z / *Rapid Prototyping Program*	**Project (Number/Name)** 638 / *Rapid Prototyping Program*

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

N/A

D. Acquisition Strategy

RPP leverages the Services' and Defense Agencies' most efficient and effective acquisition approach for rapid prototyping. This includes using Other Transaction Authorities and new or existing contract vehicles.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604331D8Z / *Rapid Prototyping Program*	**Project (Number/Name)** 638 / *Rapid Prototyping Program*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
SCIFIRE	MIPR	Air Force Life Cycle Management Center : Eglin, FL	-	37.421		-		-		-		-	Continuing	Continuing	-
SCIFIRE	MIPR	MISC : Multiple	-	1.522		-		-		-		-	Continuing	Continuing	-
SCIFIRE	Option/ FP	Johns Hopkins University Applied Physics Laboratory : Laurel, MD	-	1.000		-		-		-		-	Continuing	Continuing	-
JAKCC	C/FP	Lead Systems Integrator : Multiple	-	39.823		-		-		-		-	Continuing	Continuing	-
JAKCC	C/FP	MULTI : MULTI	-	1.204		-		-		-		-	Continuing	Continuing	-
JAKCC	MIPR	MISC : Multiple	-	1.921		-		-		-		-	Continuing	Continuing	-
VARIOUS	MIPR	MULTI : MULTI	402.725	16.407	Sep 2022	109.189	Sep 2023	110.291	Sep 2024	-		110.291	Continuing	Continuing	-
		Subtotal	402.725	99.298		109.189		110.291		-		110.291	Continuing	Continuing	N/A

	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	402.725	99.298		109.189		110.291		-		110.291	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604331D8Z / *Rapid Prototyping Program*	**Project (Number/Name)** 638 / *Rapid Prototyping Program*

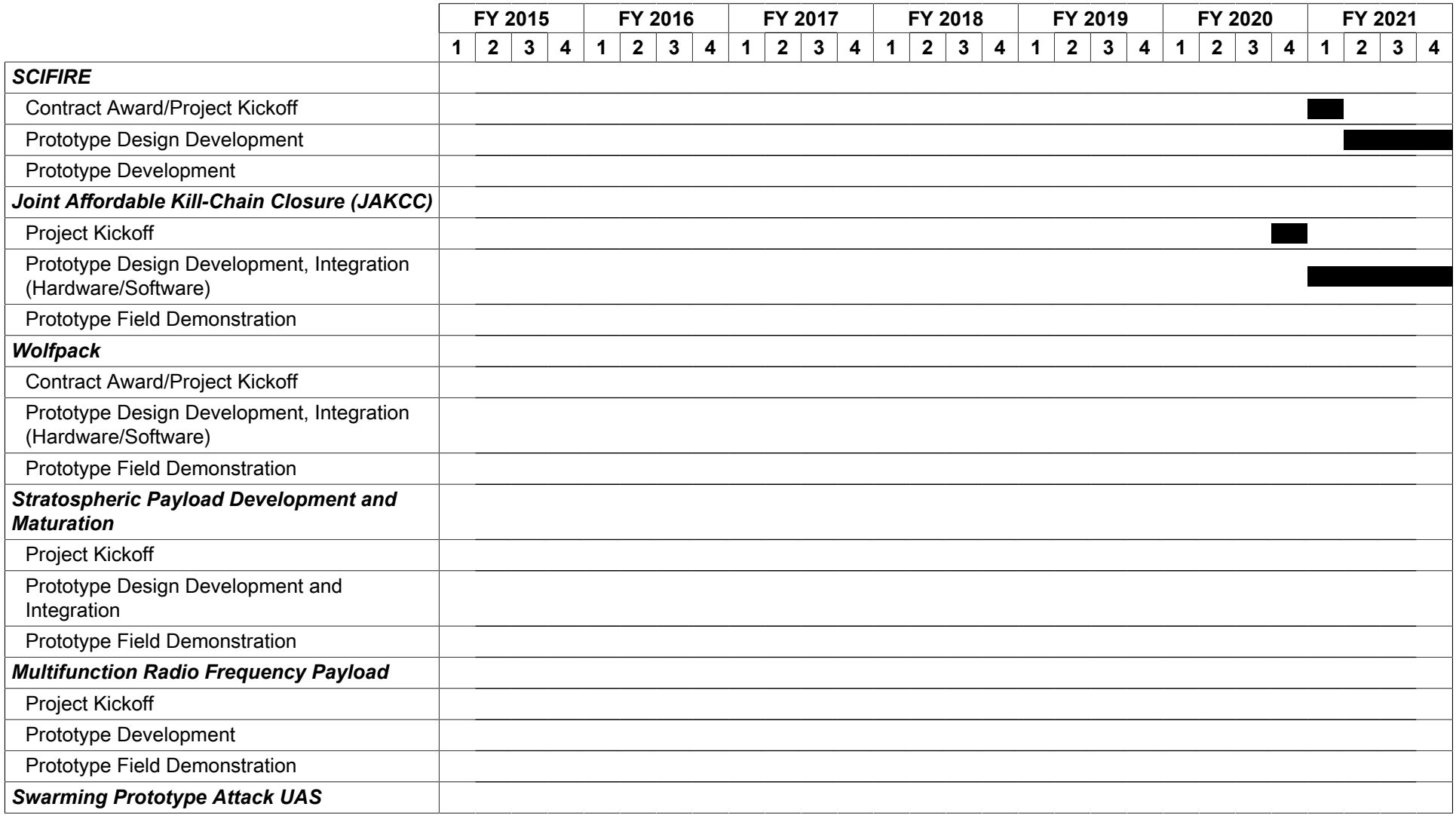
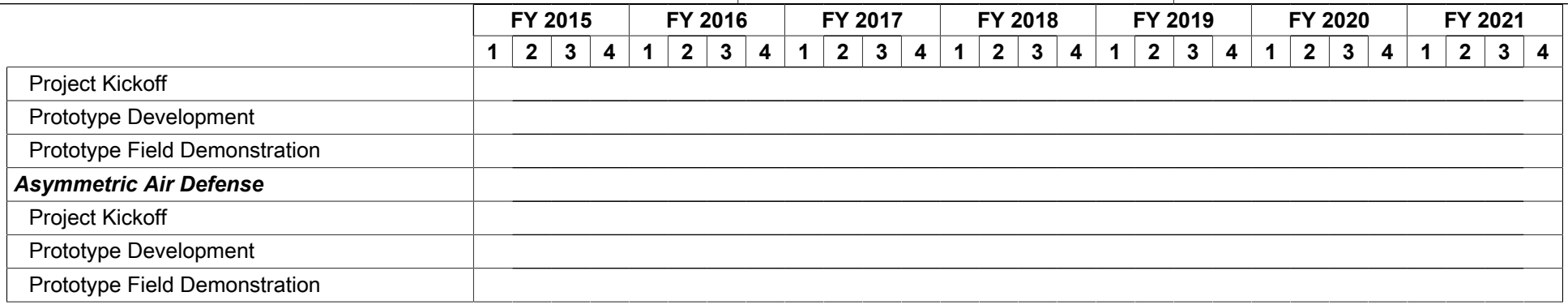


Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604331D8Z / *Rapid Prototyping Program*	**Project (Number/Name)** 638 / *Rapid Prototyping Program*



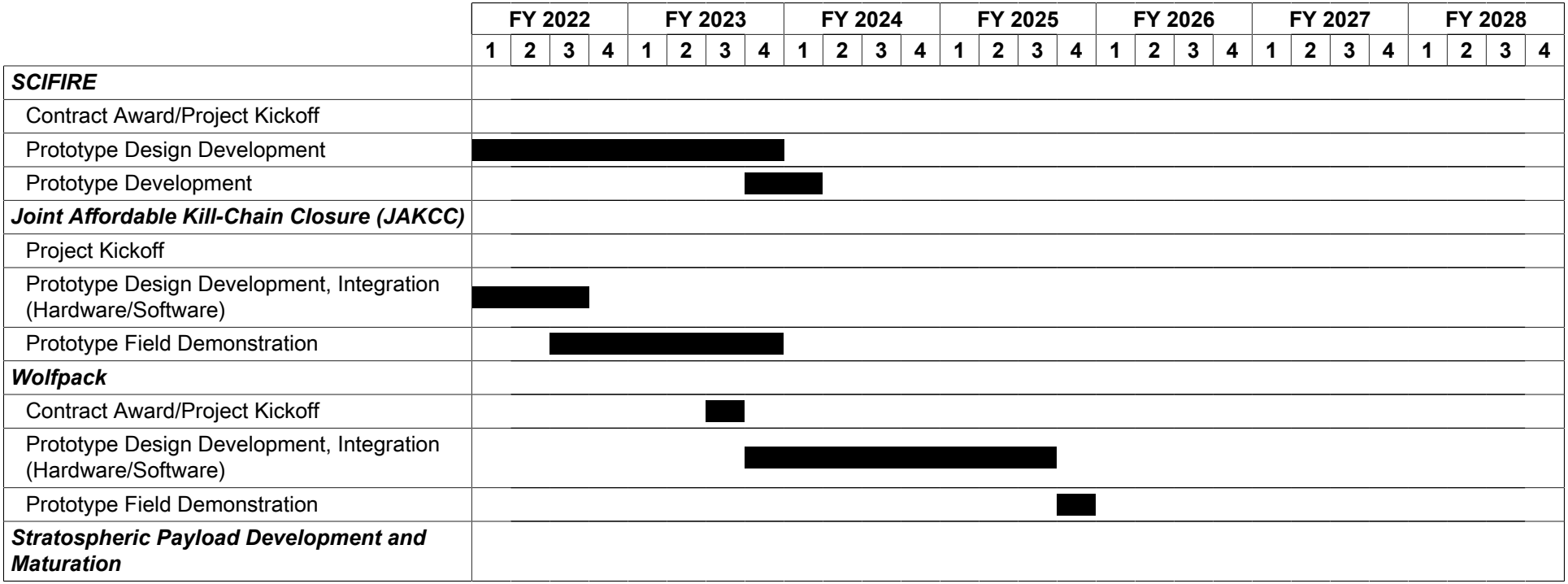


Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604331D8Z / *Rapid Prototyping Program*	**Project (Number/Name)** 638 / *Rapid Prototyping Program*

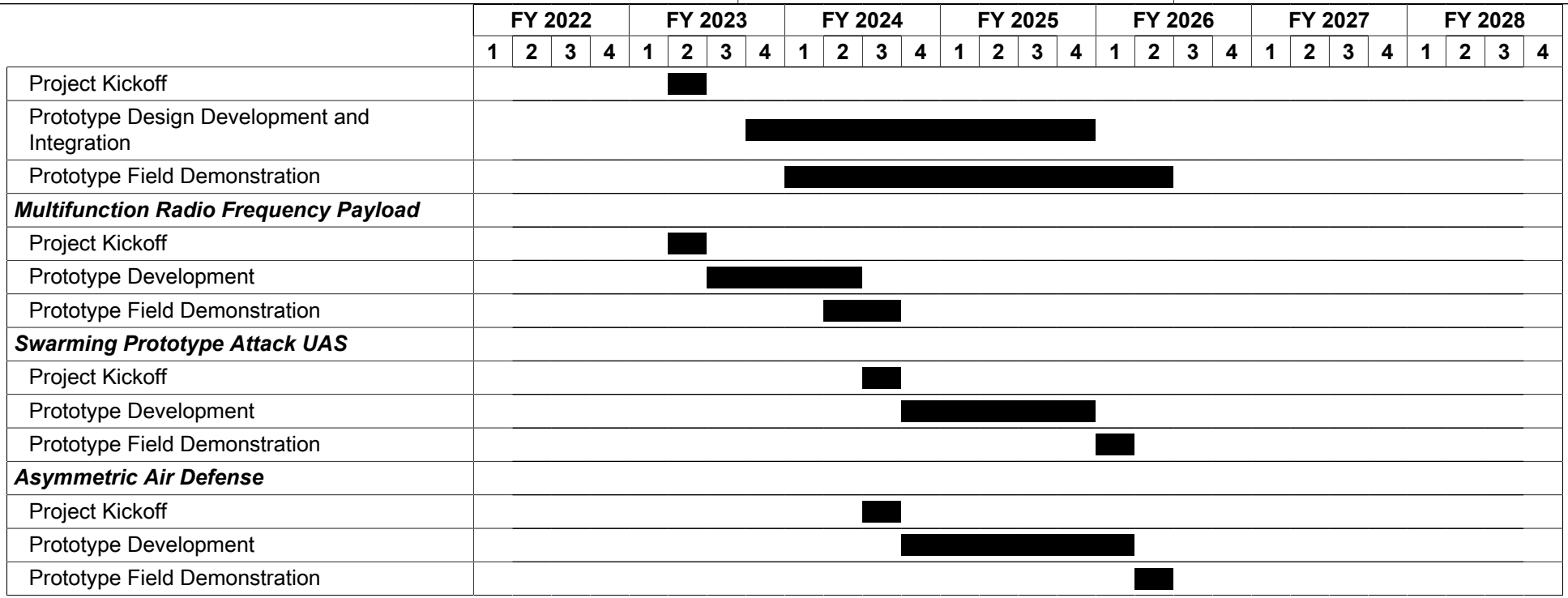


Exhibit R-4A, RDT&E Schedule Details: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604331D8Z / *Rapid Prototyping Program*	**Project (Number/Name)** 638 / *Rapid Prototyping Program*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
SCIFIRE				
Contract Award/Project Kickoff	1	2021	1	2021
Prototype Design Development	2	2021	4	2023
Prototype Development	4	2023	1	2024
Joint Affordable Kill-Chain Closure (JAKCC)				
Project Kickoff	4	2020	4	2020
Prototype Design Development, Integration (Hardware/Software)	1	2021	3	2022
Prototype Field Demonstration	3	2022	4	2023
Wolfpack				
Contract Award/Project Kickoff	3	2023	3	2023
Prototype Design Development, Integration (Hardware/Software)	4	2023	3	2025
Prototype Field Demonstration	4	2025	4	2025
Stratospheric Payload Development and Maturation				
Project Kickoff	2	2023	2	2023
Prototype Design Development and Integration	4	2023	4	2025
Prototype Field Demonstration	1	2024	2	2026
Multifunction Radio Frequency Payload				
Project Kickoff	2	2023	2	2023
Prototype Development	3	2023	2	2024
Prototype Field Demonstration	2	2024	3	2024
Swarming Prototype Attack UAS				
Project Kickoff	3	2024	3	2024

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604331D8Z / *Rapid Prototyping Program*	**Project (Number/Name)** 638 / *Rapid Prototyping Program*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Prototype Development	4	2024	4	2025
Prototype Field Demonstration	1	2026	1	2026
Asymmetric Air Defense				
Project Kickoff	3	2024	3	2024
Prototype Development	4	2024	1	2026
Prototype Field Demonstration	2	2026	2	2026

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604331D8Z / *Rapid Prototyping Program*	Project (Number/Name) 073 / *Rapid Defense Experimentation Reserve*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
073: *Rapid Defense Experimentation Reserve*	0.000	34.019	-	-	-	-	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Project 073, Rapid Defense Experimentation Reserve (RDER), was added to the Rapid Prototyping Program (RPP) Program Element starting in FY 2022. The FY 2023 appropriation transferred RDER to a new Program Element, PE 0604790D8Z.

A. Mission Description and Budget Item Justification

To facilitate rapid modernization of the force, the RDER initiative was established in the Defense Planning Guidance for Fiscal Year 2023-2027, to encourage multi-component experimentation through a campaign of learning. Fiscal Year 2022 funding for RDER was congressionally added to the RPP PE. RDER funding was transferred to PE 0604790D8Z in Fiscal Year 2023. Services, Agencies, and other participating organizations are to identify “best of breed” capabilities developed among DoD prototyping programs, and execute approved projects through large-scale experiments in order to refine and/or validate the Joint Warfighting Concept (JWC). Organizations are to nominate proposals to the Office of the Under Secretary of Defense for Research and Engineering (OUSD(R&E)) that are multi-component – involving Joint Services, International partners and/or other government agencies. These proposals should link to one or more of the four key supporting concepts (“functional battles”) of the Joint Warfighting Concept: Joint Concept for Fires, Joint Concept for Command and Control, Joint Concept for Contested Logistics, and Joint Concept for Information Advantage.

The Department will implement multiple RDER experimentation series through Service nominated projects with execution timelines ranging from one to two years. The OUSD(R&E) will review project progress, recommend new projects at least annually with the goal of quickly incorporating the most promising innovative prototypes into experiments, and promptly terminate projects that fail to achieve expectations. To incentivize a disciplined approach to rapidly identify, incorporate, and execute projects largely through the Military Services, the Department will fund approved Service projects for the upcoming fiscal year out of the Department reserves. Funding decisions on additional funds in follow-on years for new projects, and funding decrements for project terminations, will be incorporated in budgets annually based on emerging requirements and periodic assessments of project viability. Services will execute these funds under oversight of the Office of the Secretary of Defense (OSD) in a manner consistent with the experimentation scenario for which individual projects were selected.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Rapid Defense Experimentation Reserve (RDER) Experiment Proposal Shaping, Evaluation, and Process and Program Management	4.700	-	-
Description: RDER will execute threat informed system-of-systems experiments to fully address Joint capability gaps and serve as an integrating effort for DoD and Service prototyping capabilities. Funding provided for proposal shaping, evaluation, planning, coordination, alignment, and execution of RDER experimentation series into Joint large-scale exercises. Activities included			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604331D8Z / *Rapid Prototyping Program*	**Project (Number/Name)** 073 / *Rapid Defense Experimentation Reserve*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
monitoring new technologies through the innovation stakeholder community (Service labs, industry, academia, and federally funded research and development centers) in order to identify those "best of breed" prototyped capabilities to be integrated in experiments and aligned to the Defense Planning Scenarios. The integration of multiple capabilities will assess their operational utility under the Joint Warfighting Concept (JWC). Execution will consist of a series of experimentation that is conducted with existing Service and joint exercise programs. In FY 2022, RDER prepared and planned for those experiments selected for funding in FY 2023. It executed a selection and recommendation process in two call cycles identified as RDER 24-1 and 24-2. A Deputy's Management Action Group (DMAG) decision was made for 24-1 and the 24-2 cycle was completed in October 2022.			
Title: Experiments Integration ***Description:*** RDER Experiments Integration uses combatant command and Service exercise venues already in place to reduce cost and to conduct experiments in operationally relevant environments. In FY 2022, these funds provided manpower to develop and integrate prototype platforms and capabilities into joint experimentation events.	1.000	-	-
Title: Experiment and Architectural Design ***Description:*** This funding provided support for the preemptive actions required for participation in upcoming experimentation events. Through both design and structural efforts, this event architecture assures the proper employment of prototype technologies at multiple venues and locations. In FY 2022, Experiment and Architectural Design integrated a government reference architecture into a Joint experiment to ensure technical maturity and system interoperability.	1.419	-	-
Title: Experimentation Operation Command and Control ***Description:*** This funding provided resources for RDER Operational Planning Teams who deploy simultaneously to multiple regional planning conferences throughout the year to integrate coalition experiments into joint force exercises. Deliverables included a mobile Sensitive Compartmented information Facility (SCIF) to assure the secure observation, transition, and execution of critical information on-site.	2.000	-	-
Title: Opposing Force (OPFOR) Threat Emulation ***Description:*** This line was used by RDER personnel to plan and conduct threat emulation to represent an opposing force during experiments. This provided a threat informed, operationally relevant environment to conduct experiments within, thereby increasing the value of information collected.	2.000	-	-
Title: Joint International Experimentation for the Indo-Pacific and Europe	1.200	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604331D8Z / *Rapid Prototyping Program*	**Project (Number/Name)** 073 / *Rapid Defense Experimentation Reserve*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Description: This funding provided for planning and coordination cells in theater that work with services, allies, and partners to plan and execute the RDER experimentation campaign in the Indo-Pacific and European region. In FY 2022, the U.S. Indo-Pacific Command RDER experimentation planning and execution team was stood up. The team planned RDER experimentation efforts in the Indo-Pacific region in preparation for FY 2023 experiments.			
Title: High Altitude Balloons ***Description:*** This funding provided support for stratospheric efforts that enable all domains to leverage already developed prototypes to support experimentation in operationally relevant environments. Additional details provided in classified R2.	2.000	-	-
Title: End-to-End Mission Thread Studies and Analysis Support ***Description:*** This funding supported hypothesis and discovery efforts to better inform the capabilities required to enable the Joint Force to execute the Joint Warfighting Concept. Johns Hopkins University Applied Physics Lab (JHU APL) supported this effort. In FY 2022, Mission Engineering analysis, studies, and discovery experiments were executed to inform the identification of required warfighting capabilities and technologies to close warfighting gaps and support implementation of the Joint Warfighting Concept.	2.200	-	-
Title: RDER Experimentation Acceleration ***Description:*** This effort accelerated service led experimentation efforts that were selected as part of follow-on year experimentation. This is necessary to account for long lead items and ensure that capabilities will be available on risk reduction event and exercise timelines in the next fiscal year. Experiments that were provided with acceleration funding in FY 2022 included the Family of Integrated Targeting Cells (FITC), High Frequency Modernization, MQ-9 Enhancements, and Valkyrie Suppression of Enemy Air Defenses.	17.500	-	-
Accomplishments/Planned Programs Subtotals	34.019	-	-

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

Service experimentation outcomes will be designed to validate and accelerate required capabilities enabling the JWC by evaluating and integrating prototyped technologies in operationally relevant, multi-domain environments. Experimentation results will facilitate Joint Staff analysis in the evaluation of the Joint Warfighting

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604331D8Z / *Rapid Prototyping Program*	**Project (Number/Name)** 073 / *Rapid Defense Experimentation Reserve*

Concept, assist the Joint Requirements Oversight Council in requirements determination, and inform the Deputy's Management Action Group to make budget decisions that effect changes throughout the Department.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604331D8Z / *Rapid Prototyping Program*	Project (Number/Name) 073 / *Rapid Defense Experimentation Reserve*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
End to End mission thread studies and Analysis Support	MIPR	Washington Headquarters Services : Alexandria VA	-	2.000		-		-		-		-	-	-	-
Industry experimentation	MIPR	Air Force Life Cycle Management Center/ HBN : Hanscom AFB, MA	-	1.000		-		-		-		-	-	-	-
Industry experimentation	MIPR	DEVCOM Army Research Laboratory : Adelphi, MD	-	1.000		-		-		-		-	-	-	-
Joint International Experimentation for the Indo-Pacific and Europe	MIPR	MULTI : MULTI	-	1.800		-		-		-		-	-	-	-
RDER experimentation acceleration	MIPR	MULTI : MULTI	-	7.450		-		-		-		-	-	-	-
RDER experimentation acceleration	MIPR	SAF/FMBIB : Washington DC	-	2.000		-		-		-		-	-	-	-
RDER experimentation acceleration	MIPR	DLA Troop Support : Philadelphia, PA	-	1.233		-		-		-		-	-	-	-
RDER assessments and experiments	MIPR	Naval Air Warfare Center Aircraft Division : Patuxent River, MD	-	3.500		-		-		-		-	-	-	-
RDER experimentation acceleration	MIPR	NAVWAR Information Warfare Command : Pacific, San Diego, CA	-	1.000		-		-		-		-	-	-	-
RDER Experimentation Proposal shaping and support	MIPR	MISC : Multiple	-	4.170		-		-		-		-	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604331D8Z / *Rapid Prototyping Program*	**Project (Number/Name)** 073 / *Rapid Defense Experimentation Reserve*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
High Altitude Balloons	MIPR	Navy Systems Management Activity : JBAB, DC	-	2.000		-		-		-		-	-	-	-
VARIOUS	MIPR	Naval Surface Warfare Center Dahlgren Division : Dahlgren, VA	-	2.000		-		-		-		-	-	-	-
VARIOUS	MIPR	MULTI : MULTI	-	4.866	Sep 2022	-		-		-		-	-	-	-
		Subtotal	-	34.019		-		-		-		-	-	-	N/A

	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	34.019		-		-		-		-	-	-	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604331D8Z / *Rapid Prototyping Program*	**Project (Number/Name)** 073 / *Rapid Defense Experimentation Reserve*

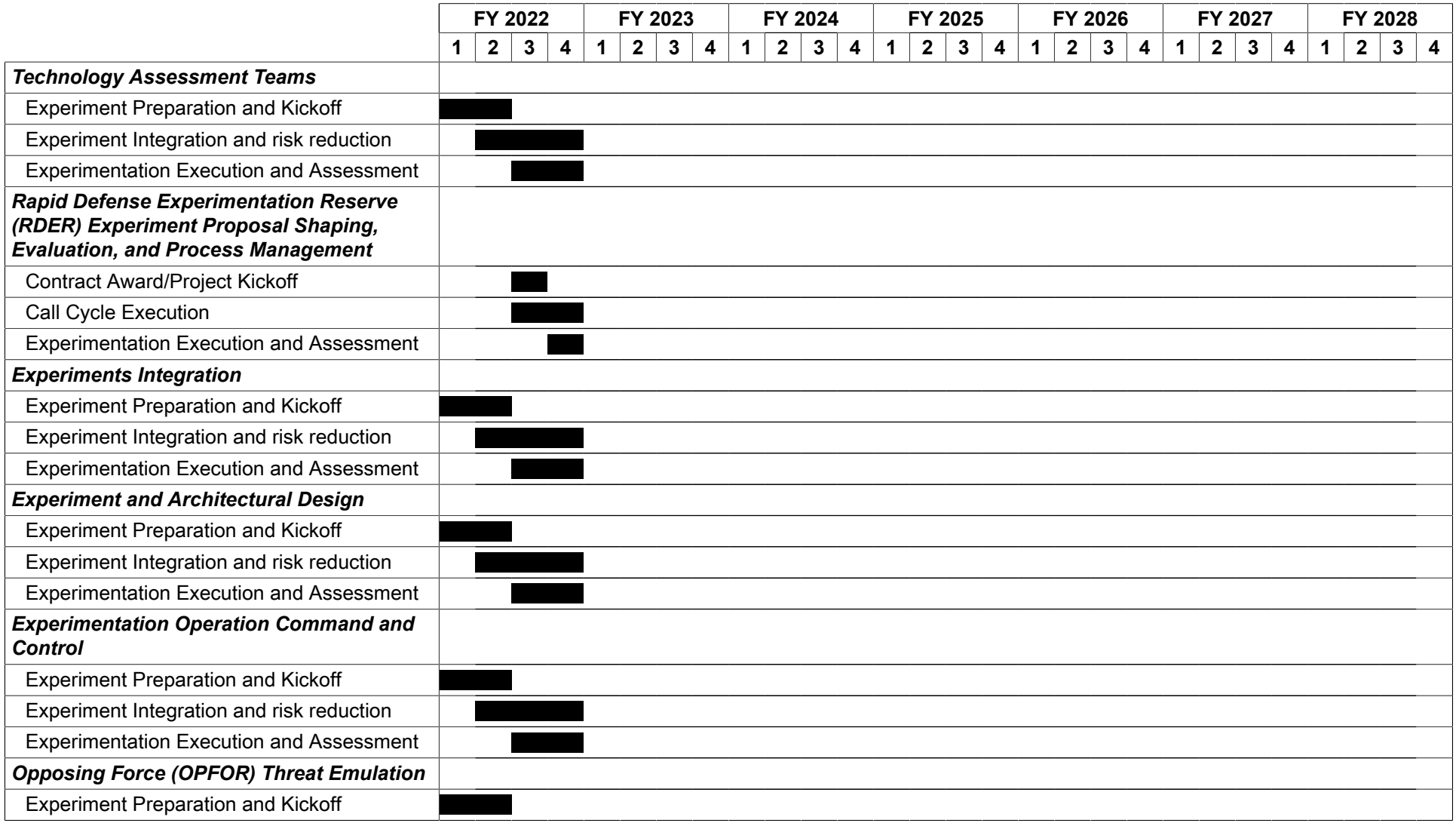


Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604331D8Z / *Rapid Prototyping Program*	**Project (Number/Name)** 073 / *Rapid Defense Experimentation Reserve*

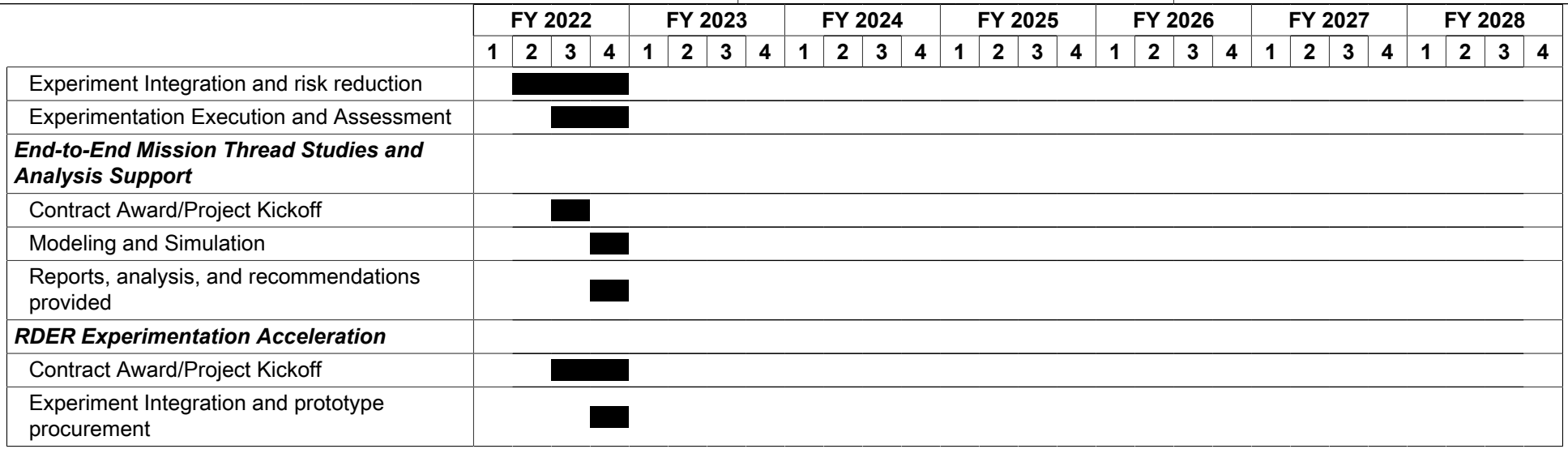


Exhibit R-4A, RDT&E Schedule Details: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604331D8Z / *Rapid Prototyping Program*	**Project (Number/Name)** 073 / *Rapid Defense Experimentation Reserve*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Technology Assessment Teams				
Experiment Preparation and Kickoff	1	2022	2	2022
Experiment Integration and risk reduction	2	2022	4	2022
Experimentation Execution and Assessment	3	2022	4	2022
Rapid Defense Experimentation Reserve (RDER) Experiment Proposal Shaping, Evaluation, and Process Management				
Contract Award/Project Kickoff	3	2022	3	2022
Call Cycle Execution	3	2022	4	2022
Experimentation Execution and Assessment	4	2022	4	2022
Experiments Integration				
Experiment Preparation and Kickoff	1	2022	2	2022
Experiment Integration and risk reduction	2	2022	4	2022
Experimentation Execution and Assessment	3	2022	4	2022
Experiment and Architectural Design				
Experiment Preparation and Kickoff	1	2022	2	2022
Experiment Integration and risk reduction	2	2022	4	2022
Experimentation Execution and Assessment	3	2022	4	2022
Experimentation Operation Command and Control				
Experiment Preparation and Kickoff	1	2022	2	2022
Experiment Integration and risk reduction	2	2022	4	2022
Experimentation Execution and Assessment	3	2022	4	2022
Opposing Force (OPFOR) Threat Emulation				

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604331D8Z / *Rapid Prototyping Program*	**Project (Number/Name)** 073 / *Rapid Defense Experimentation Reserve*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Experiment Preparation and Kickoff	1	2022	2	2022
Experiment Integration and risk reduction	2	2022	4	2022
Experimentation Execution and Assessment	3	2022	4	2022
End-to-End Mission Thread Studies and Analysis Support				
Contract Award/Project Kickoff	3	2022	3	2022
Modeling and Simulation	4	2022	4	2022
Reports, analysis, and recommendations provided	4	2022	4	2022
RDER Experimentation Acceleration				
Contract Award/Project Kickoff	3	2022	4	2022
Experiment Integration and prototype procurement	4	2022	4	2022

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0604341D8Z / *DIU Prototyping*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	52.108	15.585	41.902	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
843: *DIU Prototyping*	52.108	10.585	26.689	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
844: *National Security Innovation Capital*	0.000	5.000	15.213	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

This program supports the Department's initiatives to Build a Sustainable and Long-Term Advantage, and Build a Resilient Joint Force and Defense Ecosystem.

The Defense Innovation Unit (DIU) mission is to strengthen U.S. national security by accelerating the adoption of commercial technology throughout the military and growing the national security innovation base. DIU partners with organizations across the DoD and the interagency to rapidly prototype, field, and scale commercial solutions that can save lives, lead to new operational concepts, increase efficiencies, and save taxpayer dollars. With offices in Silicon Valley, Boston, Austin, Chicago, and in the Pentagon, DIU is able to attract the best and brightest talent and cutting-edge solutions.

The National Defense Strategy for FY 2022 asserts that we have returned to an era of inter-state strategic competition with Russia and China, heightening the sense of urgency with which the nation, and Department of Defense (DoD), must reform our acquisition policies and approach to sustaining military-technical superiority. Notably, 11 of the 14 critical technology focus areas are dual use and rapidly developed by the commercial sector. While adversaries are challenging the U.S. across several dimensions, most importantly, our near peer competitors are at par or ahead of the United States in critical technology areas. Consistent with the Administration's research and development budget priorities, this new era of competition requires technological superiority to ensure the United States' ability to project power, maintain international norms and rule of law, provide credible deterrence, and prevail in conflict.

DIU increases the Department's access to commercial technologies and talent, with the ultimate goal of fielding leading-edge technology to warfighters at the speed of relevance. Working across the country, and in collaboration with our allies and partners, DIU is developing new ways of doing business, growing our national security innovation base to include more "non-traditional" companies that had previously not collaborated with the military, working with traditional vendors in novel ways to increase efficiency, and challenging innovators to share their knowledge and expertise in support of our nation's defense.

Through a competitive prototype process, DIU identifies and provides access to technology companies and products on behalf of DoD organizations. Additionally, DIU executes projects to leverage commercial sector technology analogous to military applications thereby increasing dual-use technology agility for the DoD. DIU Prototyping funds facilitate the award of projects that can augment commercial technologies, existing government-owned capabilities, or concepts for defense application.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0604341D8Z / *DIU Prototyping*

DIU focuses on six technology areas where commercial industry is the lead:

• Artificial Intelligence (AI)/ Machine Learning (ML) – Applying AI/ML learning to accelerate critical decision making and operational impact.
• Autonomy – Adopting and countering autonomous systems with a focus on human-machine interaction and scalable teaming.
• Cyber – Making enterprise combat information open, accessible, and secure for defense personnel across the globe.
• Energy - Leveraging proven advancement in energy and materials technology to enhance capabilities and strengthen resilience across installation and distributed operations.
• Human Systems – Optimizing the human system and its enabling platforms through enhanced equipment, innovative training, and novel health applications.
• Space – Developing on-demand access to space, persistent satellite capabilities, and broadband space data transfer.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	16.178	24.402	24.414	-	24.414
Current President's Budget	15.585	41.902	0.000	-	0.000
Total Adjustments	-0.593	17.500	-24.414	-	-24.414
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	17.500			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	-0.593	-	-24.414	-	-24.414

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2022	FY 2023
Project: 843: *DIU Prototyping*		
Congressional Add: *Orbital Prototyping*	-	11.000
Congressional Add: *Visual Augmentation Technology*	-	6.500
Congressional Add Subtotals for Project: 843	-	17.500
Project: 844: *National Security Innovation Capital*		
Congressional Add: *Long Duration Energy Storage, including Lithium Batteries (also known as Jumpstart for Advanced Battery Standarization)*	5.000	-
Congressional Add Subtotals for Project: 844	5.000	-

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0604341D8Z / *DIU Prototyping*

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2022	FY 2023
Congressional Add Totals for all Projects	5.000	17.500

Change Summary Explanation

FY 2024 funding re-aligned to new National Security Innovation Capital (NSIC) Program Element (PE) 0603021D8Z and Defense Innovation Unit PE 0603342D8Z to better align funding to the mission.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense											Date: March 2023	
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0604341D8Z / *DIU Prototyping*				Project (Number/Name) 843 / *DIU Prototyping*			
COST ($ in Millions)	**Prior Years**	**FY 2022**	**FY 2023**	**FY 2024 Base**	**FY 2024 OCO**	**FY 2024 Total**	**FY 2025**	**FY 2026**	**FY 2027**	**FY 2028**	**Cost To Complete**	**Total Cost**
843: *DIU Prototyping*	52.108	10.585	26.689	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Defense Innovation Unit (DIU) mission is to strengthen U.S. national security by accelerating the adoption of commercial technology throughout the military and growing the national security innovation base. DIU partners with organizations across the DoD and the interagency to rapidly prototype, field, and scale commercial solutions that can save lives, lead to new operational concepts, increase efficiencies, and save taxpayer dollars. With offices in Silicon Valley, Boston, Austin, Chicago, and in the Pentagon, DIU is able to attract the best and brightest talent and cutting-edge solutions.

The National Defense Strategy for FY 2022 asserts that we have returned to an era of inter-state strategic competition with Russia and China, heightening the sense of urgency with which the nation, and Department of Defense (DoD), must reform our acquisition policies and approach to sustaining military-technical superiority. Notably, 11 of the 14 critical technology focus areas are dual use and rapidly developed by the commercial sector. While adversaries are challenging the U.S. across several dimensions, most importantly, our near peer competitors are at par or ahead of the United States in critical technology areas. Consistent with the Administration's research and development budget priorities, this new era of competition requires technological superiority to ensure the United States' ability to project power, maintain international norms and rule of law, provide credible deterrence, and prevail in conflict.

DIU increases the Department's access to commercial technologies and talent, with the ultimate goal of fielding leading-edge technology to warfighters at the speed of relevance. Working across the country, and in collaboration with our allies and partners, DIU is developing new ways of doing business, growing our national security innovation base to include more "non-traditional" companies that had previously not collaborated with the military, working with traditional vendors in novel ways to increase efficiency, and challenging innovators to share their knowledge and expertise in support of our nation's defense.

Through a competitive prototype process, DIU identifies and provides access to technology companies and products on behalf of DoD organizations. Additionally, DIU executes projects to leverage commercial sector technology analogous to military applications thereby increasing dual-use technology agility for the DoD. DIU Prototyping funds facilitate the award of projects that can augment commercial technologies, existing government-owned capabilities, or concepts for defense application.

DIU focuses on six technology areas where commercial industry is the lead:

• Artificial Intelligence (AI)/ Machine Learning (ML) – Applying AI/ML learning to accelerate critical decision making and operational impact.
• Autonomy – Adopting and countering autonomous systems with a focus on human-machine interaction and scalable teaming.
• Cyber – Making enterprise combat information open, accessible, and secure for defense personnel across the globe.
• Energy - Leveraging proven advancement in energy and materials technology to enhance capabilities and strengthen resilience across installation and distributed operations.
• Human Systems – Optimizing the human system and its enabling platforms through enhanced equipment, innovative training, and novel health applications.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604341D8Z / *DIU Prototyping*	**Project (Number/Name)** 843 / *DIU Prototyping*

• Space – Developing on-demand access to space, persistent satellite capabilities, and broadband space data transfer.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Defense Innovation Unit (DIU) Prototyping	10.585	9.189	-
Description: DIU executes its mission through partnerships with Services, combatant commands, and other DoD organizations to prototype commercial solutions and scale across the Joint Force. ***FY 2023 Plans:*** In FY 2023, DIU Prototyping funds will facilitate additional follow-on prototype contract awards of projects and scale proven solutions across the Joint Force. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding re-aligned to Defense Innovation Unit Program Element (PE) 0603342D8Z to better align the funding to the mission.			
Accomplishments/Planned Programs Subtotals	10.585	9.189	-

	FY 2022	FY 2023
Congressional Add: Orbital Prototyping ***FY 2023 Plans:*** Plan to issue a Request for Prototyping Proposal (RPP) by the end of February 2023 to obligate $1.6 million to SpaceX for the RAPID program. Obligation should occur no later than April 2023. Anticipate a number of modifications and potentially other Portal pulls (RPPs), estimated at $3.7 million, with obligation by end of June 2023.	-	11.000
Congressional Add: Visual Augmentation Technology ***FY 2023 Plans:*** Display with Digital Night Vision (DNV), Heads Up Display (HUD) to provide relevant data in the following form factors: glasses, visor/goggles, contacts. Artificial Intelligence to power augmentation reality (AR) and software to drive system gesture control Commercial network to enhance Military Tactical systems. Sensor integration to increase survivability and lethality.	-	6.500
Congressional Adds Subtotals	-	17.500

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

DIU primarily utilized Title 10 U.S. Code § 2371b authority to prototype projects to enhance military effectiveness through the Commercial Solutions Opening (CSO) process.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604341D8Z / *DIU Prototyping*	Project (Number/Name) 843 / *DIU Prototyping*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
DIU Prototyping	MIPR	Various : Various	12.470	10.585		26.689		-		-		-	Continuing	Continuing	-
Autonomy	C/FFP	Various : Various	3.650	-		-		-		-		-	Continuing	Continuing	-
Cyber	C/FFP	Various : Various	3.820	-		-		-		-		-	Continuing	Continuing	-
Human System	C/FFP	Various : Various	3.491	-		-		-		-		-	Continuing	Continuing	-
Space	C/FFP	Various : Various	8.677	-		-		-		-		-	Continuing	Continuing	-
COVID	C/FFP	Various : Various	5.000	-		-		-		-		-	Continuing	Continuing	-
AE&M	C/FFP	Various : Various	0.000	-		-		-		-		-	Continuing	Continuing	-
National Security Innovation Capital	MIPR	Various : Various	15.000	-		-		-		-		-	Continuing	Continuing	-
		Subtotal	52.108	10.585		26.689		-		-		-	Continuing	Continuing	N/A

	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	52.108	10.585		26.689		-		-		-	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604341D8Z / *DIU Prototyping*	**Project (Number/Name)** 843 / *DIU Prototyping*

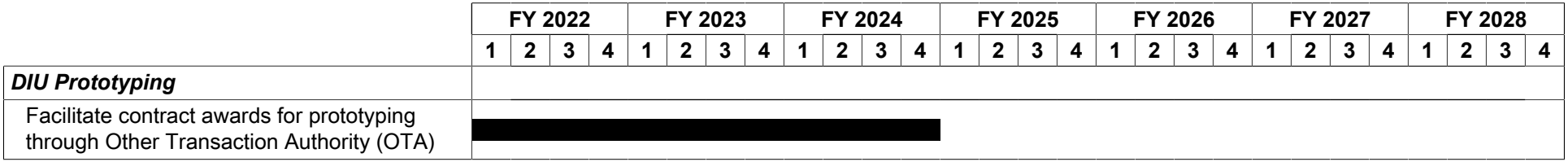

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604341D8Z / *DIU Prototyping*	**Project (Number/Name)** 843 / *DIU Prototyping*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
DIU Prototyping				
Facilitate contract awards for prototyping through Other Transaction Authority (OTA)	1	2022	4	2024

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604341D8Z / *DIU Prototyping*	Project (Number/Name) 844 / *National Security Innovation Capital*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
844: *National Security Innovation Capital*	0.000	5.000	15.213	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The mission of NSIC is to accelerate the development of dual-use hardware technologies critical to our national security and economic competitiveness. It is an initiative that enables dual-use hardware startups to advance key milestones in their product development by addressing the shortfall of private investment from trusted sources. NSIC's support enables companies to develop their technologies and products more rapidly. The resulting reductions in technical risk, along with the signaling of DoD interest in such dual-use companies, attracts trusted private investment that might otherwise sit on the sidelines. The overall result is more rapid and robust development of hardware in the U.S., the expansion of the defense industrial base and reduction of technology flow to adversaries.

Initial broad areas of focus are autonomy, communications, power, sensors and space.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: National Security Innovation Capital (NSIC)	-	15.213	-
Description: In FY 2021 NSIC received an appropriation of $15M from Congress. NSIC utilized that appropriation to fund contracts with nine startup companies whose technologies covered the five different Topics of Interest described above. Those technologies involved, among others: hypersonics, quantum phenomena and microelectronics. Contracts ranged from $500,000 to $3,000,000 over periods of performance between twelve and eighteen months. The companies are located across the country including TX, SC, MI, MA, CO and CA. This $15 million congressional add was executed in Project Code P843 of this Program Element. ***FY 2023 Plans:*** As in FY 2022, NSIC will continue funding dual-use hardware startups developing products in autonomy, communications, power, sensors and space. Depending on the scope of the individual projects, NSIC will support up to ten companies with the $15,000,000 budgeted. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding re-aligned to new National Security Innovation Council (NSIC) Program Element 0603021D8Z to better align the funding to the mission.			
Accomplishments/Planned Programs Subtotals	-	15.213	-

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604341D8Z / *DIU Prototyping*	**Project (Number/Name)** 844 / *National Security Innovation Capital*

	FY 2022	FY 2023
Congressional Add: Long Duration Energy Storage, including Lithium Batteries (also known as Jumpstart for Advanced Battery Standarization) ***FY 2022 Accomplishments:*** DIU is rapidly prototyping and will deploy Battery Energy Storage Systems (BESS) to increase the resiliency of DoD power systems. Current BESS (or generators) support resiliency up to 4 to 8 hours. By using various chemistries and configurations from commercial BESS solutions, DIU will prototype solutions with up to 100 hours of battery storage. This will increase the resiliency and readiness of multiple DoD installations that directly support military operations.	5.000	-
Congressional Adds Subtotals	5.000	-

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

NSIC primarily utilizes Title 10 U.S. Code § 2371b Other Transactions Authority to prototype projects to further develop dual-use, hardware-based technologies that are critical to the military through the Commercial Acceleration Opportunity (CAO) process.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604341D8Z / *DIU Prototyping*	Project (Number/Name) 844 / *National Security Innovation Capital*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
NSIC	C/TBD	Various : Various	0.000	5.000	Mar 2022	15.213	Mar 2023	-		-		-	Continuing	Continuing	-
		Subtotal	0.000	5.000		15.213		-		-		-	Continuing	Continuing	N/A

	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	5.000		15.213		-		-		-	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604341D8Z / *DIU Prototyping*	**Project (Number/Name)** 844 / *National Security Innovation Capital*

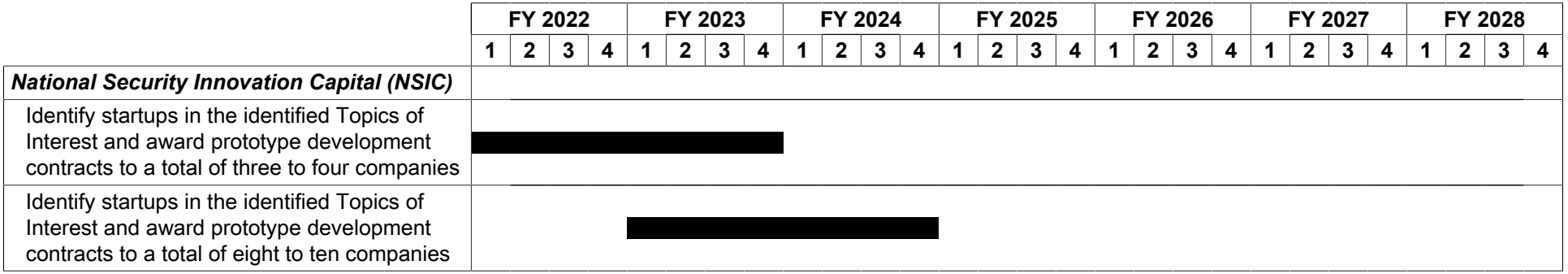

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604341D8Z / *DIU Prototyping*	**Project (Number/Name)** 844 / *National Security Innovation Capital*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
National Security Innovation Capital (NSIC)				
Identify startups in the identified Topics of Interest and award prototype development contracts to a total of three to four companies	1	2022	4	2023
Identify startups in the identified Topics of Interest and award prototype development contracts to a total of eight to ten companies	1	2023	4	2024

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0604400D8Z *I Department of Defense (DoD) Unmanned Systems Common Development*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	94.784	7.478	7.583	2.643	0.000	2.643	2.667	2.658	2.638	2.695	-	-
440: *UAS Airspace Integration*	55.157	2.428	5.699	0.747	0.000	0.747	0.750	0.747	0.740	0.756	-	-
442: *Interoperability*	35.272	5.000	1.621	1.653	0.000	1.653	1.670	1.665	1.654	1.689	-	-
443: *Unmanned Systems Roadmap*	4.355	0.050	0.263	0.243	0.000	0.243	0.247	0.246	0.244	0.250	-	-

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

The Department of Defense (DoD) Unmanned Systems Common Development program is a joint effort that supports the Department's initiatives to Deter Aggression and Build Sustainable and Long-Term Advantage.

Key aspects of this effort include (1) integrating unmanned systems into civil and expeditionary environments in a safe and effective manner, (2) making available commercially developed unmanned systems that are cyber-secure to the Department for procurement and operation, (3) identifying and mitigating unmanned system cyber vulnerability threats, and (4) developing standards, concepts, and guidance that support the Department’s procurement and operation of unmanned systems. Currently, this effort is primarily focused on the development of systems and concepts that support the DoD UAS integration mission and DoD UAS security mission both in the U.S. National Airspace and in an expeditionary environment. While the initial focus is on UAS, system and concept development across all unmanned systems is the long-term goal.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	7.762	2.691	2.694	-	2.694
Current President's Budget	7.478	7.583	2.643	-	2.643
Total Adjustments	-0.284	4.892	-0.051	-	-0.051
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-0.108			
• Congressional Rescissions	-	-			
• Congressional Adds	-	5.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	-0.284	-	-0.051	-	-0.051

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0604400D8Z *I Department of Defense (DoD) Unmanned Systems Common Development*

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2022	FY 2023
Project: 440: *UAS Airspace Integration*		
Congressional Add: *Department of Defense (DoD) Unmanned System Common Development*	-	5.000
Congressional Add Subtotals for Project: 440	-	5.000
Congressional Add Totals for all Projects	-	5.000

Change Summary Explanation

FY 2024 decrease is due to minor pricing adjustments.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604400D8Z / *Department of Defense (DoD) Unmanned Systems Common Development*	**Project (Number/Name)** 440 / *UAS Airspace Integration*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
440: *UAS Airspace Integration*	55.157	2.428	5.699	0.747	0.000	0.747	0.750	0.747	0.740	0.756	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project supports both near-term and long-term DoD unmanned system development goals by focusing on (1) making commercially developed unmanned systems available to the Department for procurement and operation that are cyber-secure, (2) identifying and mitigating unmanned system cyber vulnerability threats, and (3) developing standards, concepts, and guidance that support the Department's procurement and operation of unmanned systems.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Unmanned Aircraft System Airspace Integration Initiatives	2.428	0.699	0.747
Description: FY 2023/2024 Overview: Make unmanned systems and critical unmanned system components that are evaluated as cyber secure and only developed in or by trustworthy countries available for procurement by the DoD and potential Interagency partners. ***FY 2023 Plans:*** - Rapidly identify, test, select, and make available commercial Small UAS capable of meeting the operational demands of the DoD. This effort is intended to increase the availably of Blue UAS and Blue UAS components for future procurement by the DoD. - Conduct penetration testing and cybersecurity assessment on unmanned systems in order to assess and validate system security and provide the Government with an understanding of the level of security risk incurred by system operation. - Integrate Cyber Security Policies and standards into unmanned system Architectures. - Develop unmanned systems cyber security concepts in order to limit cyber security vulnerabilities. - Update the Department's unmanned systems integrated roadmap. - Validate autonomous safety precepts for unmanned systems. - Improve cybersecurity and communication links of unmanned systems. - Continue to develop safety standards and policy for unmanned and autonomous systems that will allow for the incorporation of artificial intelligence. - Develop autonomy test and evaluation standards and architectures using modeling and simulation. - Support for unmanned systems interoperability and integration workshop and technical exchange meetings. - Investigate a cyber-secure solution for integrating artificial intelligent systems into unmanned systems.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604400D8Z / *Department of Defense (DoD) Unmanned Systems Common Development*	**Project (Number/Name)** 440 / *UAS Airspace Integration*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
- Develop and demonstrate an interoperable, standards-based, open architecture solution for cross-domain (air, ground, surface, sub-surface) unmanned systems communication. ***FY 2024 Plans:*** - Continue rapidly identifying, testing, selecting, and making available commercial Small UAS capable of meeting the operational demands of the DoD. This effort is intended to increase the availably of Blue UAS and Blue UAS components for future procurement by the DoD. - Continue conducting penetration testing and cybersecurity assessment on unmanned systems in order to assess and validate system security and provide the Government with an understanding of the level of security risk incurred by system operation. - Integrate Cyber Security Policies and standards into unmanned system Architectures. - Continue the development of unmanned systems cyber security concepts in order to limit cyber security vulnerabilities. - Continue updating the Department's unmanned systems integrated roadmap. - Continue validating autonomous safety precepts for unmanned systems. - Improve cybersecurity and communication links of unmanned systems. - Continue to develop safety standards and policy for unmanned and autonomous systems that will allow for the incorporation of artificial intelligence. - Develop autonomy test and evaluation standards and architectures using modeling and simulation. - Support for unmanned systems interoperability and integration workshop and technical exchange meetings. - Investigating a cyber-secure solution for integrating artificial intelligent systems into unmanned systems. - Continue development and demonstrating of interoperable, standards-based, open architecture solution for cross-domain (air, ground, surface, sub-surface) unmanned systems communication. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2024 increase is due to minor pricing adjustments			
Accomplishments/Planned Programs Subtotals	2.428	0.699	0.747

	FY 2022	FY 2023
Congressional Add: Department of Defense (DoD) Unmanned System Common Development	-	5.000
FY 2023 Plans: Various testing efforts focusing on the development and live flight demonstration of the of DoD UAS Traffic Management (UTM) related systems in coordination with the testing sites for Grand Forks North Dakota.		
Congressional Adds Subtotals	-	5.000

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604400D8Z / *Department of Defense (DoD) Unmanned Systems Common Development*	**Project (Number/Name)** 440 / *UAS Airspace Integration*

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604400D8Z / *Department of Defense (DoD) Unmanned Systems Common Development*	**Project (Number/Name)** 440 / *UAS Airspace Integration*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
GBSAA	MIPR	USAF A3 AFLCMC/ HBAG (VOLPE/ MITRE) : AFLCMC/ HBAG	41.405	0.041		2.005		0.747		-		0.747	-	-	-
DoD UTM	MIPR	NASA : Ames Research California	5.518	0.534		2.578		-		-		-	-	-	-
National Guard GBSAA	MIPR	Army PM UAS : Army Redstone, Alabama	5.863	0.450		-		-		-		-	-	-	-
DoD UxS adn C-UxS Architecture and Standards	MIPR	USAF/ARMY/ NAVY/NASA : Labs - California, NY, Alabama	2.371	1.403		1.116		-		-		-	-	-	-
		Subtotal	55.157	2.428		5.699		0.747		-		0.747	-	-	N/A

Remarks

NA

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
USAF - A3 PBFA Support	Option/ LH	USAF A3 AFLCMC/ HBAG : AFLCMC/ HBAG	0.000	0.000		0.000		0.000		-		0.000	-	-	-
		Subtotal	0.000	0.000		0.000		0.000		-		0.000	-	-	N/A

Remarks

NA

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604400D8Z / *Department of Defense (DoD) Unmanned Systems Common Development*	Project (Number/Name) 440 / *UAS Airspace Integration*	

	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	55.157	2.428		5.699		0.747		-		0.747	-	-	N/A

Remarks

NA

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604400D8Z / *Department of Defense (DoD) Unmanned Systems Common Development*	**Project (Number/Name)** 440 / *UAS Airspace Integration*

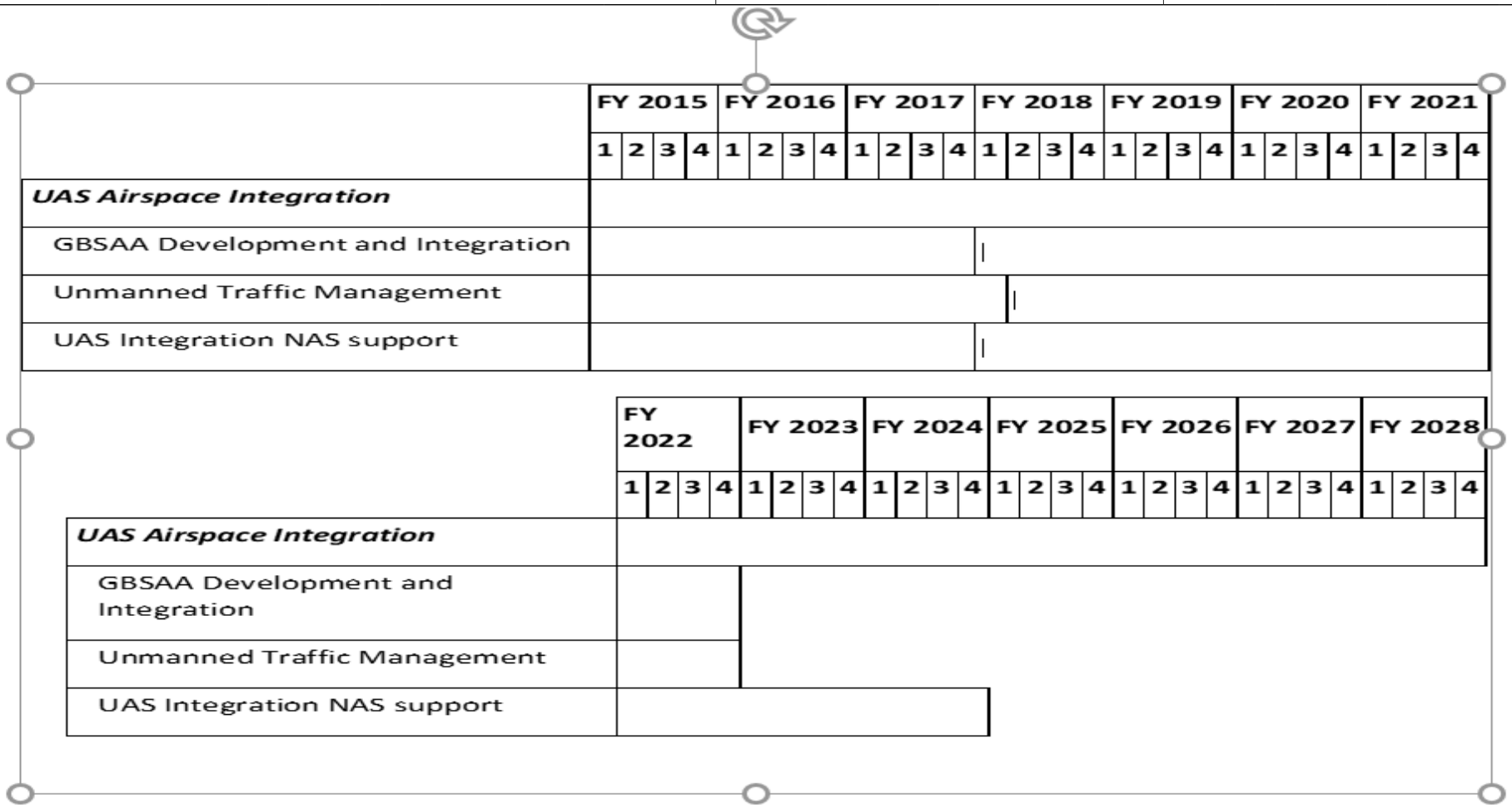


Exhibit R-4A, RDT&E Schedule Details: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604400D8Z / *Department of Defense (DoD) Unmanned Systems Common Development*	**Project (Number/Name)** 440 / *UAS Airspace Integration*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
GBSAA Development and Integration				
GBSAA Development and Integration	1	2018	4	2022
Unmanned Traffic Management	2	2018	4	2022
UAS Integration NAS support				
UAS Integration NAS support	1	2018	4	2024

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604400D8Z / *Department of Defense (DoD) Unmanned Systems Common Development*	Project (Number/Name) 442 / *Interoperability*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
442: *Interoperability*	35.272	5.000	1.621	1.653	0.000	1.653	1.670	1.665	1.654	1.689	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project supports both near-term and long-term DoD UAS Integration goals by primarily focusing on (1) the safe and effective integration of UAS within civil and expeditionary airspace and (2) the development of standards, concepts, and guidance to support this integration. In the near-term, this project is focused on the development of concepts and prototype systems that support both the DoD UAS integration mission and DoD UAS security mission. This effort includes the development and integration of the following current airspace access and integration system initiatives: (1) COA Approval Processing System (CAPS), (2) UAS Drone Zone, (3) Low Altitude Authorization and Notification Capability (LAANC), and (4) UAS Traffic Management (UTM). The long-term goal of this project is to establish the ability for DoD UAS to safely, effectively, and routinely operate beyond visual line of sight in U.S. national, foreign national, international, training, and combat airspace. The results from this effort will be shared with federal partners, to include the Federal Aviation Administration (FAA), in order to help shape the development of LAANC and UTM related concepts, technology, and rule making.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Interoperability	5.000	1.621	1.653
Description: To develop concepts and prototype systems that support both the DoD unmanned systems integration and security mission. The FY 2023/2024 focus of effort is on the development of airspace access and integration concepts and systems with the goal of enabling DoD UAS inoperability in a UTM managed airspace environment. The results from this effort will be shared with federal partners, to include the FAA, in order to help shape the development of UTM related concepts, technology, and rule making. ***FY 2023 Plans:*** - Develop DoD prototype UAS integration/security systems and associated concepts that support DoD operations in both US national airspace and expeditionary airspace. - Ensure concepts and systems developed are aligned with the vision established in current UAS integration and security related concept of operations documents. - Assist in the development of future DoD UAS integration and security related concept of operations documents through ongoing research and the execution of Operational Assessments and Demonstrations of UTM capabilities within the DoD and Federal Government. - Ensure systems and concepts developed support integration with FAA current/planned airspace access and airspace integration systems to include, but not limited to, UTM systems.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604400D8Z / *Department of Defense (DoD) Unmanned Systems Common Development*	**Project (Number/Name)** 442 / *Interoperability*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
- Develop and test methods to integrate DoD UAS into the UTM environment to include demonstrating a method to pass information between unmanned aircraft on the DIU Blue UAS Cleared List and the DoD prototype UTM Federal UAS Service Supplier (FUSS). - Develop UAS airspace integration procedures and standards as well as conduct modeling, simulation, and operational analysis needed to validate those procedures and standards. - Conduct live flight and simulated demonstrations using developed UAS integration and security systems and associated concepts in order to (1) demonstrate the latest capabilities, (2) assess system interoperability, (3) refine concepts and hardware/ software solutions, and (4) validate current standards. - Develop recommendations for safe separation standards and techniques that enable low-altitude military UAS to remain clear of other aircraft. - Engage the FAA to advance DoD UAS and Counter UAS airspace integration.			
FY 2024 Plans: - Develop DoD prototype UAS integration/security systems and associated concepts that support DoD operations in both US national airspace and expeditionary airspace. - Ensure concepts and systems developed are aligned with the vision established in current UAS integration and security related concept of operations documents. - Assist in the development of future DoD UAS integration and security related concept of operations documents through ongoing research and the execution of Operational Assessments and Demonstrations of UTM capabilities within the DoD and Federal Government. - Ensure systems and concepts developed support integration with FAA current/planned airspace access and airspace integration systems to include, but not limited to, UTM systems. - Develop and test methods to integrate DoD UAS into the UTM environment to include demonstrating a method to pass information between unmanned aircraft on the DIU Blue UAS Cleared List and the DoD prototype UTM Federal UAS Service Supplier (FUSS). - Develop UAS airspace integration procedures and standards as well as conduct modeling, simulation, and operational analysis needed to validate those procedures and standards. - Conduct live flight and simulated demonstrations using developed UAS integration and security systems and associated concepts in order to (1) demonstrate the latest capabilities, (2) assess system interoperability, (3) refine concepts and hardware/ software solutions, and (4) validate current standards. - Develop recommendations for safe separation standards and techniques that enable low-altitude military UAS to remain clear of other aircraft.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604400D8Z / *Department of Defense (DoD) Unmanned Systems Common Development*	**Project (Number/Name)** 442 / *Interoperability*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
- Engage the FAA to advance DoD UAS and Counter UAS airspace integration.			
FY 2023 to FY 2024 Increase/Decrease Statement: There is no significant change between FY 2023 and FY 2024.			
Accomplishments/Planned Programs Subtotals	5.000	1.621	1.653

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604400D8Z / *Department of Defense (DoD) Unmanned Systems Common Development*	Project (Number/Name) 442 / *Interoperability*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
UxS Interoperability and Architecture Development	MIPR	Labs, Warfare Centers, and DoD components and support : DoD Labs, Warefare Center, DoD and support service	35.272	5.000		1.621		1.653		-		1.653	-	-	-
		Subtotal	35.272	5.000		1.621		1.653		-		1.653	-	-	N/A

Remarks

NA

	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	35.272	5.000		1.621		1.653		-		1.653	-	-	N/A

Remarks

NA

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604400D8Z / *Department of Defense (DoD) Unmanned Systems Common Development*	**Project (Number/Name)** 442 / *Interoperability*

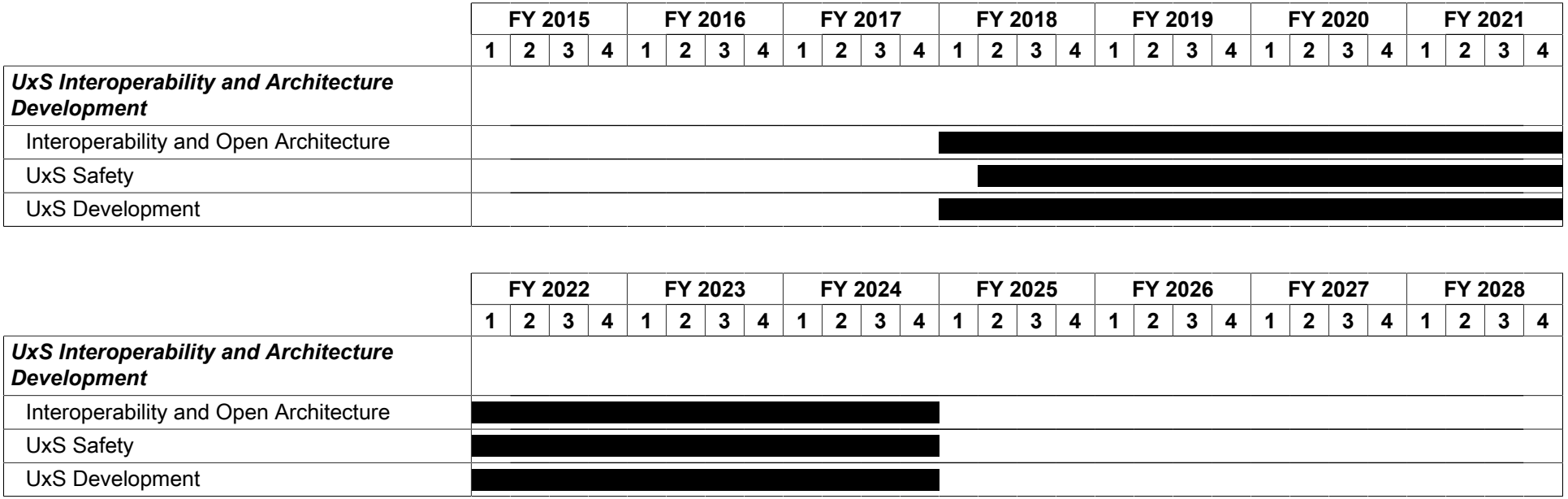


Exhibit R-4A, RDT&E Schedule Details: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604400D8Z / *Department of Defense (DoD) Unmanned Systems Common Development*	**Project (Number/Name)** 442 / *Interoperability*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
UxS Interoperability and Architecture Development				
Interoperability and Open Architecture	1	2018	4	2024
UxS Safety	2	2018	4	2024
UxS Development	1	2018	4	2024

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604400D8Z / *Department of Defense (DoD) Unmanned Systems Common Development*	Project (Number/Name) 443 / *Unmanned Systems Roadmap*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
443: *Unmanned Systems Roadmap*	4.355	0.050	0.263	0.243	0.000	0.243	0.247	0.246	0.244	0.250	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project supports unmanned systems related forums, activities, events, travel, and other support requirements needed to enable the Department's unmanned systems goals. This includes efforts identified by the DoD Chairman of the interagency UAS Executive Committee (UAS EXCOM) as being important to enabling increased and ultimately routine DoD UAS access to and integration within both civil and expeditionary airspace.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Unmanned Systems Roadmap	0.050	0.263	0.243
Description: This project supports unmanned systems related forums, activities, events, travel, and other support requirements needed to enable the Department's unmanned systems goals. This includes efforts identified by the DoD Chairman of the interagency UAS Executive Committee (UAS EXCOM) as being important to enabling increased and ultimately routine DoD UAS access to and integration within both civil and expeditionary airspace.			
FY 2023 Plans: Continue providing general support to the Unmanned Systems Common Development program in order to achieve the Department's long and short term goals. Plans: - Support unmanned system objectives of the DASD (Platform and Weapons Portfolio Management), Assistant Secretary of Defense (Acquisition); and Under Secretary of Defense (Acquisition and Sustainment). - Support the DoD Co-Chair of the UAS Executive Committee, to include the Integration and Security Senior Steering Groups and the UAS Science and Research Panel (SARP) - Support the OUSD(A&S) Co-Chair of the OSD UAS cyber-security Exception and Waiver Board. - Support the OUSD(A&S) Co-Chair of the Joint Robotics and Autonomous System Enterprise (JRASE). - Support development of unmanned and autonomous systems' roadmaps, concepts, standards, procedures, and policies. - Support the processing of UAS cyber-security procurement and operations requests. - Inform and guide development of the DoD's Blue Small UAS and Blue Architecture programs. - Inform and guide UAS integration decisions, programs, and test events.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604400D8Z / *Department of Defense (DoD) Unmanned Systems Common Development*	**Project (Number/Name)** 443 / *Unmanned Systems Roadmap*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
- Conduct unmanned systems related interagency coordination. - Support administrative and travel related cost associated with the unmanned system common development program. ***FY 2024 Plans:*** - Support unmanned system objectives of the DASD (Platform and Weapons Portfolio Management), Assistant Secretary of Defense (Acquisition); and Under Secretary of Defense (Acquisition and Sustainment). - Support the DoD Co-Chair of the UAS Executive Committee, to include the Integration and Security Senior Steering Groups and the UAS Science and Research Panel (SARP). - Support the OUSD(A&S) Co-Chair of the OSD UAS cyber-security Exception and Waiver Board. - Support the OUSD(A&S) Co-Chair of the Joint Robotics and Autonomous System Enterprise (JRASE). - Support development of unmanned and autonomous systems' roadmaps, concepts, standards, procedures, and policies. - Support the processing of UAS cyber-security procurement and operations requests. - Inform and guide development of the DoD's Blue Small UAS and Blue Architecture programs. - Inform and guide UAS integration decisions, programs, and test events. - Conduct unmanned systems related interagency coordination. - Support administrative and travel related cost associated with the unmanned system common development program. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** There is no significant change between FY 2023 and FY 2024.			
Accomplishments/Planned Programs Subtotals	0.050	0.263	0.243

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604400D8Z / *Department of Defense (DoD) Unmanned Systems Common Development*	Project (Number/Name) 443 / *Unmanned Systems Roadmap*	

Support ($ in Millions)

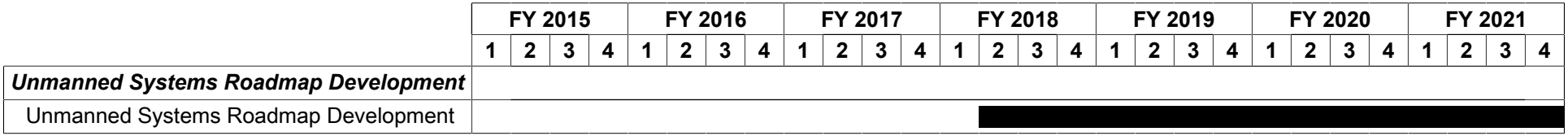
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Unmanned Systems Roadmap	C/LH	Army TARDEC Unmanned System Support services : Army TARDEC	4.355	0.050		0.263		0.243		-		0.243	-	-	-
		Subtotal	4.355	0.050		0.263		0.243		-		0.243	-	-	N/A

	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	4.355	0.050		0.263		0.243		-		0.243	-	-	N/A

Remarks

NA

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604400D8Z / *Department of Defense (DoD) Unmanned Systems Common Development*	**Project (Number/Name)** 443 / *Unmanned Systems Roadmap*



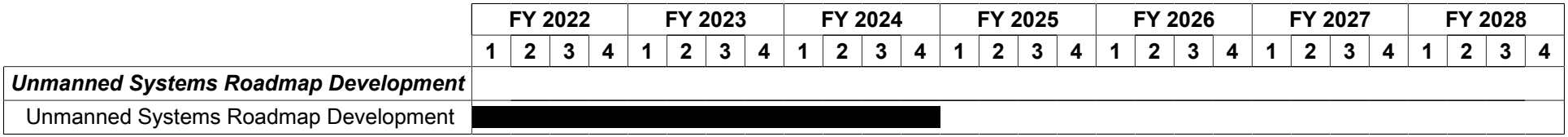


Exhibit R-4A, RDT&E Schedule Details: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604400D8Z / *Department of Defense (DoD) Unmanned Systems Common Development*	**Project (Number/Name)** 443 / *Unmanned Systems Roadmap*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Unmanned Systems Roadmap Development				
Unmanned Systems Roadmap Development	2	2018	4	2024

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0604555D8Z / *Operational Energy Capability Improvement*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	0.000	23.069	39.479	53.726	-	53.726	58.489	59.740	60.910	62.143	Continuing	Continuing
035: *Operational Energy Prototyping*	0.000	9.344	39.479	53.726	-	53.726	58.489	59.740	60.910	62.143	Continuing	Continuing
036: *Commanding Energy*	-	5.295	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
038: *Powering the Force*	-	4.315	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
054: *Electrifying the Battlespace*	-	4.115	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

Note

New start (Y/N): No

A. Mission Description and Budget Item Justification

The Operational Energy Prototyping (OEP) program prototypes, validates, and demonstrates the most promising, innovative, and cost-effective technologies and methods that address joint, high-priority, operational energy requirements.

This program supports the Department's initiatives to Build Sustainable and Long-Term Advantage and a Resilient Joint Force. The OEP program matures and demonstrates technology that enables increased operational reach, reduces emissions and logistical burdens that will support the Department's strategic goals to deter aggression and strategic attacks against the United States, allies, and partners, while being prepared to prevail in conflict when necessary, prioritizing the People's Republic of
China (PRC) challenge in the Indo-Pacific, and the Russia challenge in Europe. OEP is the Department's dedicated investment for Operational Energy Prototype development, validation, and warfighter demonstration to address joint operational energy requirements. Investments in OEP support current policy objectives and inform future policy goals.

The OEP program prototypes, validates, and demonstrates the most promising, innovative, and cost-effective technologies and methods that address joint, high-priority, operational energy requirements.

This program supports the Department's initiatives to Build Sustainable and Long-Term Advantage and a Resilient Joint Force. The OEP program matures and demonstrates technology that enables increased operational reach, reduces emissions and logistical burdens that will support the Department's strategic goals to deter aggression and strategic attacks against the United States, allies, and partners, while being prepared to prevail in conflict when necessary, prioritizing the PRC challenge in the Indo-Pacific, and the Russia challenge in Europe. OEP is the Department's dedicated investment for Operational Energy Prototype development, validation, and warfighter demonstration to address joint operational energy requirements. Investments in OEP support current policy objectives and inform future policy goals.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0604555D8Z *I Operational Energy Capability Improvement*

OEP funding efforts will identify and mitigate energy-related risks and increase warfighting capabilities and resilience. OEP will invest in prototyping, validating, and demonstrations in three focus areas:

• Powering the Force: Support the deployment of mobile and distributed operations with resilient and agile energy logistics in contested environments. Reduce the risks, vulnerability, and climate impacts of the DOD's dependence on fuel.
• Electrifying the Battlespace: Enable the electrification of weapons, platforms, unmanned systems, and soldiers to field new weapon, sensing, active defense, and other technologies. Meet the growing demands of power across the battlespace.
• Commanding Energy: Capture and understand energy profiles to transform the Joint Force from reactive to predictive energy management and control. Achieve real-time energy awareness and command and control at all levels.

OEP serves as the program by which operational energy technology advances made under the Operational Energy Capability Innovation (OECI) can transition to military service acquisition programs. Transition plans for each prototype are established to ensure that components have time to plan, program, and budget for technology transition to programs of record.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	23.069	45.779	54.801	-	54.801
Current President's Budget	23.069	39.479	53.726	-	53.726
Total Adjustments	0.000	-6.300	-1.075	-	-1.075
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-6.300			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	-	-	-1.075	-	-1.075

Change Summary Explanation

FY 2024 decrease due to a reduction of technology road mapping efforts within operational energy innovations and deconfliction of efforts across the Services.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604555D8Z / *Operational Energy Capability Improvement*	Project (Number/Name) 035 / *Operational Energy Prototyping*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
035: *Operational Energy Prototyping*	0.000	9.344	39.479	53.726	-	53.726	58.489	59.740	60.910	62.143	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The mission of the OEP is to fund warfighter prototyping, demonstration, and transition that will improve DOD operational effectiveness. As Defense-Wide funding it promotes long term change in DOD capabilities so they are better aligned with the Operational Energy Strategy.

OEP fosters non-science and technology innovation to improve operational energy performance and has two key mission aspects. First, to ruggedize, demonstrate, and transition into use operational energy technologies and practices that will improve DOD military capabilities, resiliency, and/or reduce costs. Second, to establish within the military Services sustainable, institutional capability to continue to develop and adopt operational energy innovations.

OEP serves as the program by which operational energy technology advances made under the Operational Energy Capability Innovation program (OECI) can transition to military service acquisition programs without delay and loss of momentum. Transition plans for each successful prototype will be established to ensure that components have time to plan, program, and budget for technology transition to programs of record. Demand for this program is greater than 4 times the funding available ensuring the most competitive programs are awarded to move forward.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Operational Energy Prototyping (OEP)	9.344	39.479	53.726
Description: Operational Energy Prototyping (OEP) continues to identify and demonstrate the most promising, innovative, and cost-effective technologies and methods that address joint high-priority operational energy requirements. OEP solicits proposals from across the DoD and competitively awards projects based on OE impact and programmatic transition. Warfighter feedback is obtained through limited technical assessment, static demonstration, and participation in formal exercises. Transition plans are established for each prototype to ensure support for requirements and acquisition programs of record. OEP invests in prototyping, validations, and demonstrations in four focus areas: (1) support prototype development of new operational energy technologies, (2) carry out formal demonstrations at installations or in conjunction with exercises conducted by the Joint Staff, a combatant command, or a military department, (3) collect cost and performance data to overcome barriers against employing an innovative technology because of concerns regarding technical or programmatic risk, and (4) provide the tools and analysis that quantifies the mission impact of these new technologies.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604555D8Z / *Operational Energy Capability Improvement*	**Project (Number/Name)** 035 / *Operational Energy Prototyping*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Field-based airborne power generation systems; renewable space-based solar advances; smaller, mobile, and modular waste-to-energy systems securing warfighter health through mitigating burn-pit exposure. ***FY 2023 Plans:*** Complete FY 2022 project starts. OEP competitively awarded nine projects encompassing Space, Land, Sea, and Air combat domains. Space Force Power beaming enables increased efficiency for space satellites, while improved solar cell manufacturing lowers costs of high-grade photovoltaics applicable to Space domains and earthbound applications. Anti-idle technology reduces tactical vehicle idle time up to 17 hours per day, with a correlative reduction on energy and carbon emissions. Unmanned aircraft systems increased mission time on station due to weather-based route planning, electronic control unit modifications, and hybrid-energy system employment. Increased energy awareness on the battlefield with automated fuel reporting, and metering and monitoring of energy storage and three-phase electric power. The Tactical Microgrid Standard (TMS) has been fully ratified (MIL-PRF-3071) yielding improved policy and acquisition of smart-grid usage of electrical power. Presidential directed actions towards burn pit closures identified requirements for miniaturization of waste incineration and waste to energy systems. The September 2022 Pentagon Energy Expo brought over 100 technologies from across the DOD to the Pentagon for display to the Deputy Secretary of Defense, Congressional Members, and Service Flag Officers and OEP continues to advocate for DOD-wide adoption and promote transition. Demand for funding of Operational Energy, Advanced Technology Development mature programs is more than four times the funding available annually. In FY 2022 OECI will complete projects in energy storage, tactical microgrids, nuclear fuel production, space solar, and power and thermal management for high-energy weapons. OEP will continue to operationalize the best of these efforts with continued prototyping ahead of transition to programs of record. FY 2023 Projects encompass all combat domains and all aspects of operational energy systems. Data collection, warfighter demonstrations, analytical impact and quantification are also core tenants of OEP. Congressional adds for Airborne Energy Generation as well as continued efforts for burn pit mitigation are planned. OEP will leverage the fully ratified TMS to synchronize efforts to ensure roadmaps are developed leading to out-year DOD-wide adoption of tactical microgrids. ***FY 2024 Plans:*** In FY 2024 OECI will complete projects in energy storage, tactical microgrids, nuclear fuel production, space solar, and power and thermal management for high-energy weapons. OEP will continue to competitively award projects and operationalize the best of these proposed efforts with continued prototyping, validation, and demonstration ahead of transition to programs of record.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604555D8Z / *Operational Energy Capability Improvement*	**Project (Number/Name)** 035 / *Operational Energy Prototyping*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Projects will encompass all combat domains and all aspects of operational energy systems. Data collection, warfighter demonstrations, analytical impact and quantification are core tenants of OEP. Increased warfighter evaluations moving closer to operational environments will strengthen fidelity of technology impact and transition. Future plans focus on improving agility, sustainability and resiliency of the Joint Force, through cold weather technologies, radio isotropic fuels for modular nuclear generation, waste-to-energy, space-based capabilities, power beaming, energy storage, and microgrid prototype demonstrations with both storage and renewable energy for enhanced warfighter effectiveness. Additional funding will be allocated to advancing Section 324(c4) of the National Defense Authorizations Act for FY 2021 to ensure development of a DoD-wide operational energy tool for accountability and transition. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** This program accelerates the deployment of innovative technologies that improve operational energy efficiency and security in a contested logistics environment. The demand was validated in FY 2022. The FY 2024 increase aligns with advanced technologies maturation through OECIF (0604055D8Z) and the Services to rapidly transition capability to the warfighter. The program demonstrates and transitions technologies focused on solutions to reduce the time and cost to implement and operate tactical microgrids, optimized energy storage, and extended duration and use of autonomous systems, as examples.			
Accomplishments/Planned Programs Subtotals	9.344	39.479	53.726

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

N/A

D. Acquisition Strategy

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604555D8Z / *Operational Energy Capability Improvement*	**Project (Number/Name)** 035 / *Operational Energy Prototyping*

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Support Contract	C/IDDQ	TBD : TBD	0.000	1.200		2.100		2.400		-		2.400	-	-	N/A
		Subtotal	0.000	1.200		2.100		2.400		-		2.400	-	-	N/A

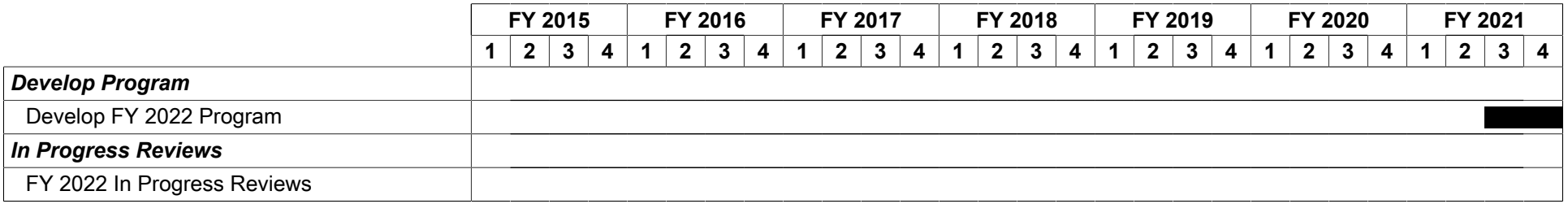
Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Operational Energy Prototyping	TBD	Various : Various	0.000	8.144		37.379		51.326		-		51.326	-	-	N/A
		Subtotal	0.000	8.144		37.379		51.326		-		51.326	-	-	N/A

	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	9.344		39.479		53.726		-		53.726	-	-	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604555D8Z / *Operational Energy Capability Improvement*	**Project (Number/Name)** 035 / *Operational Energy Prototyping*



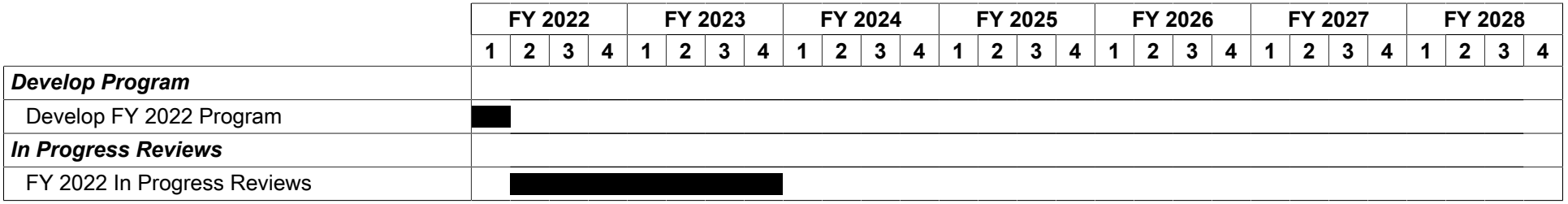


Exhibit R-4A, RDT&E Schedule Details: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604555D8Z / *Operational Energy Capability Improvement*	**Project (Number/Name)** 035 / *Operational Energy Prototyping*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Develop Program				
Develop FY 2022 Program	3	2021	1	2022
In Progress Reviews				
FY 2022 In Progress Reviews	2	2022	4	2023

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604555D8Z / *Operational Energy Capability Improvement*	Project (Number/Name) 036 / *Commanding Energy*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
036: *Commanding Energy*	-	5.295	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The mission of the OEP is to fund warfighter prototyping, demonstration, and transition that will improve DOD operational effectiveness. As Defense-Wide funding it promotes long term change in DOD capabilities so they are better aligned with the Operational Energy Strategy.

OEP fosters non-S&T innovation to improve operational energy performance and has two key mission aspects. First, to ruggedize, demonstrate, and transition into use operational energy technologies and practices that will improve DOD military capabilities, resiliency, and/or reduce costs. Second, to establish within the military Services sustainable, institutional capability to continue to develop and adopt operational energy innovations.

OEP serves as the program by which operational energy technology advances made under the Operational Energy Capability Innovation program (OECI) can transition to military service acquisition programs without delay and loss of momentum. Transition plans for each successful prototype will be established to ensure that components have time to plan, program, and budget for technology transition to programs of record. Demand for this program is greater than 4 times the funding available ensuring the most competitive programs are awarded to move forward.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Commanding Energy	5.295	-	-
Description: Operational Energy Prototyping (OEP) continues to identify and demonstrate the most promising, innovative, and cost-effective technologies and methods that address joint high-priority operational energy requirements. OEP solicits proposals from across the DOD and competitively awards projects based on OE impact and programmatic transition. Warfighter feedback is obtained through limited technical assessment, static demonstration, and participation in formal exercises. Transition plans are established for each prototype to ensure support for requirements and acquisition programs of record. OEP invests in prototyping, validations, and demonstrations in four focus areas: (1) support prototype development of new operational energy technologies, (2) carry out formal demonstrations at installations or in conjunction with exercises conducted by the Joint Staff, a combatant command, or a military department, (3) collect cost and performance data to overcome barriers against employing an innovative technology because of concerns regarding technical or programmatic risk, and (4) provide the tools and analysis that quantifies the mission impact of these new technologies.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604555D8Z / *Operational Energy Capability Improvement*	**Project (Number/Name)** 036 / *Commanding Energy*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Commanding Energy - Automated Fuel Reporting and Deployable Metering and Monitoring transitions networked knowledge of energy resources, usage, and combat needs; Tactical Microgrid Standard transitions to the Army and USMC acquisitions offices enabling efficient and optimal energy use across the battlespace; Enhancing energy tools for warfighter mission planning.			
Accomplishments/Planned Programs Subtotals	5.295	-	-

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604555D8Z / *Operational Energy Capability Improvement*	Project (Number/Name) 036 / *Commanding Energy*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Commanding Energy	TBD	Various : Various	-	5.295		-		-		-		-	Continuing	Continuing	-
		Subtotal	-	5.295		-		-		-		-	Continuing	Continuing	N/A

	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	5.295		-		-		-		-	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604555D8Z / *Operational Energy Capability Improvement*	**Project (Number/Name)** 036 / *Commanding Energy*

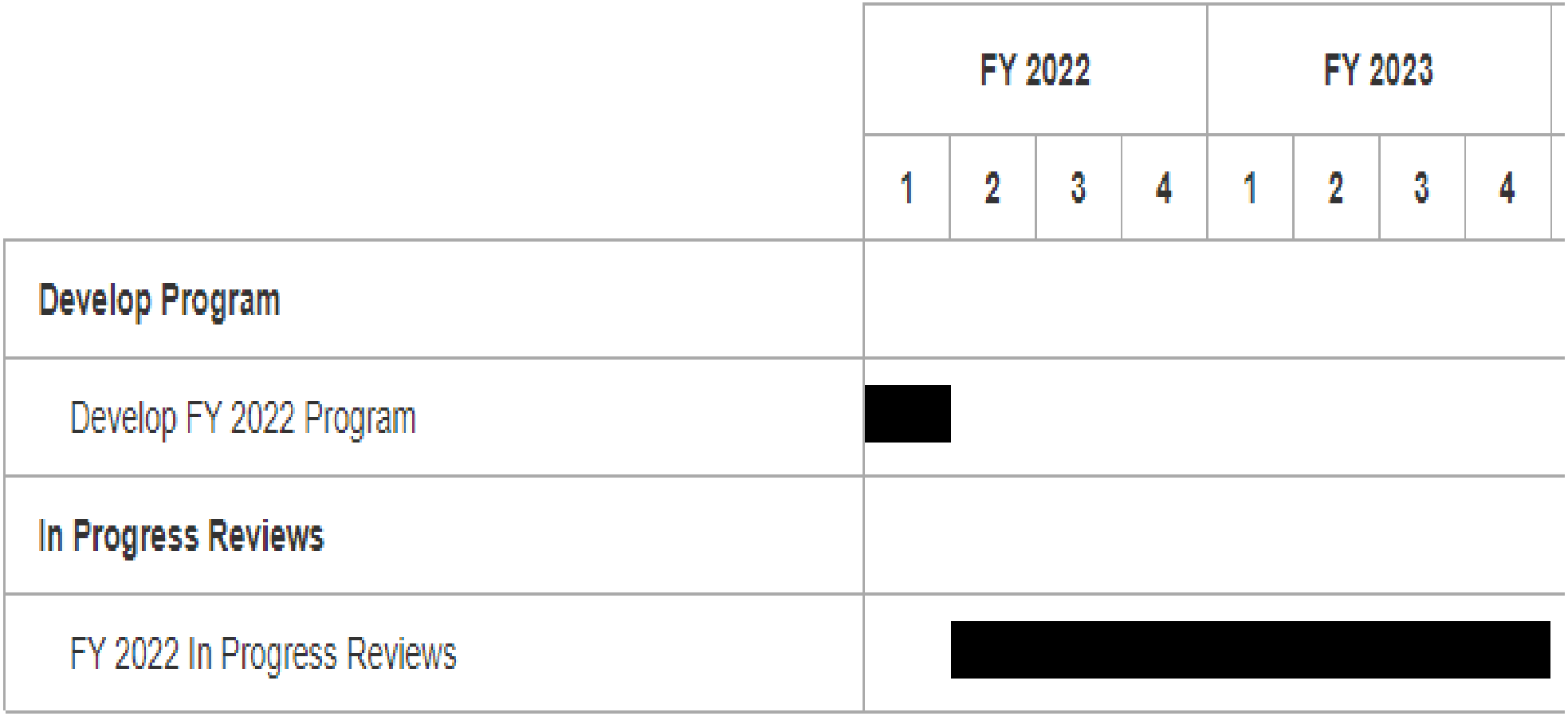


Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604555D8Z / *Operational Energy Capability Improvement*	Project (Number/Name) 038 / *Powering the Force*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
038: *Powering the Force*	-	4.315	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The mission of the OEP is to fund warfighter prototyping, demonstration, and transition that will improve DOD operational effectiveness. As Defense-Wide funding it promotes long term change in DOD capabilities so they are better aligned with the Operational Energy Strategy.

OEP fosters non-S&T innovation to improve operational energy performance and has two key mission aspects. First, to ruggedize, demonstrate, and transition into use operational energy technologies and practices that will improve DOD military capabilities, resiliency, and/or reduce costs. Second, to establish within the military Services sustainable, institutional capability to continue to develop and adopt operational energy innovations.

OEP serves as the program by which operational energy technology advances made under the Operational Energy Capability Innovation program (OECI) can transition to military service acquisition programs without delay and loss of momentum. Transition plans for each successful prototype will be established to ensure that components have time to plan, program, and budget for technology transition to programs of record. Demand for this program is greater than 4 times the funding available ensuring the most competitive programs are awarded to move forward.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Powering the Force	4.315	-	-
Description: Operational Energy Prototyping (OEP) continues to identify and demonstrate the most promising, innovative, and cost-effective technologies and methods that address joint high-priority operational energy requirements. OEP solicits proposals from across the DOD and competitively awards projects based on OE impact and programmatic transition. Warfighter feedback is obtained through limited technical assessment, static demonstration, and participation in formal exercises. Transition plans are established for each prototype to ensure support for requirements and acquisition programs of record. OEP invests in prototyping, validations, and demonstrations in four focus areas: (1) support prototype development of new operational energy technologies, (2) carry out formal demonstrations at installations or in conjunction with exercises conducted by the Joint Staff, a combatant command, or a military department, (3) collect cost and performance data to overcome barriers against employing an innovative technology because of concerns regarding technical or programmatic risk, and (4) provide the tools and analysis that quantifies the mission impact of these new technologies. Powering the Force – Uncrewed Aerial Vehicle technology transition increases mission on-station time and energy savings with positive climate impact; on-orbit demonstration of wireless power transfer.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604555D8Z / *Operational Energy Capability Improvement*	**Project (Number/Name)** 038 / *Powering the Force*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Accomplishments/Planned Programs Subtotals	4.315	-	-

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604555D8Z / *Operational Energy Capability Improvement*	**Project (Number/Name)** 038 / *Powering the Force*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Powering the Force	TBD	Various : Various	-	4.315		-		-		-		-	Continuing	Continuing	-
		Subtotal	-	4.315		-		-		-		-	Continuing	Continuing	N/A

	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	4.315		-		-		-		-	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604555D8Z / *Operational Energy Capability Improvement*	**Project (Number/Name)** 038 / *Powering the Force*

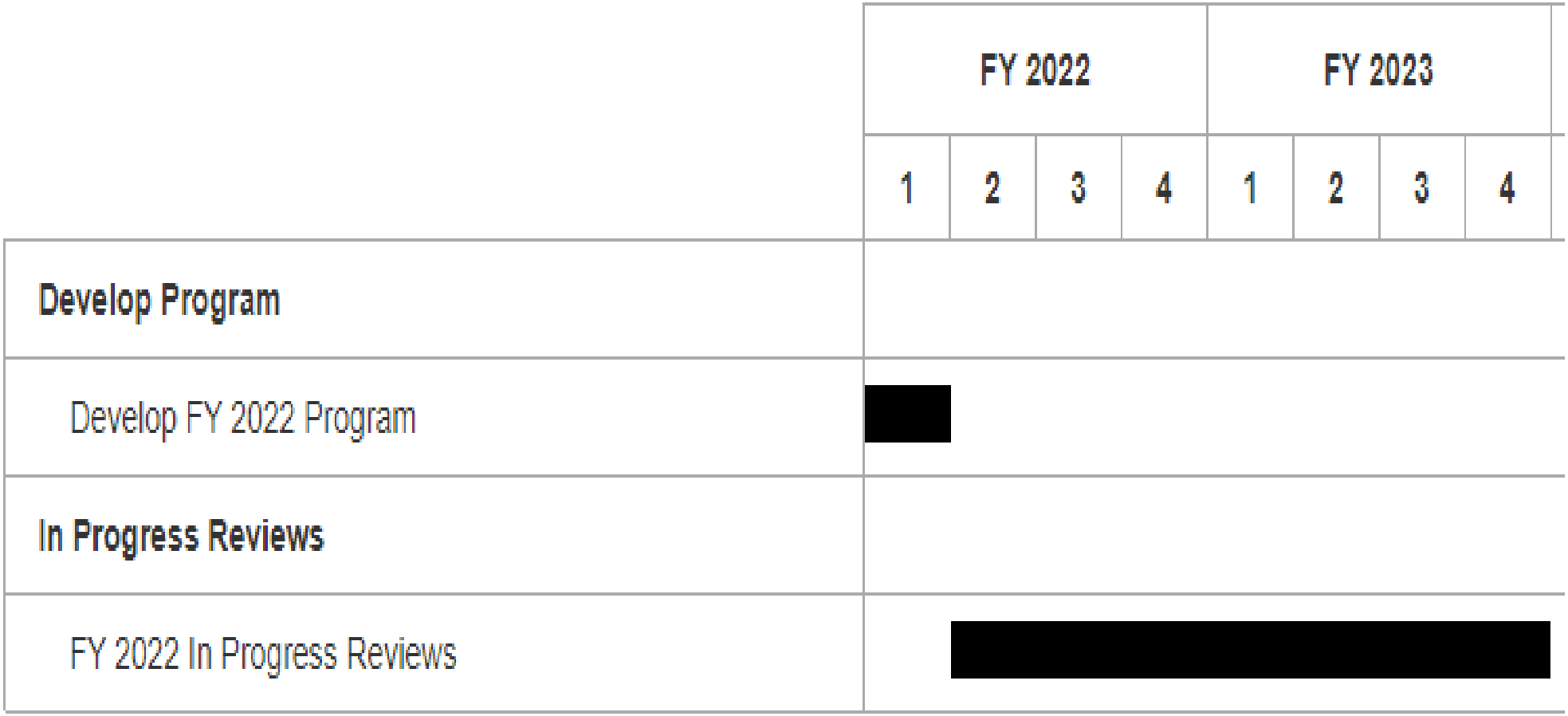


Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604555D8Z / *Operational Energy Capability Improvement*	Project (Number/Name) 054 / *Electrifying the Battlespace*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
054: *Electrifying the Battlespace*	-	4.115	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The mission of the OEP is to fund warfighter prototyping, demonstration, and transition that will improve DOD operational effectiveness. As Defense-Wide funding it promotes long term change in DOD capabilities so they are better aligned with the Operational Energy Strategy.

OEP fosters non-S&T innovation to improve operational energy performance and has two key mission aspects. First, to ruggedize, demonstrate, and transition into use operational energy technologies and practices that will improve DOD military capabilities, resiliency, and/or reduce costs. Second, to establish within the military Services sustainable, institutional capability to continue to develop and adopt operational energy innovations.

OEP serves as the program by which operational energy technology advances made under the Operational Energy Capability Innovation program (OECI) can transition to military service acquisition programs without delay and loss of momentum. Transition plans for each successful prototype will be established to ensure that components have time to plan, program, and budget for technology transition to programs of record. Demand for this program is greater than 4 times the funding available ensuring the most competitive programs are awarded to move forward.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Electrifying the Battlespace	4.115	-	-
Description: Operational Energy Prototyping (OEP) continues to identify and demonstrate the most promising, innovative, and cost-effective technologies and methods that address joint high-priority operational energy requirements. OEP solicits proposals from across the DOD and competitively awards projects based on OE impact and programmatic transition. Warfighter feedback is obtained through limited technical assessment, static demonstration, and participation in formal exercises. Transition plans are established for each prototype to ensure support for requirements and acquisition programs of record. OEP invests in prototyping, validations, and demonstrations in four focus areas: (1) support prototype development of new operational energy technologies, (2) carry out formal demonstrations at installations or in conjunction with exercises conducted by the Joint Staff, a combatant command, or a military department, (3) collect cost and performance data to overcome barriers against employing an innovative technology because of concerns regarding technical or programmatic risk, and (4) provide the tools and analysis that quantifies the mission impact of these new technologies. Electrifying the Battlespace – Enabling greater industry participation and rapid acquisition of tactical vehicle hybridization and electrification technologies by increasing the types and numbers of tactical vehicles with electric prototypes.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604555D8Z / *Operational Energy Capability Improvement*	**Project (Number/Name)** 054 / *Electrifying the Battlespace*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Accomplishments/Planned Programs Subtotals	4.115	-	-

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604555D8Z / *Operational Energy Capability Improvement*	Project (Number/Name) 054 / *Electrifying the Battlespace*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Electrifying the Battlespace	TBD	Various : Various	-	4.115		-		-		-		-	Continuing	Continuing	-
		Subtotal	-	4.115		-		-		-		-	Continuing	Continuing	N/A

	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	4.115		-		-		-		-	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604555D8Z / *Operational Energy Capability Improvement*	**Project (Number/Name)** 054 / *Electrifying the Battlespace*

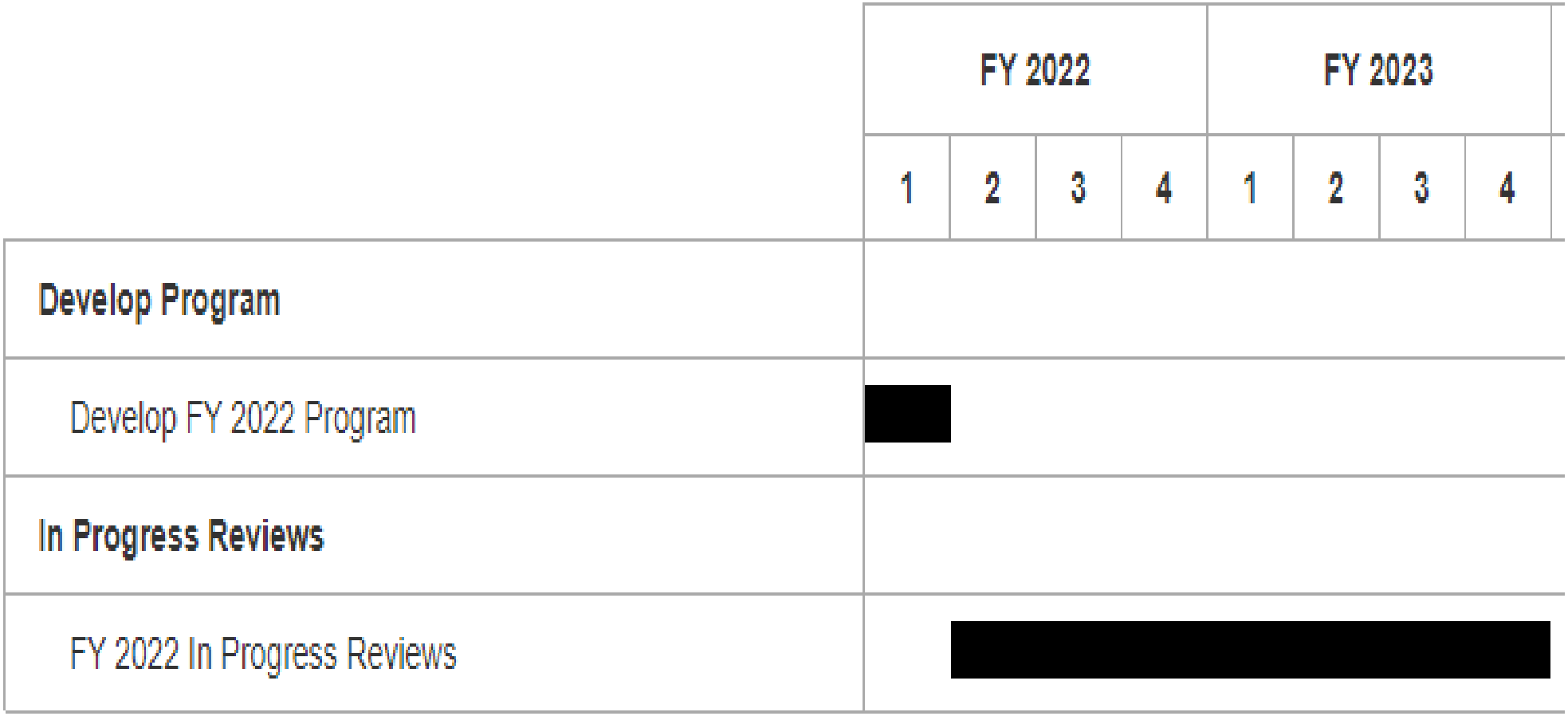


Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0604682D8Z / *Wargaming & Support for Strategic Analysis (SSA)*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	18.111	3.284	3.229	3.206	-	3.206	3.588	3.423	3.528	3.610	-	-
104: *Wargaming & Support for Strategic Analysis*	18.111	3.284	3.229	3.206	-	3.206	3.588	3.423	3.528	3.610	-	-

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

This program supports the Department's initiatives to Deter Aggression, Defend the Homeland, and Build Sustainable and Long-Term Advantage.

This program supports the Office of the Director, Cost Assessment & Program Evaluation (CAPE) by funding activities that help CAPE to implement warfighting analysis in support of the National Defense Strategy (NDS). The CAPE accomplishes this by leading studies to support campaign analysis and analytical research across a spectrum of national security issues and concerns.

These RDT&E resources support critical studies and analyses to assist senior DoD leaders in optimally balancing the lethality, partnership, and reform levels of effort to carry out the NDS. The research agenda focuses on near to long-term problems identified by the Deputy Secretary of Defense, and addresses difficult and complex questions linked to program alternatives for current and future capabilities and forces in order to enhance the senior leadership's deliberations and decision-making.

This program provides the scientific and technical engineering services needed for research studies in the development of models and simulations and the evaluation of current analytical tools and scientific methods used to evaluate and assess scenarios and concepts of operations for a wide range of warfighting environments and scenarios. Deliverables from this program will include reports, briefings, and analyses designed to illuminate findings and assessments to inform Operation Plan development and DoD's approach to concept development, joint campaign analysis, evaluation, and force development.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0604682D8Z / *Wargaming & Support for Strategic Analysis (SSA)*

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	3.409	3.229	3.143	-	3.143
Current President's Budget	3.284	3.229	3.206	-	3.206
Total Adjustments	-0.125	0.000	0.063	-	0.063
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	-0.125	-	0.063	-	0.063

Change Summary Explanation

Program adjustments to account for inflation.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604682D8Z / *Wargaming & Support for Strategic Analysis (SSA)*	Project (Number/Name) 104 / *Wargaming & Support for Strategic Analysis*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
104: *Wargaming & Support for Strategic Analysis*	18.111	3.284	3.229	3.206	-	3.206	3.588	3.423	3.528	3.610	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This program supports the Office of the Director, Cost Assessment & Program Evaluation (CAPE). It funds activities that help CAPE to implement the vision of the Deputy Secretary of Defense to support new approaches to campaign analysis. CAPE will accomplish this by leading studies and developing analytic tools to think about future capabilities and posture.

This program provides for analytical research across a spectrum of issues and concerns. The research agenda is focused on near to long-term problems identified by the Deputy Secretary of Defense, and addresses difficult and complex questions linked to program alternatives for current and future capabilities and forces in order to enhance the senior leadership's deliberations and decision-making.

This program provides the scientific and technical engineering services needed for research studies in the development of models and simulations and the evaluation of current analytical tools and scientific methods used to evaluate and assess future scenarios and concepts of operations for a wide range of warfighting environments and scenarios. Deliverables from this program will include reports, briefings, and analyses designed to illuminate findings and assessments. Outcomes include the compilation and campaign analyses data to support the DoD capabilities to the challenges of a near-peer warfight and strategic and programmatic options for post INF treaty weapons options.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Wargaming & Support for Strategic Analysis	3.284	3.229	3.206
Description: This program provides for analytical research across a spectrum of issues and concerns. The research agenda is focused on near to long-term problems identified by the Deputy Secretary of Defense, and addresses difficult and complex questions linked to program alternatives for current and future capabilities and forces in order to enhance the senior leadership's deliberations and decision-making.			
FY 2023 Plans: Studies, analyses, and assessments will be focused on: - Developing and refining warfighting objectives from senior leader priorities and Strategic Support Analysis activities - Overseeing concept, analysis, and force design work - Providing guidance to DoD on best practices for Service Concepts and long range fires decision			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604682D8Z / *Wargaming & Support for Strategic Analysis (SSA)*	**Project (Number/Name)** 104 / *Wargaming & Support for Strategic Analysis*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
- Analytic Working Group initiatives to comprehensively assess, recommend, and oversee execution of enterprise reforms necessary to improve the Department's ability to analytically advance the Secretary's priorities ***FY 2024 Plans:*** Studies, analyses, and assessments will be focused on: - Developing and refining warfighting objectives from senior leader priorities and Strategic Support Analysis activities - Overseeing concept, analysis, and force design work - Providing guidance to DoD on best practices for Service Concepts and long range fires decision - Analytic Working Group initiatives to comprehensively assess, recommend, and oversee execution of enterprise reforms necessary to improve the Department's ability to analytically advance the Secretary's priorities ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2024 decrease will continue to fund a mix of research activities and carry out the 2024 plans as stated above.			
Accomplishments/Planned Programs Subtotals	3.284	3.229	3.206

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

A mix of competitive contracts with commercial firms and research provided by university-affiliated research centers (UARCs), and Federally Funded Research and Development Centers (FFRDCs).

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604682D8Z / *Wargaming & Support for Strategic Analysis (SSA)*	Project (Number/Name) 104 / *Wargaming & Support for Strategic Analysis*	

Product Development ($ in Millions)

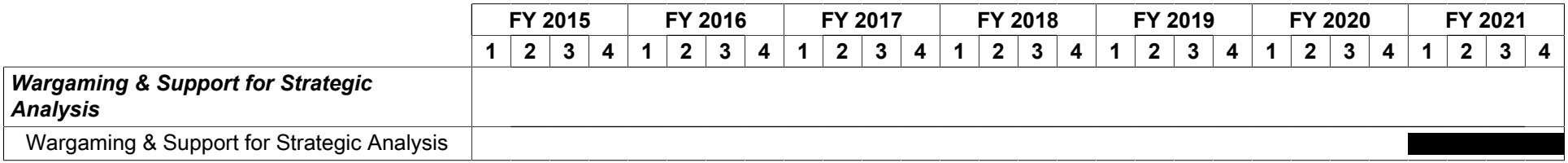
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Wargaming & Support for Strategic Analysis	C/Various	Various : DC Metro Area	18.111	3.284		3.229		3.206		-		3.206	Continuing	Continuing	N/A
		Subtotal	18.111	3.284		3.229		3.206		-		3.206	Continuing	Continuing	N/A

	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	18.111	3.284		3.229		3.206		-		3.206	Continuing	Continuing	N/A

Remarks

The CAPE will accomplish this program by leading warfighting analysis, mission engineering threads, and analysis of concepts of operations. Funds will be awarded for high-priority projects based on competition, and the awards will include analysis of proposed costs.

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604682D8Z / *Wargaming & Support for Strategic Analysis (SSA)*	**Project (Number/Name)** 104 / *Wargaming & Support for Strategic Analysis*



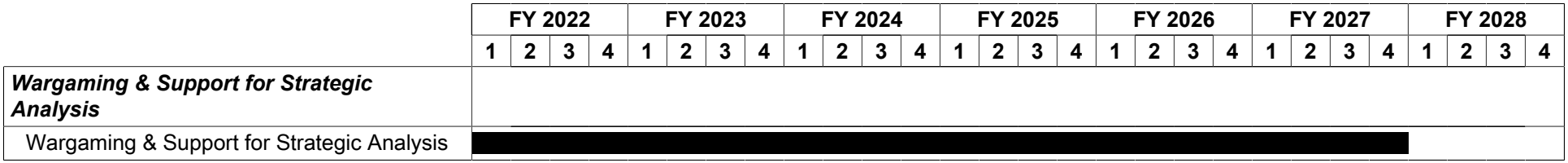


Exhibit R-4A, RDT&E Schedule Details: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604682D8Z / *Wargaming & Support for Strategic Analysis (SSA)*	**Project (Number/Name)** 104 / *Wargaming & Support for Strategic Analysis*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Wargaming & Support for Strategic Analysis				
Wargaming & Support for Strategic Analysis	1	2021	4	2027

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0604790D8Z / *Rapid Defense Experimentation Reserve (RDER)*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	-	0.000	24.758	79.773	-	79.773	73.671	77.650	80.671	82.429	Continuing	Continuing
790: *Rapid Defense Experimentation Reserve (RDER)*	-	0.000	24.758	79.773	-	79.773	73.671	77.650	80.671	82.429	Continuing	Continuing

Note

New Start (Y/N): No

In FY 2023, the Rapid Defense Experimentation Reserve (RDER) transferred from the Rapid Prototyping Program (RPP) 0604331D8Z to a stand alone program element under the oversight of the Office of the Under Secretary of Defense for Research and Engineering (OUSD(R&E)).

A. Mission Description and Budget Item Justification

The RDER PE supports core program management and integration activities necessary to plan and execute a multi-year campaign of experimentation. The RDER initiative is a whole of DoD effort focused on joint experimentation to provide rapid capabilities that address our most difficult military challenges. The Secretary of Defense established the RDER initiative in the Defense Planning Guidance for Fiscal Year 2023-2027, to enable multi- component experimentation through a campaign of learning that accelerates technology transition and scale-up with the Services through the Deputy's Management Action Group. This experimentation is executed using validated mission vignettes to assess Measures of effectiveness and measures of performance identified in Modeling and Simulation. Integrated Assessment plans are developed for each prototype in the experiment and the data is collected thru a campaign of experimentation utilizing Service demonstration venues such as Project Convergence or Combatant Command Training Exercises such as Northern Edge or Valliant Shield. The final prototype assessment will consist of a body of evidence that consists of Modeled data, range or exercise performance, and doctrine, organization, training, materiel, leadership and education, personnel, and facilities (DOTMPLF) issues. This assessment will be presented to the Joint Requirements Oversight Council (JROC) and the Deputy Secretary of Defense (DEPSECDEF) Deputy Management Action Group (DMAG) to inform transition or acceleration decisions for the department.

The RDER program focuses on a campaign of joint experimentation on rapid capabilities that address our most complex military challenges. The Secretary of Defense established RDER in the Defense Planning Guidance to enable multi-component joint experimentation through a campaign of learning and to establish a body of evidence to support rapid adoption by the Services. RDER enables the Services, agencies, industry, and other organizations to identify "best of breed" capabilities to be prototyped in large-scale joint experiments and validate and/or refine the Joint Warfighting Concept (JWC).

OUSD(R&E)'s process for incubating promising prototypes starts with a novel experimental design based on a web of interconnected systems addressing specific Defense Planning Scenarios. This approach is unique from other experimentation that focuses on determining individual system efficacy. Additionally, the experimental design is unique in using the web of systems to explore new warfighting concepts that capitalize on contributions of multiple Services as a true joint force. The experimentation yields live data that the USD(R&E) analyzes against the performance predicted in modelling and simulation.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0604790D8Z / *Rapid Defense Experimentation Reserve (RDER)*

OUSD(R&E) manages the Department's multiple RDER experimentation events and conducts integration activities with the Joint Force. OUSD(R&E) recommends new projects, reviews project progress, and incorporates the most promising innovative prototypes into existing exercise venues such as: Project Convergence, Valiant Shield, Talisman Sabre, Grey Flag, Joint Battle Problem, and TREX. RDER utilizes funding to plan, integrate, and oversee joint experiments; provide assessments on project viability; and, deliver the results to the DMAG to facilitate decisions on transitioning promising capabilities with the Services.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	0.000	0.000	0.000	-	0.000
Current President's Budget	0.000	24.758	79.773	-	79.773
Total Adjustments	0.000	24.758	79.773	-	79.773
• Congressional General Reductions	-	-45.242			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	70.000			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	-	-	8.773	-	8.773
• RDER Realignment from 0604331D8Z, Project 073	-	-	71.000	-	71.000

Change Summary Explanation

FY 2023 includes a congressional transfer of $70.000 million from the Rapid Prototyping Program (RPP), 0604331D8Z, Project 073, and a congressional reduction of $45.242 million.

FY 2024 includes a funding re-alignment of $71.000 million from the Rapid Prototyping Program (RPP), 0604331D8Z, a program adjustment increase of $10.000 million to support the Rapid Defense Experimentation Reserve (RDER) priorities, a reduction of $1.545 million to support the Historically Black Colleges and Universities/Minority Serving Institutions program, which is a priority of the Under Secretary of Defense for Research and Engineering (USD(R&E)), a reduction of $0.074 million to support departmental priorities, and an increase of $0.392 million for an economic assumption inflation.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604790D8Z / *Rapid Defense Experimentation Reserve (RDER)*	Project (Number/Name) 790 / *Rapid Defense Experimentation Reserve (RDER)*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
790: *Rapid Defense Experimentation Reserve (RDER)*	-	0.000	24.758	79.773	-	79.773	73.671	77.650	80.671	82.429	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY 2023, Congress transferred the Rapid Defense Experimentation Reserve RDER from the Rapid Prototyping Program (RPP) 0604331D8Z to a standalone program element under the oversight of the Office of the Under Secretary of Defense for Research and Engineering (OUSD(R&E)).

A. Mission Description and Budget Item Justification

The RDER program focuses on a campaign of joint experimentation on rapid capabilities that address our most complex military challenges. The Secretary of Defense established RDER in the Defense Planning Guidance to enable multi-component joint experimentation through a campaign of learning and to establish a body of evidence to support rapid adoption by the Services. RDER enables the Services, agencies, industry, and other organizations to identify “best of breed” capabilities to be prototyped in large-scale joint experiments and validate and/or refine the Joint Warfighting Concept (JWC).

OUSD(R&E)’s process for incubating promising prototypes starts with a novel experimental design based on a web of interconnected systems addressing specific Defense Planning Scenarios. This approach is unique from other experimentation that focuses on determining individual system efficacy. Additionally, the experimental design is unique in using the web of systems to explore new warfighting concepts that capitalize on contributions of multiple Services as a true joint force. The experimentation yields live data that the USD(R&E) analyzes against the performance predicted in modelling and simulation.

OUSD(R&E) manages the Department’s multiple RDER experimentation events and conducts integration activities with the Joint Force. OUSD(R&E) recommends new projects, reviews project progress, and incorporates the most promising innovative prototypes into existing exercise venues such as: Project Convergence, Valiant Shield, Talisman Sabre, Grey Flag, Joint Battle Problem, and TREX. RDER utilizes funding to plan, integrate, and oversee joint experiments; provide assessments on project viability; and, deliver the results to the Deputy Secretary of Defense management action group to facilitate decisions on transitioning promising capabilities with the Services.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Rapid Defense Experimentation Reserve (RDER) Program Management	0.000	2.758	9.273
Description: Program Management includes the oversight of the execution of prototypes resourced with the Services to address required capabilities. This effort includes the ideation, identification and evaluation required to review service candidates for execution. Activities include monitoring new technologies through the innovation stakeholder community, which includes the			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604790D8Z / *Rapid Defense Experimentation Reserve (RDER)*	**Project (Number/Name)** 790 / *Rapid Defense Experimentation Reserve (RDER)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Service laboratories, industry, academia, and federally funded research and development centers and assess “best of breed” prototypes integrated in joint experimentation venues. ***FY 2023 Plans:*** RDER establishes and coordinates experimentation venues that provide interoperability for multi-component defense planning scenarios and mitigate potential risks of incompatibility at the joint level. Program Managers (PMs) oversees the cost, schedule, and performance of the prototypes within the Joint Warfighting Concept (JWC) functional battles: Fires; Command and Control (C2), Information Assurance (IA), Contested Logistics and Space and Cyber. RDER PMs collaborate with system developers to select risk reduction experiments that meet the technology maturation milestones for the multi-component experiments at Northern Edge 2023 and Gray flag exercises. RDER PMs provide program oversight and prepare experimentation plans for each prototype technology mapped to specific mission threads.. ***FY 2024 Plans:*** RDER will complete the evaluation of FY 2023 candidates as well as initiate the execution of FY 2024 experimentation. This includes plans to establish and coordinate experimentation venues that provide interoperability for multi-component defense planning scenarios and mitigate potential risks of incompatibility at the joint level. PMs plan to oversee the cost, schedule, and performance of prototypes within the four JWC functional battles: Fires; C2; IA; Contested Logistics and Space and Cyber. RDER PMs plan to collaborate with system developers to select risk reduction experiments that meet the technology maturation milestones for the multi-component experiments at Project Convergence 2024, Valiant Shield 2024, Talisman Sabre, Grey Flag 2024, Joint Battle Problem 2024, and TREX 2024. RDER PMs provide program oversight and prepare assessment and experimentation plans for each prototype technology. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2024 increase will include 2 years of candidate prototypes being concurrently evaluated requiring a funding increase to successfully execute. Funding increases to account for additional resources required.			
Title: Experiments Integration ***Description:*** RDER coordinates with the exercise planning cells at the Combatant Commands to conduct experiments. Technical readiness reviews evaluate system design requirements in order to define requirements for participation into multiple experimentation venues. RDER reviews prototypes system requirements and maps each within the network architectures for data dissemination and collection. RDER identifies risks that would impede interoperability at multi-component experiment venues. This supports analysis with FFRDC/UARC's to evacuate the utility of Sensor or Kill webs for the CCMD experimentation team to evaluate. ***FY 2023 Plans:***	0.000	5.000	11.500

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604790D8Z / *Rapid Defense Experimentation Reserve (RDER)*	**Project (Number/Name)** 790 / *Rapid Defense Experimentation Reserve (RDER)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Funding integrates prototypes into joint experimentation events to include Northern Edge 2023 and Grey Flag during the fiscal year. The effort support operational readiness review for each technology which includes safety review, Authority to Operate, and compliance standards to support technical maturity. This effort is executed for each experimentation event within the campaign series, ensuring Joint objectives and data collection is being properly documented. ***FY 2024 Plans:*** Funding integrates prototypes into multiple experimentation events to include Project Convergence 2024, Valiant Shield 2024, Talisman Sabre, Grey Flag 2024, Joint Battle Problem 2024, and TREX 2024. The effort support operational readiness review for each technology which includes safety review, Authority to Operate, and compliance standards to support technical maturity. This effort is executed for each experimentation event within the campaign series. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2024 increase will include 2 years of candidate prototypes being concurrently evaluated requiring a funding increase to successfully execute. Funding increases to account for additional resources required.			
Title: Experiment Design	0.000	2.500	11.500
Description: Resources provide the analysis to support the Combatant Commands establishing the system-of-system level architecture for integrating multiple prototypes into a single experimentation event. For each experimentation event, RDER evaluates each system level design to establish a government reference architecture that seamlessly employs prototype technologies at multiple experimentations geolocated across multiple states. Measures of effectiveness and measures of performance are established to be collected at each event. These Integrated assessment plans are developed for each individual technology. ***FY 2023 Plans:*** In FY 2023, RDER plans to employ government reference architecture for each experimentation venue to measure prototype interoperability at Northern Edge 2023 and Grey Flag 2023. In FY 2023, individual prototypes will be integrated into the experiment concept for each given exercise. The Integrated Assessment plan will determine the requirements for evaluation that are passed to the CCMD planning cells to define the experiment collection goals.. ***FY 2024 Plans:*** In FY 2024, RDER plans to employ government reference architecture for each experimentation venue to measure prototype interoperability at Project Convergence 2024, Valiant Shield 2024, Talisman Sabre, Grey Flag 2024, Joint Battle Problem 2024, and TREX 2024. RDER evaluates and validates the technical maturity of each interface with the experimentation architectural			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604790D8Z / *Rapid Defense Experimentation Reserve (RDER)*	**Project (Number/Name)** 790 / *Rapid Defense Experimentation Reserve (RDER)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
design utilizing architectural analysis tools. The final experimentation architecture is utilize to evaluate performance of the warfighter kill chains. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2024 increase will include 2 years of candidate prototypes being concurrently evaluated requiring a funding increase to successfully execute. Funding increases to account for additional resources required.			
Title: Experimentation Execution	0.000	5.000	12.500
Description: The execution phase consists of the collection of experimental system performance that is evaluated against the Measures of effectives and measures of performance that have been previously established. RDER establishes a data collection command and control network architecture to monitor the behavioral analysis of prototypes during an experimental event. Data is collected and stored for post event analysis. RDER deploys an experimentation unit to provide onsite observation, oversight, and governance during a prototype experiment event. These evaluation teams are required at each data collection node or technology location involved in the experiment. ***FY 2023 Plans:*** In FY 2023, RDER shall deploy a Data Experimentation White Cell (DEWC) to act as a data collection command and control element for experimental prototypes during Northern Edge 2023 and Grey Flag 2023. This function provide personnel to maintain operational command and control of each prototype perform experimentation. Personnel are located onsite with the prototype and deployed operational cell to assess the performance of the capability. The functional cell acquires the operational accreditation for the DEWC each experiment and acquires the automated tools to produce daily quick look analysis for each event. Operation updates and reports are briefed daily to OSD, Services, and Combatant Command. These technologies are being operated on operational military networks and require the requisite authorities to operate. ***FY 2024 Plans:*** In FY 2023, RDER shall deploy a Data Experimentation White Cell (DEWC) for experimental prototype data collection during Project Convergence 2024, Valiant Shield 2024, Talisman Sabre 2024, Grey Flag 2024, Joint Battle Problem 2024, and TREX 2024. RDER shall procure an additional command and control facility to support the experimentation that are geographically dispersed. This function provide personnel to maintain operational command and control of each prototype perform experimentation. Personnel are located onsite with the prototype and deployed operational cell to assess the operational readiness of the capability. The functional cell acquires the operational accreditation for the DEWC each experiment and acquires the automated tools to produce daily quick look analysis for each event. Operation updates and reports are briefed daily to OSD, Services, and Combatant Command. ***FY 2023 to FY 2024 Increase/Decrease Statement:***			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604790D8Z / *Rapid Defense Experimentation Reserve (RDER)*	**Project (Number/Name)** 790 / *Rapid Defense Experimentation Reserve (RDER)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
FY 2024 increase will include 2 years of candidate prototypes being concurrently evaluated requiring a funding increase to successfully execute. Funding increases to account for additional resources required.			
Title: Opposing Force (OPFOR) Threat Emulation ***Description:*** OPFOR Threat Emulation establishes a plausible, flexible military force representing a composite of varying capabilities of actual adversary forces within an experiment. Resources provide a threat informed and operationally relevant environment to conduct experiments. ***FY 2023 Plans:*** In FY 2023, OPFOR establishes a fully informed, multi-domain, operationally relevant environment with emulations that include threat emitters, maritime and ground-based targets, decoys, and communications nodes against projects. This effort acquires threat representative targets to establish a relevant environment for each technology that has been identified during the experimentation planning phase. Personnel and platforms may serve as to act as the Opposition Force during the experiment. This effort also coordinates all logistical shipping and storage requirements for threat representative targets to forward deployed events. ***FY 2024 Plans:*** In FY 2024, OPFOR emulations expected to continue with threat emitters, maritime and ground-based targets, decoys, and communications nodes necessary to create a fully threat informed, multi-domain, operationally relevant environment for projects across Project Convergence 2024, Valiant Shield 2024, Talisman Sabre, Grey Flag 2024, Joint Battle Problem 2024, and TREX 2024. This functional component conducts an threat analysis to identify and acquire threat representative targets to establish a relevant environment for the experiment. The entity provide personnel to act as OPFOR that would serve as the viable force during the experiment. The entity is coordinates for all the communication equipment required and infrastructure that is required to integrate into the services tactical networks. This effort also coordinates all logistical shipping and storage requirements for threat representative targets to forward deployed events. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2024 increase will include 2 years of candidate prototypes being concurrently evaluated requiring a funding increase to successfully execute. Funding increases to account for additional resources required.	0.000	6.000	20.500
Title: Data Collection and Assessment ***Description:*** This effort supports the manpower required for data collection teams. The collection teams record the joint operational data to assess the measurements of performance and measurements of effectiveness of a prototype in a multi-component experimentation venue. It resources personnel who are co-located at multiple experimentation locations to include	0.000	3.500	14.500

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604790D8Z / *Rapid Defense Experimentation Reserve (RDER)*	**Project (Number/Name)** 790 / *Rapid Defense Experimentation Reserve (RDER)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
experiment venues, UARC/FFRDC's in the Continental United States, as well as at the CCMD headquarters. Data collection teams are required for each individual technology being evaluated at each event. ***FY 2023 Plans:*** RDER performs data collection on projects at Northern Edge 2023 and Grey Flag 2023. Collects unfiltered data and performs the analysis to assess the operational utility of the technology against the needs of the warfighter. The team provides an independent assessment of each report daily during an experimentation. This includes the analytical analysis of the data. An analysis team will provide a report that will include experimentation findings and recommendations. ***FY 2024 Plans:*** RDER plans perform data collection on projects executing experiments at Project Convergence 2024, Valiant Shield 2024, Talisman Sabre, Grey Flag 2024, Joint Battle Problem 2024, and TREX 2024. The team provides an independent assessment of each report daily during an experimentation. This includes acquiring the analysis tools for each prototype to support the analytical analysis of the data. An analysis team will provide a report that would provide recommendation on experimentation findings and recommendations. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2024 increase will include 2 years of candidate prototypes being concurrently evaluated requiring a funding increase to successfully execute. Funding increases to account for additional resources required.			
Accomplishments/Planned Programs Subtotals	0.000	24.758	79.773

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

N/A

D. Acquisition Strategy

RDER leverages the Services' and Defense Agencies' most efficient and effective acquisition approach for experimentation and program Management of oversight of technologies. This includes using Other Transaction
Authorities and new or existing contract vehicles.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604790D8Z / *Rapid Defense Experimentation Reserve (RDER)*	Project (Number/Name) 790 / *Rapid Defense Experimentation Reserve (RDER)*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Experiments Integration	MIPR	Johns Hopkins University Applied Physics Laboratory : Laurel, MD	-	-		2.000	Mar 2023	4.000	Nov 2023	-		4.000	Continuing	Continuing	-
Experimentation Integration	MIPR	Naval Surface Warfare Center Dahlgren Division (NSWCDD), : Dahlgren, VA	-	-		0.700	Mar 2023	5.000	Nov 2023	-		5.000	Continuing	Continuing	-
Experiments Integration	MIPR	MULTI : MULTI	-	-		2.300	Jun 2023	2.500	Mar 2024	-		2.500	Continuing	Continuing	-
Experiment Design	MIPR	Naval Surface Warfare Center Dahlgren Division (NSWCDD), : Dahlgren, VA	-	-		1.200	Mar 2023	7.500	Nov 2023	-		7.500	Continuing	Continuing	-
Experiment Design	MIPR	MULTI : MULTI	-	-		1.300	Jun 2023	4.000	Mar 2024	-		4.000	Continuing	Continuing	-
Experimentation Execution	MIPR	Johns Hopkins University Applied Physics Laboratory : : Laurel, MD	-	-		4.500	Mar 2023	5.000	Nov 2023	-		5.000	Continuing	Continuing	-
Experimentation Execution	MIPR	MULTI : MULTI	-	-		0.500	Jun 2023	7.500	Mar 2024	-		7.500	Continuing	Continuing	-
Opposing Force (OPFOR)	MIPR	Naval Surface Warfare Center Port Hueneme (NSWCPH), : Port Hueneme, CA	-	-		3.000	Mar 2025	6.000	Nov 2023	-		6.000	Continuing	Continuing	-
OPFOR	MIPR	GSA FAS AAS FEDSIM (QF0B), : Washington, D.C.	-	-		0.950	Mar 2023	8.000	Nov 2023	-		8.000	Continuing	Continuing	-
OPFOR	MIPR	MULTI : MULTI	-	-		2.050	Jun 2023	6.500	Mar 2024	-		6.500	Continuing	Continuing	-
Data Collection and Assessment	MIPR	Naval Surface Warfare Center Dahlgren Division	-	-		0.900	Mar 2023	6.500	Nov 2023	-		6.500	Continuing	Continuing	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604790D8Z / *Rapid Defense Experimentation Reserve (RDER)*	Project (Number/Name) 790 / *Rapid Defense Experimentation Reserve (RDER)*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		(NSWCDD), : Dahlgren, VA													
Data Collection and Assessment	MIPR	Naval Surface Warfare Center Indian Head Detachment (NSWC IHD), : Indian Head, MD	-	-		1.505	Mar 2023	4.000	Nov 2023	-		4.000	Continuing	Continuing	-
Data Collection and Assessment	MIPR	INARNG, : Indianapolis, IN	-	-		0.400	Mar 2023	2.000	Nov 2023	-		2.000	Continuing	Continuing	-
Data Collection and Assessment	MIPR	INARNG : Indianapolis, IN	-	-		0.695	Mar 2023	2.000	Nov 2023	-		2.000	Continuing	Continuing	-
RDER Program Management	MIPR	MULTI : MULTI	-	-		2.758	Jun 2023	9.273	Mar 2024	-		9.273	Continuing	Continuing	-
		Subtotal	-	-		24.758		79.773		-		79.773	Continuing	Continuing	N/A

	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	-		24.758		79.773		-		79.773	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604790D8Z / *Rapid Defense Experimentation Reserve (RDER)*	**Project (Number/Name)** 790 / *Rapid Defense Experimentation Reserve (RDER)*

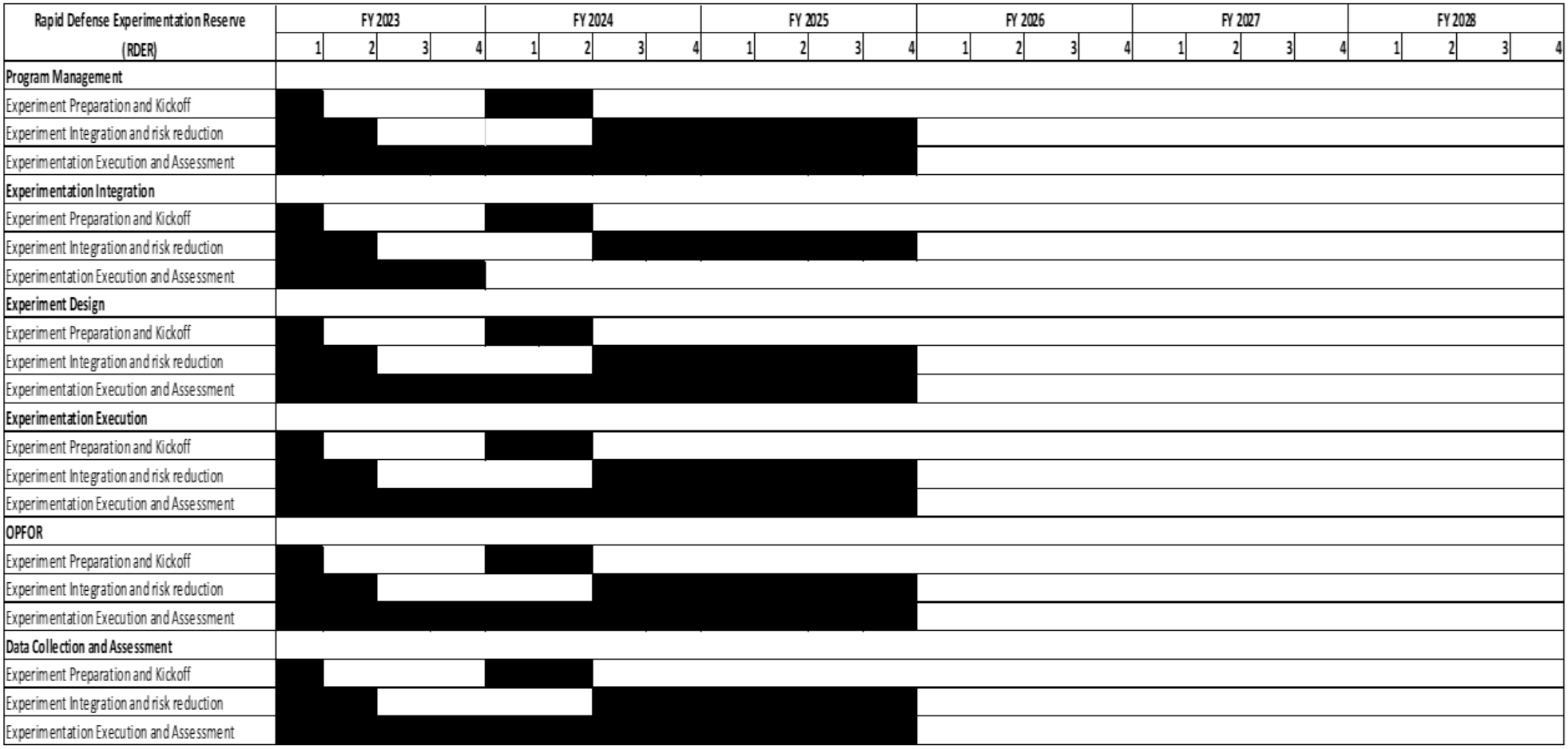

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604790D8Z / *Rapid Defense Experimentation Reserve (RDER)*	**Project (Number/Name)** 790 / *Rapid Defense Experimentation Reserve (RDER)*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Rapid Defense Experimentation Reserve Program Management				
Program Management	1	2023	4	2025
Rapid Defense Experimentation Reserve Experiments Integration				
Experiments Integration	1	2023	4	2025
Rapid Defense Experimentation Reserve Experiment Design				
Experiment Design	1	2023	4	2025
Rapid Defense Experimentation Reserve Experimentation Execution				
Experimentation Execution	1	2023	4	2025
Rapid Defense Experimentation Reserve Opposing Force (OPFOR) Threat Emulation				
Opposing Force (OPFOR) Threat Emulation	1	2023	4	2025
Rapid Defense Experimentation Reserve Data Collection and Assessment				
Data Collection and Assessment	1	2023	4	2025

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0305245D8Z *I Intelligence Capabilities and Innovation Investments*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	3.000	-	3.000	0.000	0.000	0.000	0.000	0.000	3.000
592: *Intelligence Capabilities and Innovation Investments*	-	0.000	0.000	3.000	-	3.000	0.000	0.000	0.000	0.000	0.000	3.000

Note

New Start (Y/N): No

This is not a new start program in FY 2024. This PE's, prior year and enacted year are reflected in BA 6 and BA 7, respectively, and has been properly realigned to BA 4 beginning in FY 2024.

A. Mission Description and Budget Item Justification

Classified program.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	0.000	0.000	0.000	-	0.000
Current President's Budget	0.000	0.000	3.000	-	3.000
Total Adjustments	0.000	0.000	3.000	-	3.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	-	-	3.000	-	3.000

Change Summary Explanation

Classified

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0305245D8Z / *Intelligence Capabilities and Innovation Investments*	Project (Number/Name) 592 / *Intelligence Capabilities and Innovation Investments*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
592: *Intelligence Capabilities and Innovation Investments*	-	0.000	0.000	3.000	-	3.000	0.000	0.000	0.000	0.000	0.000	3.000
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Classified.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Classified	-	-	3.000
Description: Classified. ***FY 2024 Plans:*** Classified. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2024 increase includes classified programmatic adjustments.			
Accomplishments/Planned Programs Subtotals	-	-	3.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

The contracting strategy follows guidance outlined in the DoD 5000 series directives, Federal Acquisition Regulations (FAR) and Defense Federal Acquisition Regulars (DFAR).

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0305245D8Z / *Intelligence Capabilities and Innovation Investments*	**Project (Number/Name)** 592 / *Intelligence Capabilities and Innovation Investments*

Remarks

Classified.

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0305245D8Z / *Intelligence Capabilities and Innovation Investments*	**Project (Number/Name)** 592 / *Intelligence Capabilities and Innovation Investments*

	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Intelligence Capabilities and Innovation Investments																												
Intelligence Capabilities and Innovation Investments									[redacted]																			

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0305245D8Z / *Intelligence Capabilities and Innovation Investments*	**Project (Number/Name)** 592 / *Intelligence Capabilities and Innovation Investments*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Intelligence Capabilities and Innovation Investments				
Intelligence Capabilities and Innovation Investments	1	2024	4	2024

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0901579D8Z / *Office of Strategic Capital (OSC)*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	99.000	-	99.000	145.564	0.000	0.000	0.000	Continuing	Continuing
732: *Office of Strategic Capital*	-	0.000	0.000	99.000	-	99.000	145.564	0.000	0.000	0.000	Continuing	Continuing

Note

New Start (Y/N): Yes

A. Mission Description and Budget Item Justification

This program supports the Department's initiatives to Build Sustainable and Long-Term Advantage and Build a Resilient Joint Force and Defense Ecosystem.

The Office of Strategic Capital (OSC) program supports the Department of Defense's focus on building a resilient Joint Force and enduring advantages across the defense ecosystem. OSC supports the DoD through targeted investments in critical technologies needed to solve national security challenges and secure the supply-chain for industries of the future. Specifically, the OSC program will target supply-chain critical technologies, such as advanced materials and semiconductors, which do not traditionally receive investment from the DoD procurement and acquisition enterprise, rather, they rely solely on private investment to for commercialization, manufacturing, and infrastructure. In recognition of the power of private investors to influence research and development, our global competitors directly influence and leverage private capital markets to advance their technology objectives counter to U.S. interests. Current peer competitor action requires urgent United States Government response to attract and scale private investment in support of national security.

In partnership with the DoD, defense industrial base, and the array of private sector enterprises, OSC will identify and prioritize technology areas based on DoD and United States Government Science & Technology intellectual property superiority, availability of private capital, and transition opportunities into existing and future DoD capabilities. Once identified, OSC will implement highly targeted partner capital programs expressly to attract private capital investments through lowering their cost of capital where their capital then drives an increased investment in commercialization, manufacturing, and infrastructure. These strategic technical investments will shore up the foundations to build enduring advantages through a secure critical technology base for future military capabilities.

The program will:
• Increase deep technology private capital investment to enhance the commercialization of DoD and United States Government (USG) Science & Technology investments.
• Increase domestic production, manufacturing, and infrastructure to scale domestic production and secure the national security supply chain for industries of the future
• Finance industrial transformation to mobilize suppliers to support emerging needs and industries of the future
• Co-invest with partners and allies in international critical technology companies, where practical, to support international interoperability as well as domestic integration and scaled production, and
• Accelerate the transition and fielding of capabilities that meet service priorities

The programs will be executed through DoD services and interagency partners.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0901579D8Z / *Office of Strategic Capital (OSC)*

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	0.000	0.000	0.000	-	0.000
Current President's Budget	0.000	0.000	99.000	-	99.000
Total Adjustments	0.000	0.000	99.000	-	99.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• New Start	-	-	99.000	-	99.000

Change Summary Explanation

As a new start in FY 2024, the increase of $99.000 million supports the Department of Defense’s focus on building a resilient Joint Force and enduring advantages across the defense ecosystem through targeted investments in critical technologies needed to solve national security challenges and secure the supply-chain for industries of the future.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0901579D8Z / *Office of Strategic Capita l (OSC)*	Project (Number/Name) 732 / *Office of Strategic Capital*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
732: *Office of Strategic Capital*	-	0.000	0.000	99.000	-	99.000	145.564	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

New Start (Y/N): Yes

A. Mission Description and Budget Item Justification

The OSC Program Element funding supports investments in the productization and scaling of critical technologies vital to national and economic security, and in doing so directly aligns to the National Defense Strategy through ensuring an enduring advantage in our critical technology areas, increasing integrated deterrence in the economic domain, strengthening partnerships, campaigning alongside mission-aligned national security departments and agencies, and developing a scalable and secure supply base for industries of the future. Program portfolio aligns with the critical technology areas where applicable. Investment identification and prioritization is determined in coordination with the Military Services and Joint Staff, alongside principle policy-making leadership, including the Undersecretaries for Research and Engineering, Acquisition and Sustainment, Policy, and Comptroller, and the Director of CAPE. Individual projects will scale proportionally with impact, mission need, and private sector contributions. Projects are selected using a merit-based process that identifies the most promising, innovative, and cost-effective technology opportunities, with an emphasis on transitioning technologies into current or future programs of record.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Critical Technologies Limited Partner Program	0.000	-	15.000
Description: This project licenses and invests via loans, loan guarantees, convertible instruments, grants and / or contracts into Critical Technology (CT) private investment funds. CT funds are organized and vertically integrated by critical technology areas that support broader national security and economic security objectives, such as semiconductors, advanced materials, and biotechnology. The intent is to increase early-stage investment in the enabling and frontier critical technology areas that require longer duration, lower return “patient capital” required for hardware-based technologies as compared to the software-based technologies.			
FY 2024 Plans: OSC will work with interagency partners and build towards a program capable of seeding that “patient capital” via debt and convertible instruments. The requirement for patient capital has decreased private-sector investment in these critical technologies (i.e., e-commerce received 150 times more investment than quantum in FY 2021). The planning for this project was initiated in FY 2023 in partnership with the Small Business Administration’s Small Business Investment Company (SBIC) program. Planning			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0901579D8Z / *Office of Strategic Capita / (OSC)*	**Project (Number/Name)** 732 / *Office of Strategic Capital*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
focused on building the framework for the CT program, including training, digital infrastructure, and process codification. This project will receive its first DoD funding in FY 2024. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** This is a new start program and funding in FY 2024.			
Title: Loan Program Office ***Description:*** This project invests via loans, loan guarantees, convertible instruments, and / or purchase commitments in Critical Technology (CT) companies to scale domestic manufacturing and infrastructure. CT companies require significant capital to manufacture and deploy critical technologies. Given the market risk of emerging critical technologies, as well as higher domestic production costs, private capital financing is often insufficient or unavailable to CT companies. This elevated cost decreases the probability that companies will have enough time to scale production to meet DoD needs and increases the probability of off-shoring manufacturing. ***FY 2024 Plans:*** In order to appropriately scale and secure the supply chains for critical technology areas vital to national security and to meet NDS mandates, OSC will develop a loan program office that supports capital expenditure financing, project financing, and working capital for companies developing technologies critical to national security. The planning for this project was initiated in FY 2023 in partnership with the Export-Import Bank. This project will receive its first DoD funding in FY 2024. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** This is a new start program and funding in FY 2024.	0.000	-	49.200
Title: Transition Acceleration Program ***Description:*** Leveraging existing development programs, projects, and warfighter priorities, this project aligns equity-based private investors and public development funding to co-invest in Critical Technology companies that are developing compelling military capabilities with clear pathways to transition to existing or future programs of record. The USAF pioneered a fund-matching program to co-invest SBIR/STTR funding alongside private investors to increase total investment in technologies which could support both USAF and Commercial (i.e., dual-use) use cases. ***FY 2024 Plans:*** In FY 2023, OSC will be deploying a similar approach with OUSD(R&E) SBIR/STTR funding, expanding to other eligible appropriations in FY 2024. ***FY 2023 to FY 2024 Increase/Decrease Statement:***	0.000	-	15.000

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0901579D8Z / *Office of Strategic Capita l (OSC)*	**Project (Number/Name)** 732 / *Office of Strategic Capital*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
This is a new start program and funding in FY 2024.			
Title: Global Technology Scouting and Co-Investment Program ***Description:*** This project invests via loans, loan guarantees, convertible instruments, grant and / or contracts into non-profit technology scouting and investment companies to co-invest in international critical technology companies which support interoperability and integrated deterrence. While great technology can be developed anywhere, many DoD technology investment programs, such as SBIR and STTR, require focused investment in domestic technology companies. ***FY 2024 Plans:*** The NDS directs the DoD to support integrated deterrence in both technology and the economy. In response, the Global Technology Scouting and Co-Investment Program expands OSC's focus in partnership with US partners and allies to scout and scale international critical technology areas and co-invest alongside allies and partners. The planning and experimentation for this program was initiated in FY 2023 and will receive its first dedicated appropriations in FY 2024. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** This is a new start program and funding in FY 2024.	0.000	-	15.000
Title: Investment Prospectus Analysis ***Description:*** The OSC is responsible for analyzing critical technology areas for prioritization of private capital investment. The OUSD(R&E) determines OSD's critical technology areas and OSC assess those areas by IP leadership, capital availability, and transition opportunity. ***FY 2024 Plans:*** The assessment, specifically the identification and prioritization of critical technologies, will be published for review by industry, and used to guide OSC investments. Additional research will be performed to assess the analytic framework being developed by OSC, as well as determine new financial tools to increase private sector investment in critical technologies. The first investment prospectus will developed in FY 2023 and scaled in FY 2024 with dedicated funding. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** This is a new start program and funding in FY 2024.	0.000	-	4.800
Accomplishments/Planned Programs Subtotals	0.000	-	99.000

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0901579D8Z / *Office of Strategic Capita l (OSC)*	**Project (Number/Name)** 732 / *Office of Strategic Capital*	

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
• 0901579D8Z: *Operations & Maintenance*	0.000	0.000	9.832	0.000	9.832	0.000	0.000	0.000	0.000	Continuing	Continuing

Remarks

D. Acquisition Strategy

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0901579D8Z / *Office of Strategic Capita l (OSC)*	**Project (Number/Name)** 732 / *Office of Strategic Capital*

Remarks

This will need to be completed as a part of this exhibit.

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0901579D8Z / *Office of Strategic Capita l (OSC)*	**Project (Number/Name)** 732 / *Office of Strategic Capital*

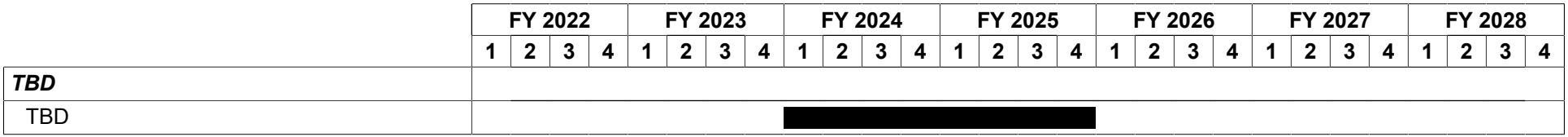

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0901579D8Z / *Office of Strategic Capital (OSC)*	**Project (Number/Name)** 732 / *Office of Strategic Capital*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
TBD				
TBD	1	2024	4	2025

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604123D8Z / *Chief Digital Artificial Intelligence Officer*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	0.000	0.000	278.340	615.246	-	615.246	595.852	598.989	384.157	392.226	Continuing	Continuing
067: *AI/ML Demonstration & Validation*	0.000	0.000	278.340	615.246	-	615.246	595.852	598.989	384.157	392.226	Continuing	Continuing

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

The Chief Digital and Artificial Intelligence Officer (CDAO) supports the Department's initiatives to build enduring advantage and build a resilient Joint Force and Defense ecosystem. The CDAO is responsible for strengthening and integrating data, artificial intelligence, and digital solutions in the Department in support of the National Defense Strategy (NDS) and Section 1513 of the National Defense Authorization Act (NDAA) for FY 2023.

The functions of the CDAO are as follows: lead and oversee the DoD's strategy development and policy formulation for data, analytics, and AI; break down barriers to data and AI adoption within DoD institutional processes; create enabling digital infrastructure and services that support Components' development and deployment of data, analytics, AI, and digital-enabled solutions; selectively scale proven digital and AI-enabled solutions focused on enterprise and joint use cases; and surge digital services for rapid response to crises and emergent challenges. This also requires CDAO to continue priority projects that align to the mission. This includes expanding the enterprise data repository, establishing a responsible AI ecosystem, executing the AI and Data Accelerator (ADA) initiative, and developing a Data, Analytics, and AI Adoption Strategy. These various lines of effort will support the overarching mission of accelerating the Department's adoption of data, analytics, and AI to preserve decision advantage across the Joint Force.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	0.000	273.340	285.229	-	285.229
Current President's Budget	0.000	278.340	615.246	-	615.246
Total Adjustments	0.000	5.000	330.017	-	330.017
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	5.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	-	-	330.017	-	330.017

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604123D8Z / *Chief Digital Artificial Intelligence Officer*

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2022	FY 2023
Project: 067: *AI/ML Demonstration & Validation*		
Congressional Add: *CDAO - DEM / VAL Activities*	-	5.000
Congressional Add Subtotals for Project: 067	-	5.000
Congressional Add Totals for all Projects	-	5.000

Change Summary Explanation

FY 2024 growth supports the expansion of AI capabilities across the DoD enterprise to include enhanced data quality, data, analytics, AI, and digital-enabled solutions in support of the National Defense Strategy (NDS) and National Defense Authorization Act (NDAA).

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604123D8Z / *Chief Digital Artificial Intelligence Officer*	Project (Number/Name) 067 / *AI/ML Demonstration & Validation*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
067: *AI/ML Demonstration & Validation*	0.000	0.000	278.340	615.246	-	615.246	595.852	598.989	384.157	392.226	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The functions of the CDAO are as follows: lead and oversee the DoD's strategy development and policy formulation for data, analytics, and AI; break down barriers to data and AI adoption within DoD institutional processes; create enabling digital infrastructure and services that support Components' development and deployment of data, analytics, AI, and digital-enabled solutions; selectively scale proven digital and AI-enabled solutions focused on enterprise and joint use cases; and surge digital services for rapid response to crises and emergent challenges. This also requires CDAO to integrate the capabilities, personnel, resources, and governance of its constituent organizations, while concurrently focusing on priority projects that align to CDAO's mission. This includes expanding the enterprise data repository; establishing a responsible AI ecosystem; executing the ADA initiative; and developing a Data, Analytics, and AI Adoption Strategy. These various lines of effort will support the overarching mission of accelerating the Department's adoption of data, analytics, and AI to preserve decision advantage across the Joint Force.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: CDAO: Building Resiliency and Readiness (USD(P&R)) ADVANA	-	1.900	0.000
Description: The GAO report 18-586R on Military Aviation Mishap findings showed that there are gaps on OUSD(P&R)'s approach for collecting, reporting, and analyzing mishap data due to lack of standardized reporting elements across the military departments' safety centers. Advana is a technology platform that not only houses a collection of enterprise data, but expands the boundaries of a standard data warehouse by arming military and business decision-makers with decision support analytics, visualizations, and data tools. This project will support the Joint Safety Council, once established, to aid in the assessment of Services' aviation mishap data supporting improvement in aviation safety. ***FY 2023 Plans:*** FY 2023 plans will allow for the enhancement of the Advanced Analytics (Advana) program. ***FY 2024 Plans:*** N/A ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2024 funding realigned to support CDAO priorities.			
Title: Chief Digital and Artificial Intelligence Officer	-	158.832	420.939
Description: The CDAO will continue to lead and oversee the DoD's strategy development and policy formulation for data, analytics, and AI; break down barriers to data and AI adoption within DoD institutional processes; create enabling digital			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604123D8Z / *Chief Digital Artificial Intelligence Officer*	**Project (Number/Name)** 067 / *AI/ML Demonstration & Validation*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
infrastructure and services that support Components' development and deployment of data, analytics, AI, and digital-enabled solutions; selectively scale proven digital and AI-enabled solutions focused on enterprise and joint use cases; and surge digital services for rapid response to crises and emergent challenges. This also requires CDAO to integrate the capabilities, personnel, resources, and governance of its constituent organizations, while concurrently focusing on priority projects that align to CDAO's mission. This includes expanding the enterprise data repository; establishing a responsible AI ecosystem; executing the ADA initiative; and developing a Data, Analytics, and AI Adoption Strategy. These various lines of effort will support the overarching mission of accelerating the Department's adoption of data, analytics, and AI to preserve decision advantage across the Joint Force. ***FY 2023 Plans:*** In FY 2023, the CDAO will continue to make progress in transforming the Department through AI, and understanding the importance of remaining agile and adapting to meet the diverse needs. The CDAO's Warfighter Support and Enterprise Capabilities will be tailored to meet these needs, and the personnel supporting these efforts are the CDAO's front-line of support to DoD components. The CDAO will continue to build on the Responsible AI eco-system to ensure the ethical, legal and moral foundations of our AI activities is reflected in every step of AI Development and implementation processes. CDAO will continue to work to ensure the RAI process flows through Test and Evaluation processes. In FY 2023 CDAO AI Assurance will also continue to transform the current Test and Evaluation Master Plan (TEMP) to a Digital TEMP, reducing development time of the TEMP, and increasing usefulness of the TEMP through fully integrated Digital Engineering (DE) processes. The CDAO Enterprise Platforms and Capabilities team will work with Advana, SUNet, VAULT, DI2E, PlatformOne, CloudOne, Navy Black Pearl, COEUS, and DoD HPCs to develop a long-term strategy to ensure that Fabric development efforts meet the Department's needs. The CDAO will take the critical, tested and proven enterprise platforms and capabilities, such as access controls, data and service integration, and AL/MLOps pipeline to continue development of foundational services to be shared and used by the Department. This effort will facilitate the creation a superhighway of countless platforms and systems to move data, analytics, capabilities, and integrate enterprise services to enable the acceleration of AI across the Department. ***FY 2024 Plans:*** In FY 2024, the CDAO will continue to make progress in transforming the Department through AI, and understanding the importance of remaining agile and adapting to meet diverse needs. The CDAO's functions and products will be tailored to meet these needs, and the personnel supporting these efforts are the CDAO's front-line of support to DoD components.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604123D8Z / *Chief Digital Artificial Intelligence Officer*	**Project (Number/Name)** 067 / *AI/ML Demonstration & Validation*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
The CDAO will continue to build on the Responsible AI eco-system to ensure the ethical, legal and moral foundations of our AI activities is reflected in every step of AI Development and implementation processes. CDAO will continue to work to ensure that RAI flows through AI Assurance processes. The CDAO team will work with Joint, Service, and partner platforms to develop a long-term strategy to ensure that Enterprise Capabilities meets the Department's needs. The CDAO will take the critical, tested and proven enterprise platforms and capabilities, such as access controls, data and service integration, and AL/MLOps pipeline to continue development of foundational services to be shared and used by the Department. This effort will facilitate the creation of a superhighway of countless platforms and systems to move data, analytics, capabilities, and integrate enterprise services to enable the acceleration of AI across the Department. FY 2024 growth will support the following: - Development of campaigning decision support tools for DoD's Dynamic Campaigning efforts - Provide high-performance computing resources for AI test and evaluation - Development of tools to continuously assess AI performance - Development of AI interoperability standards - Development of AI research and development hubs - Creation of a center for AI assurance expertise - Development of a containerized AI tool platform, a centralized library of AI packages, and a centralized library of foundational models - Development of AI test and evaluation courses at DAU and an AI training platform - DoD digital language proficiency incentives - Analytics capabilities of the Artificial Intelligence and Data Accelerator (ADA) initiative at the Combatant Commands - Three year pilot effort to provide embedded analytics support teams at the Services, Principal Staff Assistants, and select Defense Agencies and Field Activities - Three year development and experimentation of JADC2 capabilities initiated by INDOPACOM, NORTHCOM and EUCOM to operationalize a data integration layer for use across all Combatant Commands - Global Information Dominance Experiments (GIDE) to assess progress for operational, strategic and global applications ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2024 increase will support the expansion of Artificial Intelligence capabilities within CDAO and across the enterprise to include the development and enhancement of enterprise platforms and capabilities, such as access controls, data and service integration, and AL/MLOps pipeline to continue development of foundational services to be shared and used by the Department.			
Title: Artificial Intelligence and Data Accelerator (ADA)	-	76.790	76.790

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604123D8Z / *Chief Digital Artificial Intelligence Officer*	**Project (Number/Name)** 067 / *AI/ML Demonstration & Validation*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Description: ADA is a DSD initiative to accelerate the deployment of data-enabled automation platform and development capabilities to each CCMD. ADA is designed to help CCMDs determine their long-term data and AI capability and needs and whether existing platforms can be scaled to address them. This funding addresses the AI component of ADA which will enable AI capability development and demonstration across three subcomponents: AI-Enabled Joint Operating System; CCMD Experimentation; and AI Integration Service Programs. The ADA effort was directed by the DSD to accelerate the deployment of data- enabled automation platforms and development capabilities to each CCMD. It is designed to transform how CCMDs conduct globally-integrated data management, including both warfighting and business decision analytics, and provide a data foundation to enable workflow and command and control automation capabilities. ADA is a campaign of learning to identify data and joint all domain command and control (JADC2) operational needs, discover obstacles to implementation of modern capabilities, and develop joint solutions. The ADA initiative is led by the CDAO. ***FY 2023 Plans:*** In FY 2023, CDAO plans to continue to build ADA support personnel and partnerships to solve data, process, and infrastructure challenges at scale. ADA accomplishes this via on-site data personnel to augment CCMD capabilities, access to artificial intelligence (AI) experts to deploy tailored process solutions, deep reach back to DoD enterprise services, and close integration with the JADC2 experimentation community. ADA seeks to learn fast and scale outcomes broadly. As effective solutions are developed in one CCMD, they will be made available across the enterprise for further development and implementation. ADA is not solely focused on capability delivery, but designed to address both materiel and non-materiel challenges to data management. ADA discovery efforts across a range of capability areas including workforce development, acquisition practices, software modernization, IT infrastructure, and outdated processes are included. The ADA team will provide recommendations to the CDAO, JADC2 partners, and other governance bodies as appropriate. The ADA plan envisions a modest level of data management support for each CCMD by deploying the Advana and intelligence support platforms to each CCMD and the Joint Staff and embedding teams of data, analytics, and AI experts within the CCMDs to identify and resolve use cases. ***FY 2024 Plans:*** In FY 2024, CDAO plans to continue to build ADA support and partnerships to solve data, process, and infrastructure challenges at scale. ADA accomplishes this via on-site data personnel to augment CCMD capabilities, access to artificial intelligence (AI) experts to deploy tailored process solutions, deep reach back to DoD enterprise services, and close integration with the JADC2 experimentation community. ADA seeks to learn fast and scale outcomes broadly. As effective solutions are developed in one CCMD, they will be made available across the enterprise for further development and implementation. ADA is not solely focused			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604123D8Z / *Chief Digital Artificial Intelligence Officer*	**Project (Number/Name)** 067 / *AI/ML Demonstration & Validation*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
on capability delivery, but designed to address both materiel and non-materiel challenges to data management. ADA discovery efforts across a range of capability areas include workforce development, acquisition practices, software modernization, IT infrastructure, and outdated processes are included. The ADA team will provide recommendations to the CDAO, JADC2 partners, and other governance bodies as appropriate. The ADA plan envisions a modest level of data management support for each CCMD by deploying the Advana and intelligence support platforms to each CCMD and the Joint Staff and embedding teams of data, analytics, and AI experts within the CCMDs to identify and resolve use cases.			
Title: Joint Artificial Intelligence (AI) Test and Evaluation (T&E) Infrastructure Capability (JATIC) ***Description:*** At the direction of the DSD and recommendation of the NSCAI report, CDAO established the JATIC to enable enterprise-scale rapid development, testing, and deployment of AI capabilities across warfighting domains. The JATIC will enable enterprise-scale rapid development, testing, and deployment of AI capabilities across warfighter domains and will migrate the DoD towards Joint All Domain Test & Evaluation. This funding will support JATIC foundational programs such as: Adversarial AI T&E, AI/ML model card standards, Scalable AI Test Harness, CDAO data repository, data service marketplace, and ontologies. ***FY 2023 Plans:*** In FY 2023, CDAO plans to develop Adversarial AI Test & Evaluation capabilities, AI/ML model card standards, the Scalable AI Test Harness, the CDAO data repository, data service marketplace and enterprise ontologies. ***FY 2024 Plans:*** FY 2024 funding will be utilized to support JATIC efforts to include the T&E Factory, Scalable AI T&E Harness, Adversarial AI T&E, AI/ML model cards, as well as a data repository, data service marketplace, and ontologies. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2024 increase is due to the continuation of JATIC efforts to include the T&E Factory, Scalable AI T&E Harness, Adversarial AI T&E, AI/ML model cards, as well as a data repository, data service marketplace, and ontologies.	-	12.727	18.081
Title: Chief Digital and Artificial Intelligence Officer - Advana ***Description:*** The Advancing Analytics (Advana) platform is the single enterprise authoritative data management and analytics platform for the Secretary of Defense, Deputy Secretary of Defense, and Principal Staff Assistants (PSAs), with inputs from all DoD Components in alignment with the 5 May 2021 Creating Data Advantage memorandum signed by the Deputy Secretary of Defense. In FY 2024, CDAO will continue to develop and expand existing platform infrastructure, operations, and technical architecture to meet senior leadership and customer demand as outlined in Section 1513 of the National Defense Authorization Act for FY 2023. This tool suite provides Senior Leaders near real time awareness of the entire deployment process (planning stage through execution to closure) for people, equipment, and supplies within a specific Area of Responsibility. The crisis in Ukraine created a critical, time-sensitive demand for further rapid data aggregation and ongoing development support to	-	23.091	99.436

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604123D8Z / *Chief Digital Artificial Intelligence Officer*	**Project (Number/Name)** 067 / *AI/ML Demonstration & Validation*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
inform senior leader decision-making on deployment of personnel and equipment, including Non-Combatant Evacuation, Covid-19 considerations, and humanitarian aid, among other potential problem sets. Additional service support resources are needed for 24/7 operating demands required for future incidents, and globally distributed staff embedded within several Combatant Commands. This work also results in additional infrastructure, license, and labor costs. Advana must also expand to environments such as (Joint Worldwide Intelligence Communication System) to support data needs and operations at higher classification levels. The benefit of having preplanned, established frameworks and mechanisms for data interoperability between DoD components and other agencies can increase speed to insight and relevance for critical information necessary for time constrained decision support. ***FY 2023 Plans:*** In FY 2023, the CDAO will continue to make progress in transforming the Department through AI, and understanding the importance of remaining agile and adapting to meet Its diverse needs. ***FY 2024 Plans:*** In FY 2024, the CDAO will continue to make progress in transforming the Department through AI, and understanding the importance of remaining agile and adapting to meet its diverse needs. Specifically, CDAO will continue to expand the existing Advana platform infrastructure, operations, and technical architecture to meet senior leadership and customer demand. CDAO will continue to expand its current inventory of automated data connections within Advana by establishing new connections to Authoritative Data Sources (ADS) as prioritized by SD/DSD, OSD senior leadership, Joint Staff, the Military Services, and the Combatant Commands (CCMDs). CDAO and the Advana team will continue to provide readily available access to authoritative data for informed decision-making for DoD stakeholders and senior leaders. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The FY 2024 increase will support growth in users, data, and analytic output for Advana to provide decision advantage and develop new capabilities. The increase will support Advana platform expansion, operations, and technical architecture to meet demand. Funding increase will also support data engineering efforts, data service development and analytics activities. Funded efforts to include development of application programming interfaces (APIs) for data sharing, development of common ontologies for data modeling, data labeling activities, and a federated data and model catalog in support of section 1513 of the FY 2023 NDAA and the NDS priority to build a resilient Joint Force and defense ecosystem.			
Accomplishments/Planned Programs Subtotals	-	273.340	615.246

	FY 2022	FY 2023
Congressional Add: CDAO - DEM / VAL Activities	-	5.000

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604123D8Z / *Chief Digital Artificial Intelligence Officer*	**Project (Number/Name)** 067 / *AI/ML Demonstration & Validation*

	FY 2022	FY 2023
FY 2023 Plans: FY 2023 increase will support vertical munitions and fuel data integration pilots, as well efforts to deliver tactical artificial intelligence at Combatant Commands.		
Congressional Adds Subtotals	-	5.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

The CDAO acquisition, management, and contracting strategy follows guidance outlined in the DoD 5000 series directives, Federal Acquisition Regulation (FAR) and FAR supplement policies and procedures. Management uses project management tools and meetings to ensure delivery of stated capabilities and performance criteria.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604123D8Z / *Chief Digital Artificial Intelligence Officer*	**Project (Number/Name)** 067 / *AI/ML Demonstration & Validation*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Product Development	C/Various	TBD : TBD	-	-		278.340		615.246		-		615.246	Continuing	Continuing	-
		Subtotal	-	-		278.340		615.246		-		615.246	Continuing	Continuing	N/A

	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	-		278.340		615.246		-		615.246	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604123D8Z / *Chief Digital Artificial Intelligence Officer*	**Project (Number/Name)** 067 / *AI/ML Demonstration & Validation*

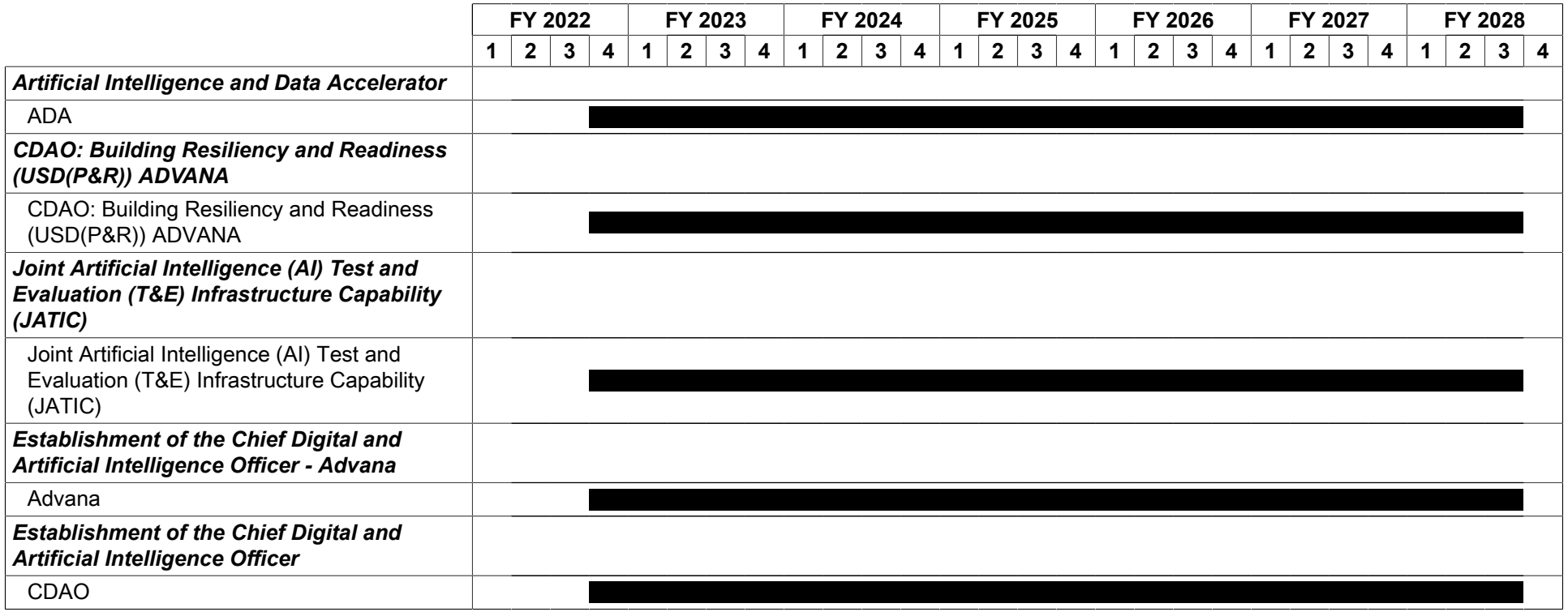


Exhibit R-4A, RDT&E Schedule Details: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604123D8Z / *Chief Digital Artificial Intelligence Officer*	**Project (Number/Name)** 067 / *AI/ML Demonstration & Validation*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Artificial Intelligence and Data Accelerator				
ADA	4	2022	3	2028
CDAO: Building Resiliency and Readiness (USD(P&R)) ADVANA				
CDAO: Building Resiliency and Readiness (USD(P&R)) ADVANA	4	2022	3	2028
Joint Artificial Intelligence (AI) Test and Evaluation (T&E) Infrastructure Capability (JATIC)				
Joint Artificial Intelligence (AI) Test and Evaluation (T&E) Infrastructure Capability (JATIC)	4	2022	3	2028
Establishment of the Chief Digital and Artificial Intelligence Officer - Advana				
Advana	4	2022	3	2028
Establishment of the Chief Digital and Artificial Intelligence Officer				
CDAO	4	2022	3	2028

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604161D8Z / *Nuclear and Conventional Physical Security, Nuclear Forensics, Resilience, Survivability*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	96.540	5.480	6.482	6.229	-	6.229	14.288	13.700	16.383	16.726	Continuing	Continuing
163: *Nuclear and Conventional Physical Security*	80.490	5.480	6.482	6.229	-	6.229	5.922	5.153	6.165	6.293	Continuing	Continuing
042: *National Technical Nuclear Forensics / System Development & Demonstration (SDD)*	16.050	0.000	0.000	0.000	-	0.000	8.366	8.547	10.218	10.433	Continuing	Continuing

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

This program supports the Department's initiatives to Deter Aggression, Defend the Homeland, Provide Nuclear Deterrence, and Build Sustainable and Long-Term Advantage.

Nuclear and Conventional Physical Security/Nuclear Forensics, Resilience, and Survivability addresses the need to defend and deter against weapons of mass destruction threats and to safeguard personnel, prevent unauthorized access to equipment, installations, material, and documents, and to safeguard the foregoing against espionage, sabotage, damage, and theft. This program oversees advanced engineering development and rapid fielding throughout the DoD for an integrated and systemic approach to develop material solutions. Public Law, Presidential, and DoD guidance, and Combatant Command and Service requirements drive the priorities for these programs.

The Physical Security Enterprise and Analysis Group (PSEAG) is responsible for avoiding duplication of effort, ensuring systems integration, and promoting interoperability and sustainability. The material solutions either (a) lead to a Program of Record, (b) become technology insertions into existing programs; or (c) advance to being a certified Commercial/Government off-the-shelf product.

Per National Security Presidential Memorandum 35, the DoD provides the U.S. Government (USG) post-detonation National Technical Nuclear Forensics (NTNF) capability. Per DoD Directive S-2060.04, the Office of the Undersecretary of Defense for Acquisition & Sustainment (OUSD(A&S)) is the office responsible for developing and leading the DoD's NTNF capabilities. The DoD mission to collect and analyze post-detonation nuclear debris is critical ensuring the USG can identify the source of nuclear material and hold those responsible for an attack is critical to our national defense and security. Internal and independent assessments indicate new capabilities are needed to sustain an effective deterrent against an unattributed nuclear attack and meet the challenges of future threats. This PE is the only DoD RDT&E program focused on Advanced Component Development and Prototypes for post-detonation NTNF capabilities.

This PE can fund travel to support the requirements of this program.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604161D8Z *I Nuclear and Conventional Physical Security, Nuclear Forensics, Resilience, Survivability*

This appropriation will finance work, including staffing, performed by a government agency or by private individuals or organizations under a contractual or grant arrangement with the government who conduct research, development, and test and evaluation efforts.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	5.650	6.482	6.521	-	6.521
Current President's Budget	5.480	6.482	6.229	-	6.229
Total Adjustments	-0.170	0.000	-0.292	-	-0.292
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	-0.170	-	-0.292	-	-0.292

Change Summary Explanation

FY 2024 decrease is to realign funding to support DoD Headquarters program management, oversight, and other support functions.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604161D8Z / *Nuclear and Conventional Physical Security, Nuclear Forensics, Resilience, Survivability*	Project (Number/Name) 163 / *Nuclear and Conventional Physical Security*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
163: *Nuclear and Conventional Physical Security*	80.490	5.480	6.482	6.229	-	6.229	5.922	5.153	6.165	6.293	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Physical Security Enterprise and Analysis Group (PSEAG) pursues the development of nuclear and conventional physical security materiel solutions in response to the stated needs and requirements of the Combatant Commands and Military Services. This program leverages commonalities in physical security requirements in order to closely balance and integrate the needs of users. The PSEAG is responsible for avoiding duplication of effort, ensuring systems integration, and promoting interoperability and sustainability. The materiel solutions either (a) lead to a Program of Record, (b) become technology insertions into existing programs; or (c) advance to being a certified Commercial/Government off-the-shelf product.

This PE can fund travel to support the requirements of this program.

This appropriation will finance work, including staffing, performed by a government agency or by private individuals or organizations under a contractual or grant arrangement with the government who conduct RDT&E efforts.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Physical Security System Development & Demonstration	5.480	6.482	6.229
Description: Develop physical security components and systems to support valid requirements while eliminating duplication of effort, pursuing the use of government and commercial off-the-shelf products, ensuring systems integration, and promoting interoperability and sustainability.			
FY 2023 Plans: - Detect an adversary and assess their intentions by identifying and warning of unauthorized access to a specified area or installation, as well as equipment related to the notification and identification of explosive threats or hazards. - Control access to safeguard personnel and their families and to prevent unauthorized access to critical infrastructure and materials to validate and verify individuals entering or already within, a facility. - Invest in robust installation and transport security to prevent a weapon of mass destruction attack or the unauthorized access to key assets such as nuclear weapons and special nuclear material. - Improve the physical security profile of fixed sites and facilities, as well as critical items while in-transit.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604161D8Z / *Nuclear and Conventional Physical Security, Nuclear Forensics, Resilience, Survivability*	**Project (Number/Name)** 163 / *Nuclear and Conventional Physical Security*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
- Deter an adversary from accessing weapons of mass destruction or gaining unauthorized access to critical assets are at the heart of prevention. - Implement control measures that ensure access is limited to authorized persons is the foundation of physical security to delay or stop unauthorized entry/access to a specified/localized area. - Incorporate decision support systems to help management, operations, and planners make decisions, which may be rapidly changing and not easily specified in advance with a focus on command and control equipment, creation and enhancement of common operating pictures, and the establishment of common architectures / interface standards. ***FY 2024 Plans:*** - Detect an adversary and assess their intentions by identifying and warning of unauthorized access to a specified area or installation, as well as equipment related to the notification and identification of explosive threats or hazards. - Control access to safeguard personnel and their families and to prevent unauthorized access to critical infrastructure and materials to validate and verify individuals entering or already within, a facility. - Invest in robust installation and transport security to prevent a weapon of mass destruction attack or the unauthorized access to key assets such as nuclear weapons and special nuclear material. - Improve the physical security profile of fixed sites and facilities, as well as critical items while in-transit. - Deter an adversary from accessing weapons of mass destruction or gaining unauthorized access to critical assets are at the heart of prevention. - Implement control measures that ensure access is limited to authorized persons is the foundation of physical security to delay or stop unauthorized entry/access to a specified/localized area. - Incorporate decision support systems to help management, operations, and planners make decisions, which may be rapidly changing and not easily specified in advance with a focus on command and control equipment, creation and enhancement of common operating pictures, and the establishment of common architectures / interface standards. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The FY 2023 to FY 2024 decrease is the result of planned internal program adjustments based on Combatant Command and Military Services needs.			
Accomplishments/Planned Programs Subtotals	5.480	6.482	6.229

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

NA

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604161D8Z / *Nuclear and Conventional Physical Security, Nuclear Forensics, Resilience, Survivability*	**Project (Number/Name)** 163 / *Nuclear and Conventional Physical Security*

D. Acquisition Strategy

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604161D8Z / *Nuclear and Conventional Physical Security, Nuclear Forensics, Resilience, Survivability*	**Project (Number/Name)** 163 / *Nuclear and Conventional Physical Security*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Physical Security - Product Development	Various	Various : Various	62.246	-		-		-		-		-	-	-	-
Joint Expeditious Subsurface-threat Sonar Capability	MIPR	Various : Various	-	0.849		4.473		-		-		-	Continuing	Continuing	-
Sonar Navigated Autonomous Grabber	MIPR	Various : Various	-	0.831		1.000		-		-		-	Continuing	Continuing	-
Small Arms Point Defense	MIPR	Various : Various	-	0.750		-		-		-		-	Continuing	Continuing	-
Waterside Defensive System	MIPR	Various : Various	-	1.494		-		-		-		-	Continuing	Continuing	-
Defender - Mobile Situational Awareness Tool	C/Various	Various : Various	-	-		-		1.141		-		1.141	Continuing	Continuing	-
Artificial Intelligence in Support of Installation Operations and Force Protection	C/Various	Various : Various	-	-		-		1.205		-		1.205	Continuing	Continuing	-
Platform for Integrated C3 and Responsive Defense	C/Various	Various : Various	-	-		-		2.249		-		2.249	Continuing	Continuing	-
		Subtotal	62.246	3.924		5.473		4.595		-		4.595	Continuing	Continuing	N/A

Remarks

NA

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Physical Security - Test & Evaluation	Various	Multiple : Multiple	18.244	-		-		-		-		-	Continuing	Continuing	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604161D8Z / *Nuclear and Conventional Physical Security, Nuclear Forensics, Resilience, Survivability*	Project (Number/Name) 163 / *Nuclear and Conventional Physical Security*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Trace Comparative	MIPR	EOD Tech Division : Indian Head, MD	-	0.795		-		-		-		-	Continuing	Continuing	-
Standoff Suicide Bomber Detection Development	MIPR	EOD Tech Division : Indian Head, MD	-	0.761		-		-		-		-	Continuing	Continuing	-
Millimeter Wave Thermal Test & Evaluation	MIPR	EOD Tech Division : Indian Head, MD	-	-		1.009		1.307		-		1.307	Continuing	Continuing	-
Gas Chromatography Mass Spectrometry Systems Test & Evaluation	MIPR	EOD Tech Division : Indian Head, MD	-	-		-		0.327		-		0.327	Continuing	Continuing	-
		Subtotal	18.244	1.556		1.009		1.634		-		1.634	Continuing	Continuing	N/A

Remarks

NA

	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	80.490	5.480		6.482		6.229		-		6.229	Continuing	Continuing	N/A

Remarks

NA

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604161D8Z / *Nuclear and Conventional Physical Security, Nuclear Forensics, Resilience, Survivability*	**Project (Number/Name)** 163 / *Nuclear and Conventional Physical Security*

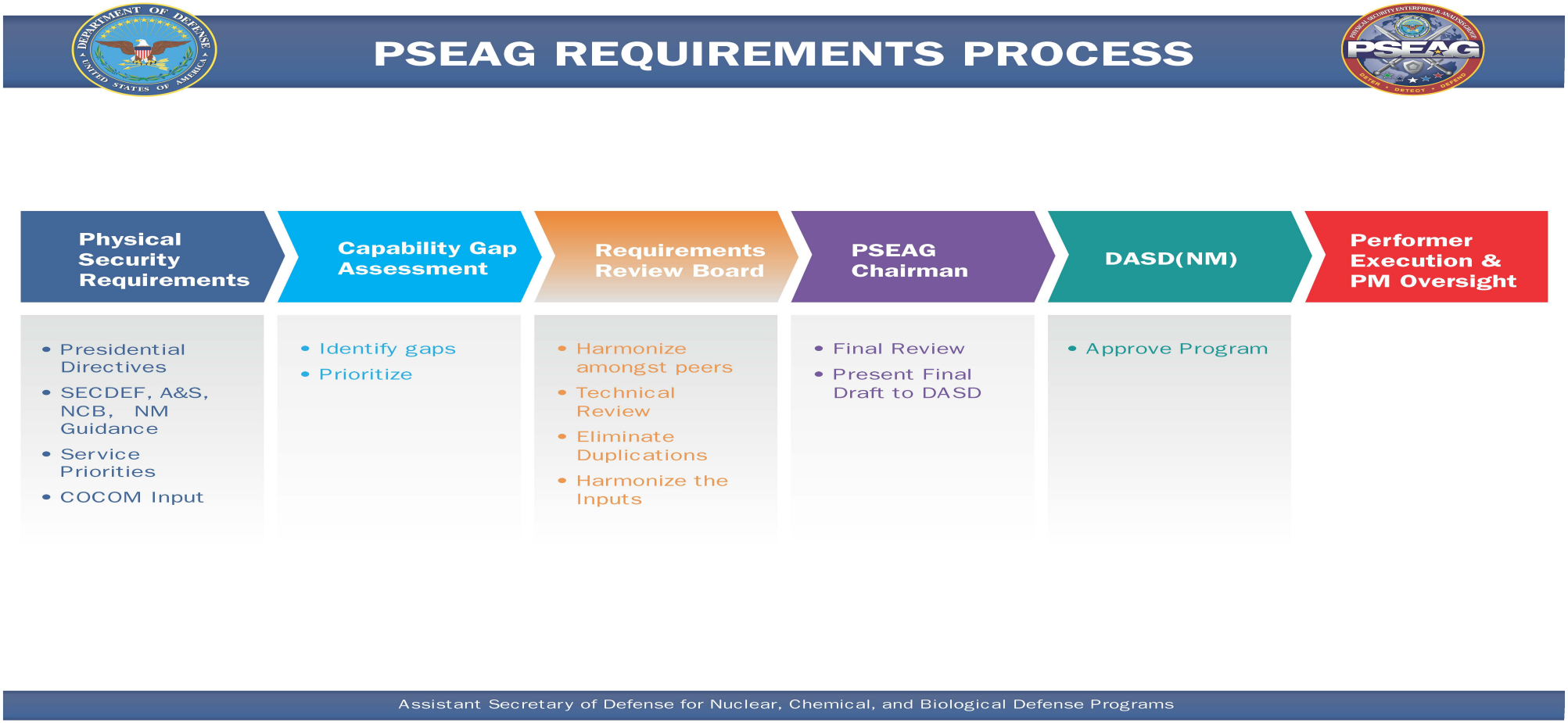


Exhibit R-4A, RDT&E Schedule Details: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604161D8Z / *Nuclear and Conventional Physical Security, Nuclear Forensics, Resilience, Survivability*	**Project (Number/Name)** 163 / *Nuclear and Conventional Physical Security*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Nuclear and Conventional Physical Security R&D				
Various physical security R&D efforts to address Combatant Command and Service Needs	1	2023	4	2028

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604161D8Z / *Nuclear and Conventional Physical Security, Nuclear Forensics, Resilience, Survivability*	Project (Number/Name) 042 / *National Technical Nuclear Forensics / System Development & Demonstration (SDD)*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
042: *National Technical Nuclear Forensics / System Development & Demonstration (SDD)*	16.050	0.000	0.000	0.000	-	0.000	8.366	8.547	10.218	10.433	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Funding transferred from Countering Nuclear Threats (CNT) to National Technical Nuclear Forensics (NTNF), P042. In FY 2018, Departments and Agencies began to shift research and development from NTNF to other mission areas. This resulted in degradation of the DoD (and by default, the U.S. Government's (USG)) ability to execute the nuclear forensics mission and deter adversaries. As the lead for providing the USG post-detonation nuclear forensics capability, the DoD is emphasizing the importance of this mission to ensure success and to be compliant with National Security Presidential Memorandum (NSPM)-35 requirements.

Prior Year funding includes the funding associated with the CNT program.

A. Mission Description and Budget Item Justification

Per NSPM 35, the DoD provides the USG post-detonation NTNF capability. Per DoDD S-2060.04, OUSD(A&S) is the DoD office responsible for DoD's NTNF capabilities. This program is the only DoD RDT&E program focused on System Development & Demonstration for NTNF capabilities.

Collecting and analyzing post-detonation debris is critical to ensure the USG can identify the source of nuclear material and hold those involved or supporting an attack accountable is critical to our national defense and security. Swift and accurate forensic and attribution (identification) capabilities are vital to supporting the President and Secretary of Defense in developing an appropriate, and timely, national response to a nuclear event and to prevent future attacks. An effective NTNF capability ensures potential adversaries, or those who support them, know that they will be held accountable if they use proxies or other non-traditional delivery of nuclear weapons against the U.S., U.S. interests, or allies. Both internal and independent studies indicate that continued improvement to the USG's NTNF capabilities is needed to sustain a credible deterrent against an attempted or actual nuclear attack.

Additionally, this program sustains perishable U.S. technical expertise at the operational DoD laboratories required to respond to a post-detonation NTNF event. The DoD's laboratory capability in this area is limited by capacity and technical expertise. In FY 2018, Departments and Agencies began to shift research and development from NTNF to other mission areas, which resulted in degradation of the DoD's (and by default, the USG's) ability to execute the nuclear forensics mission and deter adversaries through the attrition of technical experts vital to the response. Sustained support of the DoD's NTNF mission is crucial to prevent attrition of current capabilities and knowledge base, ensure that this critical and unique deterrence capability is not lost, putting the security of the nation and the ability to deter specific kinds of nuclear attack at risk, and meeting a higher standard of timeliness and confidence as directed.

This PE can fund travel to support the requirements of this program.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604161D8Z / *Nuclear and Conventional Physical Security, Nuclear Forensics, Resilience, Survivability*	**Project (Number/Name)** 042 / *National Technical Nuclear Forensics / System Development & Demonstration (SDD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: NTNF Capability Development	0.000	-	-
Description: The development of capability to collect and analyze nuclear debris is critical to our national defense and security. Swift and accurate forensic analysis and contribution to USG attribution (identification) processes are vital to supporting the President and Secretary of Defense in developing an appropriate national response to a nuclear event and to prevent future attacks in a timely manner. NTNF investments support development and retention of technical nuclear forensics expertise, improve CONUS and OCONUS collection, improve the fixed laboratory process, improving legacy NTNF capabilities, and supporting operationalization of new capabilities.			
Accomplishments/Planned Programs Subtotals	0.000	-	-

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604161D8Z / *Nuclear and Conventional Physical Security, Nuclear Forensics, Resilience, Survivability*	Project (Number/Name) 042 / *National Technical Nuclear Forensics / System Development & Demonstration (SDD)*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
NTNF	TBD	TBD : TBD	-	-		-		-		-		-	Continuing	Continuing	-
CNT	Sub Allot	JPEO CBD : Aberdeen, MD	16.050	-		-		-		-		-	-	-	-
		Subtotal	16.050	-		-		-		-		-	Continuing	Continuing	N/A

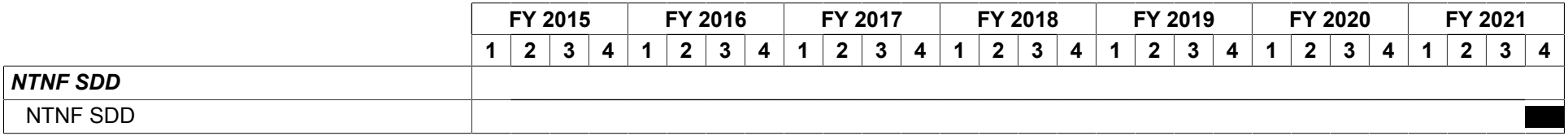
Remarks

NTNF SDD requirements begin in FY 2025

	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	16.050	-		-		-		-		-	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604161D8Z / *Nuclear and Conventional Physical Security, Nuclear Forensics, Resilience, Survivability*	**Project (Number/Name)** 042 / *National Technical Nuclear Forensics / System Development & Demonstration (SDD)*



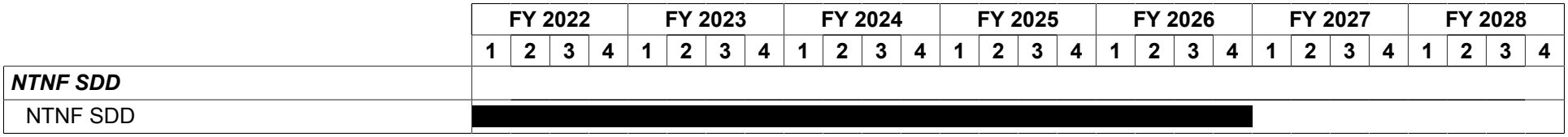


Exhibit R-4A, RDT&E Schedule Details: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604161D8Z / *Nuclear and Conventional Physical Security, Nuclear Forensics, Resilience, Survivability*	**Project (Number/Name)** 042 / *National Technical Nuclear Forensics / System Development & Demonstration (SDD)*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
NTNF SDD				
NTNF SDD	4	2021	4	2026

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604771D8Z / *Joint Tactical Information Distribution System (JTIDS)*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	171.630	20.589	9.030	9.775	-	9.775	9.926	9.903	9.890	10.068	Continuing	Continuing
771: *Joint Information and Capability Modernization*	171.630	9.033	9.030	9.775	-	9.775	9.926	9.903	9.890	10.068	Continuing	Continuing
105: *Cyber Capability & Platform Resilience*	-	11.556	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

This program supports the Department's initiatives to Defend the Homeland, Provide Nuclear Deterrence, and Build Sustainable and Long-Term Advantage.

This program provides in-depth technical, engineering, integration support, and system of system analysis for space, missile defense, Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR), Nuclear Command, Control, and Communications (NC3), and nuclear delivery system modernization program portfolio management.

- Command, Control, Communications, Computers and Intelligence, Surveillance, and Reconnaissance: Develop and maintain a roadmap to improve data link interoperability, data link waveform standards, and global enterprise capabilities, enabling resilient, survivable, federated networks.
- NC3 and Strategic Deterrence: Execute NC3 Enterprise Capability Portfolio Management on behalf of the Under Secretary of Defense for Acquisition and Sustainment (USD(A&S)). Provides acquisition expertise to recapitalize the nation's nuclear deterrent and reduce risk in nuclear modernization programs.
- Space and Missile Defense: Provides acquisition expertise to inform synchronized modernization and fielding of space and missile defense systems, including Space Control, Remote Sensing, Satellite Communication (SATCOM), Position, Navigation and Timing (PNT), launch, and homeland and regional missile defense capabilities.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604771D8Z / *Joint Tactical Information Distribution System (JTIDS)*

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	9.033	9.120	9.025	-	9.025
Current President's Budget	20.589	9.030	9.775	-	9.775
Total Adjustments	11.556	-0.090	0.750	-	0.750
• Congressional General Reductions	-	-0.090			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	11.556	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	-	-	0.750	-	0.750

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2022	FY 2023
Project: 105: *Cyber Capability & Platform Resilience*		
Congressional Add: *Deep Cyber Resiliency Assessments.*	11.556	-
Congressional Add Subtotals for Project: 105	11.556	-
Congressional Add Totals for all Projects	11.556	-

Change Summary Explanation

FY 2024 Increase in funding is for Joint Command and Control (C2) / Joint All Domain Command and Control (JADC2) analytic support Initiative and studies and analysis to enable proactive decision-making on actionable nuclear modernization acquisition risks and opportunities in support of the Nuclear Posture Review and Nuclear Deputy Management Action Group (DMAG).

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604771D8Z / *Joint Tactical Information Distribution System (JTIDS)*	Project (Number/Name) 771 / *Joint Information and Capability Modernization*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
771: *Joint Information and Capability Modernization*	171.630	9.033	9.030	9.775	-	9.775	9.926	9.903	9.890	10.068	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Provide in-depth technical, engineering, integration support, and system of system analysis for space, missile defense, cyber, C4ISR, NC3, and nuclear delivery system modernization program portfolio management.
- Command, Control, Communications, Computers and Intelligence, Surveillance, and Reconnaissance: Develop and maintain a roadmap to improve data link interoperability, data link waveform standards, and global enterprise capabilities, enabling resilient, survivable federated networks.
-NC3 and Strategic Deterrence: Execute NC3 Enterprise Capability Portfolio Management on behalf of the USD(A&S). Provides acquisition expertise to recapitalize the nation's nuclear deterrent and reduce risk in nuclear modernization programs.
- Space and Missile Defense: Provides acquisition expertise to inform synchronized modernization and fielding of space and missile defense systems, including Space Control, Remote Sensing, SATCOM, PNT, launch, and homeland and regional missile defense capabilities.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Joint Information and Capability Modernization	9.033	9.030	9.775
Description: FY 2022 Accomplishments: C4ISR: - Performed Bandwidth Efficient Common Data Link (CDL-BE) compliance analysis on over 120 platforms/users and evaluated new and evolving industry and government waveforms. - Developed and oversaw execution of Department-wide acquisition strategy for Airborne Intelligence, Surveillance, and Reconnaissance (AISR) systems that resulted in increased AISR data sharing between unified combatant commands and coalition partners. - Completed the Spectrum Efficient National Surveillance Radar technical feasibility assessment evaluating alternative operational and acquisition strategies to enable spectrum relocation of long range aviation radars and make available federal spectrum for commercial broadband wireless use. - Executed A&S leadership role within the Congressionally directed 5G Cross Functional Team, focused upon accelerating acquisition and sustainment of 5G capabilities and services. - Execute A&S co-chair function within the C3LB, conduct strategic planning, prioritization, policy execution, resource review, and oversight of DoD C3 and Electromagnetic Spectrum initiatives. - Tracked and assessed testing of Link 16 capability improvements to multiple military platforms. Supported JS J6 efforts to prioritize fielding of tactical radio replacements to address cryptographic modernization issues.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604771D8Z / *Joint Tactical Information Distribution System (JTIDS)*	**Project (Number/Name)** 771 / *Joint Information and Capability Modernization*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
- Evaluated current JADC2 acquisitions to identify acquisition challenges and proposed extensible reforms to the Defense Acquisition System, the Planning, Programming, Budgeting & Execution process, and the Joint Capabilities Integration & Development Systems. - Provided technical and acquisition support to the JADC2 CFT, provided coordination and AO support for reviews of JADC2 Reference Architecture, and developed JADC2 Implementation Plan products to support critical cross-functional team timelines and deliverables. - Delivered agile acquisition and program management insights to the Office of the Director of National Intelligence towards implementing Agile methodologies into their software development processes and institute an Intelligence Community (IC) Software Acquisition Model across IC acquisition programs. - Finalized Terms of Reference agreement and obtained United States European Command confirmation of requirement for US/France datalink interoperability between 4th/5th gen platforms and supported United States/United Kingdom Federated Network C3 joint cooperation group. - Provided technical expertise for low-observable communications interoperability for Joint/Coalition operations in contested environments, seek to achieve Government control of LO Tactical Data Link technical baselines. - As co-lead with Under Secretary of Defense Intelligence and Security, provided technical support to modernize and migrate the DoD Distributed Common Ground family of systems to an enterprise capability that aligns to National Defense Strategy (NDS) information sharing goals and objectives. - Developed the FY 2023 Joint Tactical Network Center Management Plan and Tri-Military Department Resource Plan which align the DoD's prioritized Joint communications needs and requirements between the Tactical Communications Senior Steering Group, the Communications Technology and Waveform Working Group, Service sponsors, and other key Stakeholders. - Executed the A&S leadership role within the multi-organizational Emerging Mid Band Radar Spectrum Sharing, conducting a DoD enterprise-wide study to evaluate reasonable, feasible, and executable options that define the conditions necessary to share 350 MHz of the spectrum while safeguarding incumbent military activities. - Executed the A&S leadership role for Innovation Steering Group, focusing on Line of Effort (LOE) #4 Improving Transition, and Innovation Community of Interest, to support the NDS LOE #3 improving innovation transition effectiveness to Acquisition. NC3 and Strategic Deterrence: - Supported the NC3 Capability Portfolio Manager with analysis presented to senior leadership bodies (NC3 Enterprise Review, Deputy's Management Action Group, etc.) and recommended investment and policy alternatives. - Conducted NC3 Integrated Acquisition Portfolio Review Presidential Decision Making mission thread analysis to identify schedule risk and integration challenges relating to supporting execution of Nuclear Deterrence Operation Plans. - Led NC3 working group supporting the 2022 Nuclear Posture Review (NPR). Collaborated with DoD and Agency staffs to ensure NC3 Next Generation will provide modernized NC3 capabilities to enable mission assurance for nuclear operations. Identified findings to producing a more resilient and capable modernized NC3 system.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604771D8Z / *Joint Tactical Information Distribution System (JTIDS)*	**Project (Number/Name)** 771 / *Joint Information and Capability Modernization*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
- Supported the recapitalization of the nation's nuclear deterrent, drove risk reduction in nuclear delivery system modernization programs, enhanced sustainment of fielded nuclear capabilities, supported Department-wide efforts to complete the NPR and develop an initial NPR implementation plan. - Led numerous Department-wide engagements bringing together stakeholders on Sentinel (Ground Based Strategic Deterrent) program, fostered whole of government support for the program's initial outreach to facilitate future fielding efforts. - Conducted In-Progress Reviews (IPRs) for the ACAT ID Sentinel and Long Range Standoff Weapon (LRSO) reviewing cost, schedule, performance and risk of these critical strategic deterrence programs. These IPRs resulted in improved estimates of Sentinel schedule risks and software metrics, providing additional quantitative data to drive improved program performance. For LRSO, the IPRs ensured a continued successful transition into the Engineering and Manufacturing Development contract. - Provided acquisition expertise to the Nuclear Weapons Council (NWC), recommending additional oversight and risk mitigation on key nuclear programs to enable continued synchronization, leading to successful fielded of the capability. - Provided acquisition expertise across numerous NWC Working Groups in support of key statutory responsibilities of the council. - Led sub-working group within the Nuclear Posture Review activities to foster continued and renewed support for the nuclear modernization activities Space and Missile Defense (SMD): - As co-chair of the PNT oversight council, performed oversight and cross-Service coordination of PNT modernization acquisitions to improve DoD warfighting capability. - Conducted Space Control mission thread analysis to identify schedule risk and integration challenges relating to the mission essential function in executing OPLANs. - Performed portfolio management of SATCOM, Remote Sensing, Space Control, PNT, Assured Access to Space, and Missile Defense acquisitions. Identified multi-Service programmatic disconnects for development, fielding, and operations of space, ground, and user capabilities; engaged with joint community to develop resolution courses of action ***FY 2023 Plans:*** C4ISR: - Perform role as OUSD(A&S) Principal Staff Assistant for Common Data Link (CDL) by maintaining CDL technology roadmap and terminal database, conducting annual enterprise CDL analysis, and reviewing Service budget submissions for policy compliance. - Assist Services and combatant commands develop acquisition strategies to modernize their Distributed Common Ground System (DCGS) deployments in accordance with OUSD(I&S) guidelines and NDS information sharing goals and objectives. - As a Co-Chair for the Command, Control, and Communications Leadership Board, conduct strategic planning, prioritization, policy execution, resource review, and oversight of DoD C3 and Electromagnetic Spectrum (EMS) initiatives.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604771D8Z / *Joint Tactical Information Distribution System (JTIDS)*	**Project (Number/Name)** 771 / *Joint Information and Capability Modernization*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
- Perform governance management and oversight of the Joint Tactical Networking Center (JTNC) which support DoD's goal of rapid identification, characterization, procurement, fielding, and sustainment of modular, innovative tactical communications systems. - Provide acquisition support and expertise to integrated electromagnetic spectrum (EMS) operations to ensure capabilities are met through integrated electronic transport that remain unimpeded in contested and congested EMS environments. - Provide executive guidance, technical expertise, and acquisition support to ensure a secure National Airspace System capable of supporting protection and defense of the homeland. - In support of the National Defense Strategy line of effort to build a more lethal force, develop accelerated 5G acquisition strategies and requirements that allow DoD to leverage and deploy 5G technologies at the speed of commercial industry. - Implement the Tactical Data Link (TDL) Capability Roadmap by synchronizing Department acquisition strategies to field next generation waveforms, gain efficiencies, and maintain interoperability between the Services, allies, and partner nations. - Promote Joint C2 program integration and synchronization across Components, Services, and Agencies, lead resolution of portfolio disconnects, and provide recommendations to OUSD(A&S) leadership regarding Joint C2 reprogramming. - Provide acquisition expertise to advance Joint All Domain Command and Control (JADC2) Cross Functional Team (CFT) sponsored efforts to include document development, reviews, and major studies for acquisition and material development efforts. - Leverage artificial intelligence and machine learning to increase Airborne Intelligence, Surveillance, and Reconnaissance data transport system capabilities and implement a network maintenance concept ensuring end-to-end operational availability. - Provide acquisition expertise to the Command, Control, Communications, and Computers (C4)/Cyber and Battlespace Awareness Functional Capabilities Boards and perform acquisition portfolio management of Joint Requirements Oversight Council approved C4ISR systems. - Continue support to OUSD(A&S) International Cooperation activities in line with the National Defense Strategy to strengthen alliances and attract new partners. Continue coordination for Yockey waivers, DoD Advocacy Requests, and policy issues. - Continue collaboration with DoD and Intelligence Community acquisitions and oversight staff to refine agile development lessons learned, best practices, and best-of-breed tools and metrics into acquisition policy and guidance and implement across all DoD agile development programs. NC3 and Strategic Deterrence: - Work with the Under Secretary of Defense Research and Engineering to develop Science and Technology Strategic Plans to develop next generation NC3 capabilities and to ensure a viable path exists to transition technology to new or existing acquisition programs. - Support the NC3 Capability Portfolio Manager with analysis presented to senior leadership bodies (NC3 Enterprise Review, Deputy's Management Action Group) and recommend investment and policy alternatives. Update NC3 program protection planning policy, NC3 cybersecurity systems engineering standards, modernization assessments, and comprehensive NC3 portfolio assessments.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604771D8Z / *Joint Tactical Information Distribution System (JTIDS)*	**Project (Number/Name)** 771 / *Joint Information and Capability Modernization*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
- Conduct NC3 mission thread analysis on land and space based detection systems to identify schedule risk and capability gaps relating to the Situational Awareness mission essential function that allows prompt early warning to senior decision makers under nuclear scenarios. - Support the recapitalizing the nation's nuclear deterrent, driving risk reduction in nuclear modernization programs, enhancing sustainment of existing legacy nuclear capabilities, and implementing the Nuclear Posture Review. SMD: - Provide assessment of the technical challenges to developing/implementing protected tactical satellite communications (SATCOM) systems including identification of future limitations anticipated for operators and the interoperability between systems located at different orbits. - Support narrowband SATCOM Analysis of Alternatives study and follow-on activities in order to inform leadership recommendations and determine future of narrowband SATCOM capabilities. - Support assessment of wideband SATCOM protected tactical topology for programs in development as well as being planned. Activities will include program assessments and enterprise analysis to inform portfolio resource investment decisions. - Engage in Force Protection and Battlespace Awareness Functional Capabilities Board (FCB) Working Groups, FCBs, and Joint Capabilities Boards to ensure Space and Missile Defense Directorate equities and interests are adequately addressed, with specific focus on the synergies/integration between the space and ground segments and associated command and control (C2); tracking, telemetry, and commanding (TT&C); SATCOM, and other key data links.			
FY 2024 Plans: C4ISR: - Leverage artificial intelligence and machine learning to increase AISR data transport system capabilities and implement a network maintenance concept ensuring end-to-end operational availability. - Execute the A&S leadership role within the 5G CFT, focused upon developing accelerated 5G acquisition strategies and requirements that allow DoD to leverage and deploy 5G and next-G technologies at the speed of commercial industry. - Execute A&S co-chair function of the C3LB governance council, performing oversight and cross-Service coordination of public safety communications, tactical radio and networks, TDL, and common data link modernization acquisitions to improve DoD system interoperability. - Track and assess acquisition implementation of Link 16 capability improvements across Services. Support JS J6 efforts to resolve cryptographic modernization issues. - Execute portfolio management of Joint C2 acquisitions. Identified multi-Service programmatic disconnects for air operations planning capabilities; engaged with joint community to develop resolution courses of action. - Provide acquisition leadership to advance JADC2 CFT sponsored efforts to include document development, reviews, and major studies for acquisition and material development efforts.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604771D8Z / *Joint Tactical Information Distribution System (JTIDS)*	**Project (Number/Name)** 771 / *Joint Information and Capability Modernization*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
- Continue collaboration with DoD and Intelligence Community acquisitions and oversight staff to refine agile development lessons learned, best practices, and best-of-breed tools and metrics into acquisition policy and guidance and implement across all DoD agile development programs - Continue support to OUSD(A&S) International Cooperation activities in line with the National defense strategy to strengthen alliances and attract new partners. Continue coordination for Yockey waivers, DoD Advocacy Requests, and Policy issues. Work with France to define an interoperability roadmap for 2030 and beyond. - Continue the TDL capability roadmap by synchronizing Department acquisition strategies to field next generation waveforms, gain efficiencies, and maintain Interoperability between the Services, allies, and partner nations. - Continue oversight of JTNC coordination activities and maintain the JTNC Management Plan as a living document reflecting priorities from the Tactical Communications Senior Steering Group, the Communications Technology and Waveform Working Group, Service sponsors, and other key Stakeholders. - Execute the A&S leadership role toward integrated EMS operations to ensure capabilities are met through integrated electronic transport that remain unimpeded in contested and congested EMS environments. - Execute the A&S leadership role within ISG providing acquisition insight into ISG efforts to adjudicate priorities and recommendations to inject innovation into activities and programs that meet NDS lines of effort and advise Department leadership on science, technology transition, and other related matters while also improving innovation transition effectiveness to Acquisition. NC3 and Strategic Deterrence: - Partner with USSTRATCOM NC3 Enterprise Center to evolve the NC3 Capability Planning Guidance for FY26-30. Clarify direction to Services by organizing the guidance to deliver incremental modernization in well-defined transitions and clarifying longer term capability objectives to better target research and development investments. - Support the NC3 CPM with analysis presented to senior leadership bodies (NC3 Enterprise Review, Deputy's Management Action Group, etc.) and recommend investment and policy alternatives. - Complete NC3 Integrated Acquisition Portfolio Review (IAPR) on a selected mission thread to identify programmatic schedule risk and integration challenges associated with a subset of the portfolio. The FY 2024 IAPR will likely focus on recapitalization and integration of fixed, ground mobile, and airborne command and control platforms. - Support the recapitalizing the nation's nuclear deterrent, drive risk reduction in nuclear modernization programs, enhance sustainment of fielded nuclear capabilities, and continue implementing the Nuclear Posture Review. - Conduct for In-Progress Reviews for the Long Range Standoff Weapon and Sentinel programs. Continue to assess cost, schedule and performance of the nuclear portfolio. Space and Missile Defense: - Provide in-depth technical, engineering, integration support, and system of system analysis for space systems and missile defense modernization program portfolio management.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604771D8Z / *Joint Tactical Information Distribution System (JTIDS)*	**Project (Number/Name)** 771 / *Joint Information and Capability Modernization*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
- As a Co-Chair for the Position, Navigation, and Timing (PNT) oversight council, conduct strategic planning, prioritization, policy execution, resource review, and oversight of DoD PNT initiatives. - As a Co-Chair for the Missile Defense Executive Board, conduct strategic planning, prioritization, policy execution, resource review, and oversight of DoD missile defense initiatives. - Engage in Force Protection and Battlespace Awareness Functional Capabilities Board (FCB) Working Groups, FCBs, and Joint Capabilities Boards to ensure Space and Missile Defense Directorate equities and interests are adequately addressed, with specific focus on the synergies/integration between the space and ground segments and associated command and control (C2); TT&C; SATCOM, and other key data links. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2024 Increase in funding is for Joint Command and Control / Joint All Domain Command and Control analytic support Initiative and studies and analysis to enable proactive decision-making on actionable nuclear modernization acquisition risks and opportunities in support of the Nuclear Posture Review and Nuclear Deputy Management Action Group.			
Accomplishments/Planned Programs Subtotals	9.033	9.030	9.775

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

Utilize existing fixed-price and cost-plus contracts (where appropriate) to continue providing in-depth technical, engineering, integration support, and system of system analysis for space, NC3, strategic deterrence, missile defense, and C4ISR.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604771D8Z / *Joint Tactical Information Distribution System (JTIDS)*	**Project (Number/Name)** 771 / *Joint Information and Capability Modernization*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Joint Information and Capability Modernization	C/TBD	OUSD A&S DASD SSIPM : Pentagon	171.630	9.033	Jan 2021	9.030	Jan 2021	9.775		-		9.775	Continuing	Continuing	Continuing
		Subtotal	171.630	9.033		9.030		9.775		-		9.775	Continuing	Continuing	N/A

Remarks

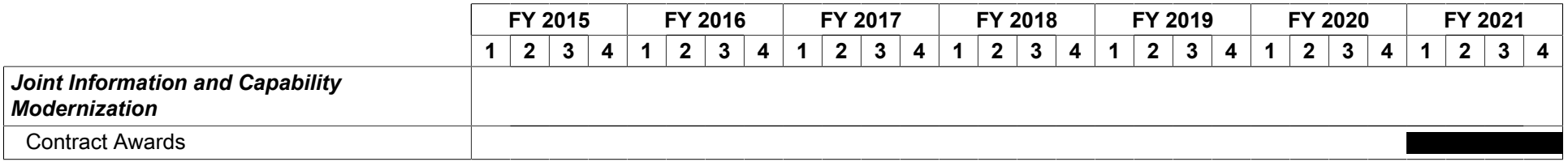
NA

	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	171.630	9.033		9.030		9.775		-		9.775	Continuing	Continuing	N/A

Remarks

Resources will be used to provide technical, systems engineering and acquisition management oversight of programs, projects and activities to maximize the Department's return on investment in information technology resources and to affect a comprehensive approach for assessing and procuring critical information systems from initial design, through development to capability delivery in support of improved weapons systems performance and military operations.

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604771D8Z / *Joint Tactical Information Distribution System (JTIDS)*	**Project (Number/Name)** 771 / *Joint Information and Capability Modernization*



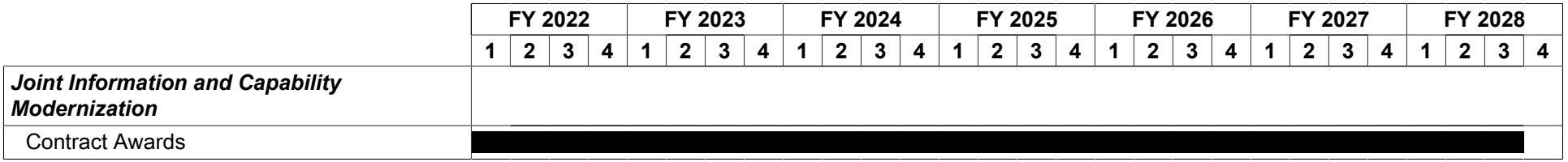


Exhibit R-4A, RDT&E Schedule Details: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604771D8Z / *Joint Tactical Information Distribution System (JTIDS)*	**Project (Number/Name)** 771 / *Joint Information and Capability Modernization*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Joint Information and Capability Modernization				
Contract Awards	1	2021	3	2028

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense											Date: March 2023	
Appropriation/Budget Activity 0400 / 5					R-1 Program Element (Number/Name) PE 0604771D8Z / *Joint Tactical Information Distribution System (JTIDS)*				Project (Number/Name) 105 / *Cyber Capability & Platform Resilience*			
COST ($ in Millions)	**Prior Years**	**FY 2022**	**FY 2023**	**FY 2024 Base**	**FY 2024 OCO**	**FY 2024 Total**	**FY 2025**	**FY 2026**	**FY 2027**	**FY 2028**	**Cost To Complete**	**Total Cost**
105: *Cyber Capability & Platform Resilience*	-	11.556	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

These funds were a congressional add specifically to conduct Deep Cyber Resiliency Assessments.

A. Mission Description and Budget Item Justification

This program supports the Department's initiatives to Defend the Homeland, and Build Sustainable and Long-Term Advantage.

The Cyber Resiliency & Cybersecurity Policy program supports the efforts of OUSD A&S, focusing on the defense of the Department's critical mission weapon systems and Defense Critical Infrastructure from cyber attack, protecting the Department's sensitive unclassified information residing within the Defense Industrial Base (DIB) sector and supply chain, and capability portfolio management for Joint Cyber Capabilities used by the Cyber Mission Force. This program funds the following critical efforts:

Cybersecurity for Weapon Systems and Critical Infrastructure: Lead the Department's Strategic Cybersecurity Program to continue critical weapon systems and defense infrastructure cybersecurity assessments and mitigations.

Deputy Assistant Secretary of Defense Platform & Weapon Portfolio Management/Cyber Warfare Directorate Cyber Resiliency efforts are aligned with the following initiatives:

Assess:
- Conduct of mission based cyber risk assessments for priority Defense Missions in support of Combatant Commands (CCMDs).
- Conduct Deep Cyber Resiliency Assessments in support of CCMDs and asset owners.

Inventory:
- Develop, sustain, and employ Cyber Risk Mitigation Tool, an Enterprise-wide decision support tool for tracking cyber vulnerability assessments and mitigations.

Prioritize:
- Prioritize Cyber Risk Mitigations based upon mission analysis conducted by Mission Focused Cyber Hardening Teams.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Cyber Capability & Platform Resilience	0.000	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604771D8Z / *Joint Tactical Information Distribution System (JTIDS)*	**Project (Number/Name)** 105 / *Cyber Capability & Platform Resilience*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Accomplishments/Planned Programs Subtotals	0.000	-	-

	FY 2022	FY 2023
Congressional Add: Deep Cyber Resiliency Assessments.	11.556	-
FY 2022 Accomplishments: FY22 Accomplishments: Conducted Cyber Risk Assessments in support of Combatant Commands: - Combatant Command (CCMD) Mission Analysis: Began pilot of analytic approach with United States Space Command (USSPACECOM) to define mission essential tasks for evaluation. - Mission Resilience (MR) Games: Completed MR I in support of United States Transportation Command and United States European Command to assess global logistics mission in a contested cyberspace environment. Began preparation for MR II in support of USSPACECOM. - Deep Cyber Resiliency Assessments (DCRAs): Completed multiple DCRAs for Mission Partners across the DoD including a high priority special request from a CCMD.		
Congressional Adds Subtotals	11.556	-

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604771D8Z / *Joint Tactical Information Distribution System (JTIDS)*	Project (Number/Name) 105 / *Cyber Capability & Platform Resilience*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Deep Cyber Resiliency Assessments	C/CPFF	DASD PWPM/Cyber Warfare Directorate : Pentagon	-	11.556		-		-		-		-	Continuing	Continuing	-
		Subtotal	-	11.556		-		-		-		-	Continuing	Continuing	N/A

	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	11.556		-		-		-		-	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604771D8Z / *Joint Tactical Information Distribution System (JTIDS)*	**Project (Number/Name)** 105 / *Cyber Capability & Platform Resilience*

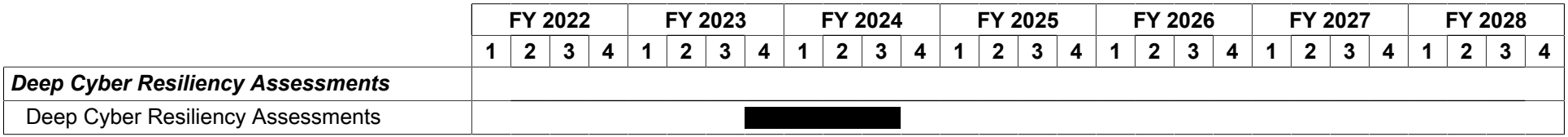


Exhibit R-4A, RDT&E Schedule Details: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604771D8Z / *Joint Tactical Information Distribution System (JTIDS)*	**Project (Number/Name)** 105 / *Cyber Capability & Platform Resilience*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Deep Cyber Resiliency Assessments				
Deep Cyber Resiliency Assessments	4	2023	3	2024

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0605022D8Z / *Defense Exportability Features (DEF) Program*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	42.291	55.312	30.145	18.981	-	18.981	16.640	15.619	15.382	15.704	-	-
013: *Defense Exportability Features (DEF) Program*	42.291	55.312	30.145	18.981	-	18.981	16.640	15.619	15.382	15.704	-	-

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

The DEF Program funds activities to support identification of major defense acquisition programs for possible export and the planning for design and incorporation of exportability features during the research and development phases of these programs. Features include, but are not limited to, technology and engineering design activities such as capability differentials, anti-tamper, system assurance, and software assurance. Activities include the development of program protection strategies for the program; the design and incorporation of exportability features into the system; implementation of exportability requirements into contracts; and other research, development, test, and evaluation activities.

Defense exportability features play a critically important role in DoD efforts to build partnership capacity. Funds support building joint and coalition environments by enabling the export of DoD systems to a wide range of partner nations, resulting in improved security and interoperability. In addition to the operational benefits, by providing these resources up front, the United States and partner nations will save significant resources by more efficiently designing and producing exportable U.S. systems.

Experience has shown that failure to identify the full range of Critical Program Information (CPI) early in a DoD program's design phase can drive major affordability and schedule problems later when programs have to "retrofit" program protection measures prior to export. Early development of export variants, including systems design approaches to integrate exportable anti-tamper protection and differential capability requirements to lower production costs, makes it possible to improve quality and timely deliveries to allies and friends and may enhance U.S. industry share of the global marketplace.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0605022D8Z / *Defense Exportability Features (DEF) Program*

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	5.416	10.145	19.234	-	19.234
Current President's Budget	55.312	30.145	18.981	-	18.981
Total Adjustments	49.896	20.000	-0.253	-	-0.253
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	20.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	49.896	-	-0.253	-	-0.253

Change Summary Explanation

The FY 2024 decrease of $0.253 million to fund Departmental priorities, while continuing to expand exportability efforts.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0605022D8Z / *Defense Exportability Features (DEF) Program*	Project (Number/Name) 013 / *Defense Exportability Features (DEF) Program*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
013: *Defense Exportability Features (DEF) Program*	42.291	55.312	30.145	18.981	-	18.981	16.640	15.619	15.382	15.704	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The DEF Program funds activities to support identification of major defense acquisition programs for possible export and the planning for design and incorporation of exportability features during the research and development phases of these programs. Features include, but are not limited to, technology and engineering design activities such as capability differentials, anti-tamper, system assurance, and software assurance. Activities include the development of program protection strategies for the program; the design and incorporation of exportability features into the system; implementation of exportability requirements into contracts; and other research, development, test, and evaluation activities.

Defense exportability features play a critically important role in DoD efforts to build partnership capacity. Funds support building joint and coalition environments by enabling the export of DoD systems to a wide range of partner nations, resulting in improved security and interoperability. In addition to the operational benefits, by providing these resources up front, the United States and partner nations will save significant resources by more efficiently designing and producing exportable U.S. systems.

Experience has shown that failure to identify the full range of CPI early in a DoD program's design phase can drive major affordability and schedule problems later when programs have to "retrofit" program protection measures prior to export. Early development of export variants, including systems design approaches to integrate exportable anti-tamper protection and differential capability requirements to lower production costs, makes it possible to improve quality and timely deliveries to allies and friends and may enhance U.S. industry share of the global marketplace.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: DEF Program	55.312	30.145	18.981
Description: The DEF Program enables DoD programs to develop and incorporate technology protection features in designated systems during the research and development phase of such systems to prepare them for export. By facilitating the export of U.S. defense systems, the DoD enhances the U.S. defense industrial base, strengthens the military capabilities of U.S. allies around the world, and increases coalition interoperability.			
FY 2023 Plans: Provide follow-on funding to the Army's Future Vertical Lift and Indirect Fire Protection Capability programs, the Navy's Surface Anti-Submarine Warfare Synthetic Trainer and Tactical Combat Training System II programs, the Air Force's Anti-Jam Modem			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605022D8Z / *Defense Exportability Features (DEF) Program*	**Project (Number/Name)** 013 / *Defense Exportability Features (DEF) Program*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
and Tactical High Power Microwave Operational Responder programs, and the Space Force's Astro-Standards and Integrated Solutions for Situation Awareness programs. ***FY 2024 Plans:*** Provide funding to help DoD programs plan for exportability in line with recent changes to DoD guidance, including the DoD Instruction (DoDI) 5000.85 Major Capability Acquisition that requires DoD programs to design their systems for exportability as the default acquisition approach and the updated Joint Capabilities Integration and Development System manual that integrates exportability into the DoD requirements planning process. In particular, support several modernization priority programs to plan for exportability to allies and partners. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The FY 2023 to FY 2024 decrease of $11.164 million is driven by a reorientation of Departmental priorities, while still continuing to expand exportability efforts.			
Accomplishments/Planned Programs Subtotals	55.312	30.145	18.981

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605022D8Z / *Defense Exportability Features (DEF) Program*	**Project (Number/Name)** 013 / *Defense Exportability Features (DEF) Program*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
DEF	TBD	Various : Various	42.291	55.312		30.145		18.981		-		18.981	-	-	-
		Subtotal	42.291	55.312		30.145		18.981		-		18.981	-	-	N/A

Remarks

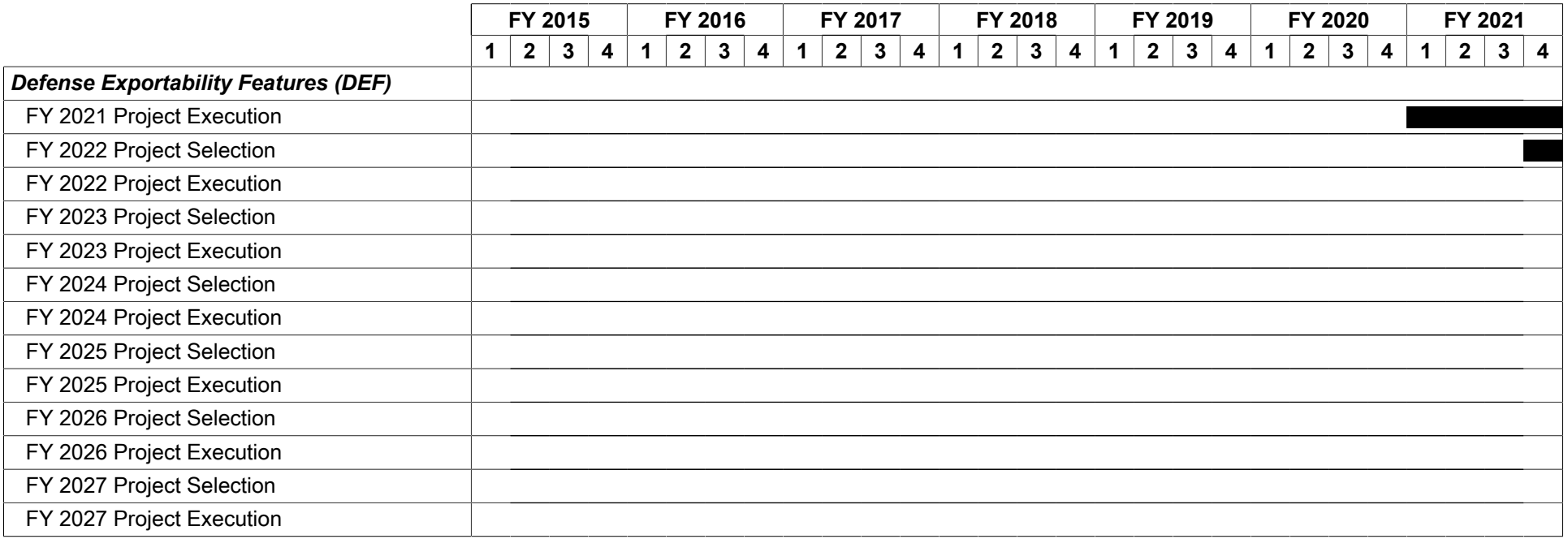
N/A.

	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	42.291	55.312		30.145		18.981		-		18.981	-	-	N/A

Remarks

N/A

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605022D8Z / *Defense Exportability Features (DEF) Program*	**Project (Number/Name)** 013 / *Defense Exportability Features (DEF) Program*



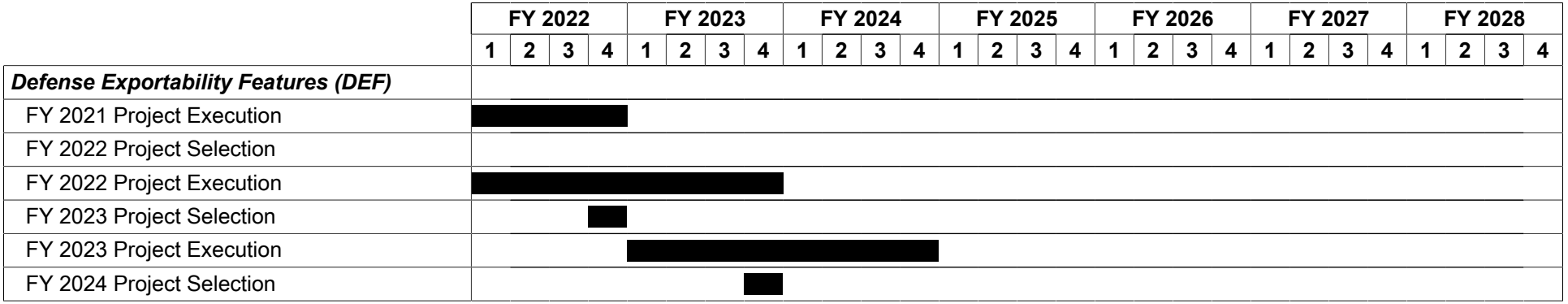


Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605022D8Z / *Defense Exportability Features (DEF) Program*	**Project (Number/Name)** 013 / *Defense Exportability Features (DEF) Program*

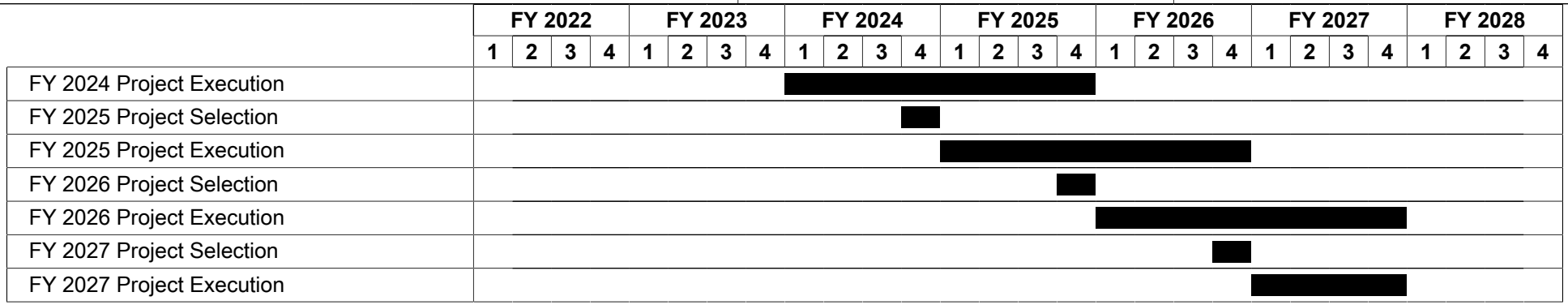


Exhibit R-4A, RDT&E Schedule Details: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605022D8Z / *Defense Exportability Features (DEF) Program*	**Project (Number/Name)** 013 / *Defense Exportability Features (DEF) Program*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Defense Exportability Features (DEF)				
FY 2021 Project Execution	1	2021	4	2022
FY 2022 Project Selection	4	2021	4	2021
FY 2022 Project Execution	1	2022	4	2023
FY 2023 Project Selection	4	2022	4	2022
FY 2023 Project Execution	1	2023	4	2024
FY 2024 Project Selection	4	2023	4	2023
FY 2024 Project Execution	1	2024	4	2025
FY 2025 Project Selection	4	2024	4	2024
FY 2025 Project Execution	1	2025	4	2026
FY 2026 Project Selection	4	2025	4	2025
FY 2026 Project Execution	1	2026	4	2027
FY 2027 Project Selection	4	2026	4	2026
FY 2027 Project Execution	1	2027	4	2027

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0605027D8Z / *OUSD(C) IT Development Initiative*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	105.786	46.573	5.938	5.456	-	5.456	5.653	6.330	4.778	4.879	Continuing	Continuing
927: *Next Generation Resource Management System*	49.848	3.674	5.938	5.456	-	5.456	5.653	6.330	4.778	4.879	Continuing	Continuing
930: *Advanced Analytics (Advana)*	55.938	42.899	-	-	-	-	-	-	-	-	Continuing	Continuing

Note

New Start (Y/N): No

Effective for the FY 2023 budget, the line 930 Advana was realigned from the Office of the Under Secretary of Defense for Comptroller PE: 0605027D8Z to the Office of the Chief Digital and Artificial Intelligence Officer (OCDAO) PE: 0604123D8Z.

A. Mission Description and Budget Item Justification

As the Department of Defense's strategic, operational, and tactical plans and objectives transform the war fighter with new capabilities and doctrine, the budgeting and accountability of funds used to pursue the Department's objectives will become more complicated and detailed allowing senior leaders to make decisions with supporting rationale for the taxpayer. Incorporating information technology towards current and emerging business processes manifesting into a state-of-the art system of systems will result in increasing efficiencies, timely diagnostics, and reducing lifecycle costs to maintain, sustain, and repair.

This initiative exploits emerging technology, processes, trends, capabilities, and techniques to incorporate state-of-the-art information technology enabling the ability, agility, and level of fidelity to collect, process, administrate, and report resource management data and to automate business processes within a more robust analytical environment within the Office of the Under Secretary of Defense (Comptroller) (OUSD(C)).

Next Generation Resource Management Systems (NGRMS):

The OUSD(C) is responsible for advising the Secretary of Defense on all Defense budgetary and fiscal matters, for Defense budget development and execution, and for overseeing financial management across the Department. The OUSD(C) has a broad set of responsibilities in supporting the Planning, Programing, Budget, and Execution (PPBE) process. The Office of the Director, Cost Assessment and Program Evaluation (CAPE), provides independent analytic advice to the Secretary of Defense on all aspects of the Defense program, including alternative weapon systems and force structures, the development and evaluation of program and defense program alternatives, and the cost-effectiveness of defense systems. There is a critical need for the development of a state-of-the-art information technology system to modernize and replace multiple, antiquated legacy systems and processes used to formulate, justify, present, and defend the entire Department of Defense budget in the OUSD(C) to meet Title 10 and Title 31 mission and reporting requirements. NGRMS is critical in formulating the DoD Budget and thereby providing the necessary fund requests to defend the homeland, deter strategic attacks against the United States, our Allies and partners. By formulating and presenting the DoD budget, NGRMS, through our Services, is helping to deter aggression, yet ensuring that we are prepared to prevail in conflicts with a prioritization to the PRC challenge in the

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0605027D8Z / *OUSD(C) IT Development Initiative*

Indo-Pacific and the Russian challenge in Europe. Through a strong DoD Budget, NGRMS is a major factor in building a resilient Joint Force and Defense ecosystem. The Comptroller's plan for mitigating the deficiencies and capability gaps associated with current systems is the development of the NGRMS.

The OUSD(C) and CAPE use multiple systems to formulate, justify, distribute, and execute the DoD budgets. The information managed by the budget formulation and programming systems is redundant, and reconciliation of information is difficult and inefficient. These systems require extensive manpower investments to provide executives the information needed to make timely key financial decisions. The OUSD(C) and CAPE require a more efficient and effective Defense budget environment that optimizes the budget cycle to ensure users are processing and reporting efficiently, and DoD Senior Leadership has the information to make informed, critical decisions.

The OUSD(C) requires capabilities to provide for the effective formulation, and justification of the Defense budget to be adaptable and modern. The requirement is for:

• Automated exchange and reconciliation of budget data
• Improved efficiency through the utilization of a unified budgetary model
• Instantaneous ability to generate data for management reviews and decisions
• Capability to accommodate emerging business practices
• Agile methods to launch and terminate new development efforts more quickly
• Seamlessly combine the out
puts of multiple efforts at various levels of maturity for organizational responsiveness and alternative resource allocation for innovation adoption

As of the 3rd Quarter FY 2022, NGRMS has been developed and has deployed Initial Operating Capability (IOC) to all Department of Defense Services and agencies. The system has been designed as a single system with a unified data source for OUSD(C) and CAPE, which supports the reforming and modernizing of the Planning, Programming, Budgeting, and Execution (PPBE) process. It provides a single, integrated system that employs the latest technologies to fulfill the Department's financial management responsibilities in an effective, efficient, and adaptable manner. The new system's agile development approach compliments the continuous and ongoing studies and changes to the PPBE and appropriation processes to prevent stagnant complexities. It also provides twenty-first century information technology that allows users to view information from multiple fully integrated modules simultaneously, e.g., current year budget submission, decision documents from previous years, and budget execution information.

Advanced Analytics (Advana):

Advana is a technology platform that not only houses a collection of enterprise data but expands the boundaries of a standard data warehouse by arming military and business decision-makers with decision support analytics, visualizations, and data tools. Advana has been designated the single enterprise authoritative data management and analytics platform for the Secretary of Defense, Deputy Secretary of Defense, and Principal Staff Assistants (PSAs), with inputs from all DoD Components. This positions Advana to enable the OUSD(C)'s "CFO of the Future" vision, the DoD Data Strategy, Creating Data Advantage memo (5 May 2021), and Memorandum on Accelerating data and Artificial Intelligence for the Warfighter (21 June 2021), all aimed at achieving the National Defense Strategy by advancing

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0605027D8Z *I OUSD(C) IT Development Initiative*

analytics throughout the DoD. Advana directly supports the DoD's financial statement audit as the single repository for financial accounting data across the Department and serves numerous other analytical use cases aligned to the National Defense Strategy.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	16.892	5.938	5.425	-	5.425
Current President's Budget	46.573	5.938	5.456	-	5.456
Total Adjustments	29.681	0.000	0.031	-	0.031
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	30.300	-			
• SBIR/STTR Transfer	-0.619	-			
• Program Adjustments	0.000	0.000	0.031	0.000	0.031

Change Summary Explanation

Effective for the FY 2023 budget, the line 930 Advana was realigned from the Office of the Under Secretary of Defense for Comptroller PE: 0605027D8Z to the Office of the Chief Digital and Artificial Intelligence Officer (OCDAO) PE: 0604123D8Z.

FY 2022 increase to further the Deputy Secretary of Defense 's Accelerating Data and Artificial Intelligence initiative. The initiative was a critical effort that provided direct support to the Combatant Commands in line with the requirement of Department of Defense (DOD) Appropriations Act, 2022 Section 8070 of division C of Public Law 117-103.

FY 2024 increase for minimal program adjustments.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0605027D8Z / *OUSD(C) IT Development Initiative*	Project (Number/Name) 927 / *Next Generation Resource Management System*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
927: *Next Generation Resource Management System*	49.848	3.674	5.938	5.456	-	5.456	5.653	6.330	4.778	4.879	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Office of the Under Secretary of Defense (Comptroller) (OUSD(C)) is responsible for advising the Secretary of Defense on all Defense budgetary and fiscal matters, for Defense budget development and execution, and for overseeing financial management across the Department. The OUSD(C) has a broad set of responsibilities in supporting the Planning, Programing, Budget and Execution (PPBE) process. The Office of the Director, Cost Assessment and Program Evaluation (CAPE), provides independent analytic advice to the Secretary of Defense on all aspects of the Defense program, including alternative weapon systems and force structures, the development and evaluation of programs and defense program alternatives, and the cost-effectiveness of defense systems.

OUSD(C) and CAPE use multiple systems to formulate, justify, distribute, and execute DoD budgets. The information managed by the budget formulation and programming systems is redundant, and reconciliation of information is difficult and inefficient. These systems require extensive manpower investments to provide executives the information needed to make timely key financial decisions. The OUSD(C) and CAPE require a more efficient and effective Defense budget environment that optimizes the budget cycle to ensure users are processing and reporting efficiently and DoD Senior Leadership has the information to make informed, critical decisions.

The OUSD(C) requires capabilities to provide for the effective formulation, and justification of the Defense budget to be adaptable and modern. This includes the following:

• Automated exchange and reconciliation of budget data
• Improved efficiency through the utilization of a unified budgetary model
• Instantaneous ability to generate data for management reviews and decisions
• Capability to accommodate emerging business practices
• Agile methods to launch and terminate new development efforts more quickly
• Seamlessly combine the outputs of multiple efforts at various levels of maturity for organizational responsiveness and alternative resource allocation for innovation adoption

As of the 3rd Quarter FY 2022, NGRMS has been developed and has deployed Initial Operating Capability (IOC) to all Department of Defense Services and agencies. The system has been designed as a single system with a unified data source for OUSD(C) and CAPE, which supports the reforming and modernizing of the PPBE process. It provides a single, integrated system that employs the latest technologies to fulfill the Department's financial management responsibilities in an effective, efficient, and adaptable manner. The new system's agile development approach compliments the continuous and ongoing studies and changes to the PPBE and

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605027D8Z / *OUSD(C) IT Development Initiative*	**Project (Number/Name)** 927 / *Next Generation Resource Management System*

appropriation processes to prevent stagnant complexities. It also provides twenty-first century information technology that allows users to view information from multiple fully integrated modules simultaneously, e.g., current year budget submission, decision documents from previous years, and budget execution information.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Next Generation Resource Management System	3.674	5.938	5.456
Description: Plan, develop, test and evaluate the system components (i.e. unified database, expert system, cross domain security, enterprise service bus, applications, services) and supportability requirements in modernizing the budget formulation, programming execution and reporting capabilities for the Department of Defense. Activities will include, but not be limited to, the preparation of all documentation required for Clinger-Cohen Compliance and acquisition regulations, developing requests for proposals, and oversight and management of contracts and deliverables. ***FY 2023 Plans:*** FY 2023 planned development will include all necessary cyber security enhancements, the spiraling on of additional agency specific enhancement, more modernized training methods such as video based options, and the streamlining of business processes to better support the changing budget requirements, based on the capabilities provide by the fully integrated system across OUSD(C) and CAPE, in support of Comptroller's reform and modernization efforts. ***FY 2024 Plans:*** FY 2024 planned development will included additional cyber security enhancements (as necessary), additional data and structure standardizations, more robust analytical ties to execution. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The decrease for NGRMS from FY 2023 to FY 2024 is due to a ramp down in requirements for development as the system moves to Full Operational Capability (FOC). We anticipate the lower level of funding will meet the future development efforts to reform and modernize the existing PPBE and appropriation processes.			
Accomplishments/Planned Programs Subtotals	3.674	5.938	5.456

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

Agile development to replace legacy mission subsystems capabilities. Current development effort is provided by KPMG contract # HQ0034-21-F-0254, period of performance June 21, 2021 – June 20, 2023.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0605027D8Z / *OUSD(C) IT Development Initiative*	Project (Number/Name) 927 / *Next Generation Resource Management System*	

Product Development ($ in Millions)

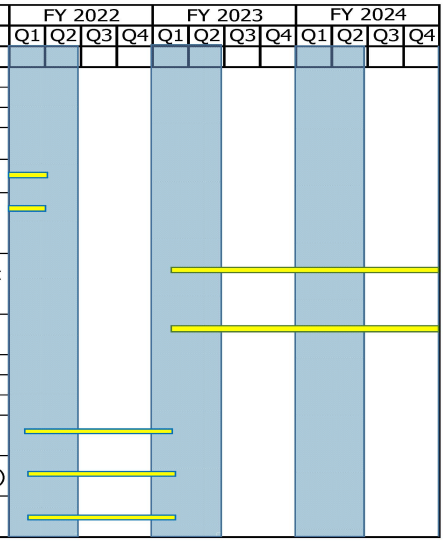
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Development	C/FFP	OUSD(C) : Pentagon & Contractor Off-site Facility	49.848	3.674		5.938		5.456		-		5.456	Continuing	Continuing	Continuing
		Subtotal	49.848	3.674		5.938		5.456		-		5.456	Continuing	Continuing	N/A

	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	49.848	3.674		5.938		5.456		-		5.456	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605027D8Z / *OUSD(C) IT Development Initiative*	**Project (Number/Name)** 927 / *Next Generation Resource Management System*

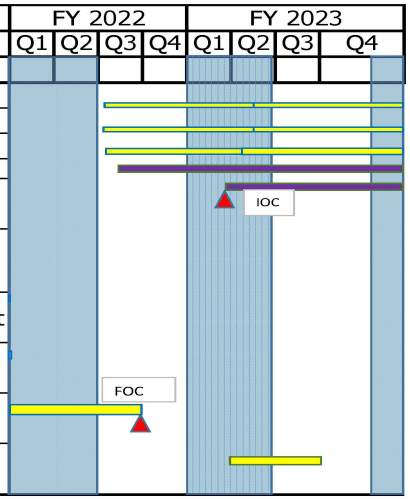
Task	Component	Sub Task	Description
Single Submission	OUSD Comptroller	Acquisition	Complete 2nd Acquisition
			Award 2nd Contract
	OUSD Comptroller	Prototype Development	Develop Single Submission Prototype
			Test/Deploy New System
	OUSD Comptroller	Iterative Development Initiatives	NIP Controls, based on changing requirements
			Integrations with Manpower updates, baed on changing requirements
			Continuous development to support changing budget requirements
	OUSD Comptroller/CAPE		Diagnostic/Tie Point Reports, based on changing requirements
Database Consolidation	OUSD Comptroller		Legacy Systems (CIS, PRCP, SDCS)
			Analysis of Alternatives
Data Analytics	OUSD Comptroller	Develop,Test & Deploy	Requirements Development
			Develop/Test/Deploy application, in Production (QLIK)
			Deploy application to End-Users, in Production (QLIK)
			Deploy application to End-Users, in Production (QLIK), including Manpower



NGRMS Funding Legend	
RDT&E	

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605027D8Z / *OUSD(C) IT Development Initiative*	**Project (Number/Name)** 927 / *Next Generation Resource Management System*

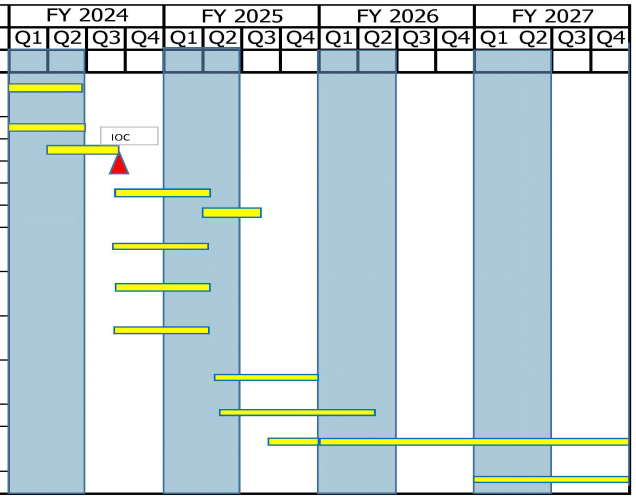
Task	Component	Sub Task	Description
Stratus	OUSD Comptroller	Development Environment	Build out Infrastructure
		Production Environment	Build out Infrastructure
		COOP Environment	Build out Infrastructure
		CSSP Support	(Sustain Site Protection in
		All	Sustain Infrastructure and Software Licenses
Complete Single Submission Production Interfaces	OUSD Comptroller	Production Development	Develop/Test/Deploy Interface in Production
	OUSD Comptroller	Reporting Requirements	Requirements Development
			Consolidation of Reports for Components
			Develop/Test/Deploy application in Production
Tie in Enactment / Accounting Systems	OUSD Comptroller	All	Analysis of Alternatives



NGRMS Funding Legend	
O&M	
RDT&E	

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605027D8Z / *OUSD(C) IT Development Initiative*	**Project (Number/Name)** 927 / *Next Generation Resource Management System*

Task	Component	Sub Task	Description
B2A/EFD NGRMS	OUSD Comptroller	Acquisition	Develop B2A/EFD to NGRMS Performance Work Statement
			Develop Acquisition Strategy
			Complete Acquisition
			Award Contract
		Prototype Development	Develop B2A/EFD Prototype
			Test/Deploy B2A/EFD Prototype
B2A/EFD Stratus Infrastructure	OUSD Comptroller	Development Environment	Build out Infrastructure
		Production Environment	Build out Infrastructure
		COOP Environment	Build out Infrastructure
Complete B2A/EFD Production Interfaces	OUSD Comptroller	Production Development	Develop/Test/Deploy Interface in Production
	OUSD Comptroller	Reporting Requirements	Requirements Development
			Develop/Test/Deploy application in Production
			Consolidation of Reports for Components



NGRMS Funding Legend	
RDT&E	

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605027D8Z / *OUSD(C) IT Development Initiative*	**Project (Number/Name)** 927 / *Next Generation Resource Management System*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
NGRMS				
Legacy Development (discontinued)	1	2017	3	2018
Single Submission	3	2018	4	2026
Data Analytics	1	2022	1	2023
MilCloud Infrastructure Buildout	3	2022	1	2024
Complete Single Submission Product Interfaces	4	2021	3	2022
Tie in Enactment/Accounting System	2	2023	3	2023
B2A/EFD NGRMS	1	2024	3	2025
B2A/EFD MILCloud Infrastructure	3	2024	1	2025
Complete B2A/EFD Production Interfaces	2	2025	4	2027

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0605027D8Z / *OUSD(C) IT Development Initiative*	Project (Number/Name) 930 / *Advanced Analytics (Advana)*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
930: *Advanced Analytics (Advana)*	55.938	42.899	-	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Effective for the FY 2023 budget, the line 930 Advana was realigned from the Office of the Under Secretary of Defense for Comptroller PE: 0605027D8Z to the Office of the Chief Digital and Artificial Intelligence Officer (OCDAO) PE: 0604123D8Z.

A. Mission Description and Budget Item Justification

The Department of Defense is currently facing an unprecedented set of operating challenges. An increasingly complex security environment, aggression from adversaries in every operating domain, and a diminished current readiness posture caused by both persistent armed conflict and the COVID-19 pandemic, which has threatened the health and welfare of the Department's greatest asset, its military and civilian workforce. In the past, it was nearly impossible for a single DoD data platform to meet the demand for the enterprise-wide common operating pictures (COPs) needed to deliver strategic insights based on timely data to help address these challenges. However, over the past two years, the Advana program has proven that it is uniquely positioned as a strategic asset and critical enabler for modernizing the data and analytics culture at DoD, providing effortless access to data and tools with the transparency required to rapidly understand results and make decisions in support of the National Defense Strategy priorities.

Advana provides a single repository for Common Enterprise Data to support the TI97 General Fund for the 4th Estate. Without Advana, the Department will be incapable of asserting readiness for an independent audit of the consolidated financial statements. Advana is positioned to support all DoD organizations pursuing unmodified opinions on their full financial statement audits. Without an automated capability to provide a transactional universe for sampling and related evidentiary proof, the Department will not be in compliance with public law.

Since 2020, Advana's efforts have directly supported the Secretary's priorities, enabling Data Advantage for diverse business and mission needs:

• Transformed previously paper-based leadership reporting to data-driven, digital dashboards using Advana's visualization tools, now exclusively used for the Deputy's Management Action Group (DMAG) and other leadership Working Group meetings.
• Expanded support for DoD's Coronavirus Task Force (CVTF), enhancing the initial common operating picture (COP) to a suite of 12 applications used for combatting COVID-19.
• Rapidly prototyped a Climate Change application in partnership with DoD's climate experts to support decision-making focused on confronting the climate crisis, a key priority for the current Administration.
• Expanded collaborations with Military Personnel Policy, Civilian Personnel Policy, and Defense Civilian Personnel Advisory Service to measure performance and analyze trends related to the entire spectrum of talent management activities including manpower planning, recruitment, hiring, placement, development, evaluation, and retention.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605027D8Z / *OUSD(C) IT Development Initiative*	**Project (Number/Name)** 930 / *Advanced Analytics (Advana)*

• Developed tools to track status of relations and cooperation with foreign countries through Foreign Military Sales (FMS), Professional Military Education (PME), Burden Sharing and more, created in collaboration with DSCA.
• Established additional partnerships to provide financial statement audit Universes of Transactions (UoTs).

Using Advana's central data platform with right-time data, data tools, and other self-service products, leaders are simplifying solutions and putting the power of analytics in the pocket of every analyst and decision-making authority at the DoD.

The requested funds will be used to buy "Big Data" software, cloud infrastructure, and required contractor services to develop, test, and implement the technology to meet the expanding requirements. These funds also include subject matter expertise costs for the DCFO and funds to be placed on a contract for cloud services, software, and labor. This will not result in hiring additional government personnel.

Going forward, the Advana data platform seeks to continue serving as the DoD's enterprise-level analytics solution and expand to over 100,000 users and 500 systems. Additional investment will allow Advana to continue supporting programmatic growth, including infrastructure enhancements, additional analytical tools, and the subject matter experts needed to develop these critical resources. Together, we will harness the power of DoD's enterprise data to help transform all functions of the Department thereby, protecting DoD's workforce, safeguarding U.S. citizens, defending allies and partners, and improving the affordability, effectiveness, and speed of our operations.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Advanced Analytics (Advana)	42.899	0.000	0.000
Description: Over the next two fiscal years, Advana is committed to ensuring that a performant, secure, flexible, enterprise-wide data analytics solution is available for the DoD analyst community. This includes providing cloud-based environments and COTS tool options on NIPR, SIPR, and JWICS, as well as having trained service desk staff, data scientists, and a managed data service team available to assist users, as needed. Funds will be used to support increments sixteen through twenty-one, per the schedule, as described below. ***FY 2023 Plans:*** Effective for the FY 2023 budget, the 930 Advana was realigned from the Office of the Under Secretary of Defense for Comptroller PE: 0605027D8Z to the Office of the Chief Digital and Artificial Intelligence Officer (OCDAO) PE: 0604123D8Z. ***FY 2024 Plans:*** CDAO will continue to provide information on Advana ***FY 2023 to FY 2024 Increase/Decrease Statement:*** N/A.			
Accomplishments/Planned Programs Subtotals	42.899	0.000	0.000

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605027D8Z / *OUSD(C) IT Development Initiative*	**Project (Number/Name)** 930 / *Advanced Analytics (Advana)*

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605027D8Z / *OUSD(C) IT Development Initiative*	**Project (Number/Name)** 930 / *Advanced Analytics (Advana)*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Development	C/TBD	OUSD(C) : Pentagon	55.938	42.899		0.000		-		-		-	Continuing	Continuing	-
		Subtotal	55.938	42.899		0.000		-		-		-	Continuing	Continuing	N/A

	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	55.938	42.899		0.000		-		-		-	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605027D8Z / *OUSD(C) IT Development Initiative*	**Project (Number/Name)** 930 / *Advanced Analytics (Advana)*

Effective for the FY 2023 budget, the line 930 Advana was realigned from the Office of the Under Secretary of Defense for Comptroller PE: 0605027D8Z to the Office of the Chief Digital and Artificial Intelligence Officer (OCDAO) PE: 0604123D8Z.

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605027D8Z / *OUSD(C) IT Development Initiative*	**Project (Number/Name)** 930 / *Advanced Analytics (Advana)*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Acquisition Milestone				
Development and ingest further data	3	2021	4	2027

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0605210D8Z / *Defense-Wide Electronic Procurement Capabilities*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	102.003	6.847	6.949	6.899	-	6.899	7.050	7.206	7.172	7.324	Continuing	Continuing
021: *Defense-Wide Electronic Procurement Capabilities-Contingency*	102.003	6.847	6.949	6.899	-	6.899	7.050	7.206	7.172	7.324	Continuing	Continuing

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

This program supports the Department's initiative to Build Sustainable and Long-Term Advantage.

Defense-wide Electronic Procurement Capabilities provides for the development of critical enterprise-wide e-business requirements for the procurement community. These requirements result from statute, regulation, process re-engineering, internal control requirements, and audit findings. This program provides for the introduction of innovative, time and cost-saving technologies into procurement processes across the Department. Resources are provided to conduct agile software development and testing on new or modified defense-wide e-business applications to ensure system and application development, integration, and demonstration of production representative systems and capabilities.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	7.108	6.949	7.034	-	7.034
Current President's Budget	6.847	6.949	6.899	-	6.899
Total Adjustments	-0.261	0.000	-0.135	-	-0.135
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	-0.261	-	-0.135	-	-0.135

Change Summary Explanation

Decrease in FY 2024 due to program reallocations.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0605210D8Z / *Defense-Wide Electronic Procurement Capabilities*	Project (Number/Name) 021 / *Defense-Wide Electronic Procurement Capabilities- Contingency*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
021: *Defense-Wide Electronic Procurement Capabilities-Contingency*	102.003	6.847	6.949	6.899	-	6.899	7.050	7.206	7.172	7.324	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Defense-wide Electronic Procurement Capabilities provides for the development of critical e-business enterprise-wide requirements for the procurement community. These requirements may result from statute, regulation, process re-engineering or internal control requirements. This program provides opportunities for the introduction of innovative, time-saving, and cost-saving technologies into procurement processes across the Department. Resources are provided to conduct agile software development and testing on new or modified defense-wide e-business applications to ensure system and application development, integration, and demonstration of production representative systems and capabilities.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Defense-Wide Electronic Procurement Capabilities- Contingency	6.847	6.949	6.899

Description: FY 2022 accomplishments continued to focus on improving the identification and tracking of government furnished property (GFP) and resolving audit findings – by completing the transition of the Plant Clearance Screening capability and initiating development of GFP phase IV interchange capabilities in the Procurement Integrated Enterprise Environment (PIEE). DPC also continued improvement and implementation of the purchase request, procurement, and catalog data standards. Additional standard development was initiated for other transactions. Further developed the modules in PIEE to improve invoice handling, surveillance performance monitoring, and appointments for purchase cardholders and contracting officer representatives. Enhanced supply chain risk data mining for vendor threat mitigation. Used robotics and automation efforts for streamlining procurement processes (e.g., FY 2019 Section 889 look-up) and expanding data mining. Began transition of the Procurement Business Intelligence Service (PBIS) to ADVANA hosting and build-out of ADVANA Procurement dashboards. Initiated pilot for future fourth estate contract writing capability.

FY 2023 Plans:

FY 2023 plans continue to focus on improving the identification and tracking of government furnished property and resolving audit findings – completing key new capabilities (e.g., Phase IV) in the PIEE. DPC will also focus on continued development of the catalog data standard to enable better price comparisons. Additional standard development will focus on implementation of procurement and purchase request data standards, particularly to major weapon system and spares contracting environments; as well as the initial implementation of standards for Other Transactions. Further develop the modules in PIEE to use the catalog data standard to drive better product and pricing identification; as well as better integrate the clause logic service and former Defense

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605210D8Z / *Defense-Wide Electronic Procurement Capabilities*	**Project (Number/Name)** 021 / *Defense-Wide Electronic Procurement Capabilities- Contingency*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Contract Management Agency capabilities. Continue to enhance supply chain risk data mining and data collection capabilities in the Supplier Performance Risk System (SPRS) supporting statutory requirements. Leverage robotics and automation efforts for streamlining procurement processes and expanding data mining – implementing capabilities to support annual procurement data validation requirements. Develop enterprise requirements coming from emerging statutes and regulations for the fourth estate contract writing capability. Deploy initial contract writing capability following pilot to the 4th estate. ***FY 2024 Plans:*** FY 2024 plans continue to focus on improving the identification and tracking of government furnished property and resolving audit findings – completing Phase IV capabilities in the PIEE to support Component accountable property systems. DPC will also focus on continued development of the catalog data standard to enable better price comparisons. Additional standard development will focus improvements in procurement and purchase request data standards, particularly for the spares, other transactions, and financial assistance types of awards. Further develop the modules in PIEE to use the catalog data standard to drive better product and pricing identification; as well as better integrate the module capabilities to enable better efficiencies and transparency. Complete transition of former DCMA contract administration capabilities. Continue to enhance supply chain risk data mining and data collection capabilities in the SPRS supporting statutory requirements. Leverage robotics and automation efforts for streamlining procurement processes and expanding data mining – implementing capabilities to support annual procurement data validation requirements. Develop enterprise requirements coming from emerging statutes and regulations for the fourth estate contract writing capability. Complete initial deployment of the 4th estate contract writing capability. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** There is no significant change between FY 2023 and FY 2024.			
Accomplishments/Planned Programs Subtotals	6.847	6.949	6.899

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0605210D8Z / *Defense-Wide Electronic Procurement Capabilities*	Project (Number/Name) 021 / *Defense-Wide Electronic Procurement Capabilities- Contingency*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Contract Business Systems Development	Various	DLA, JTIC, WPAFB : FORT BELVOIR, SCOTT AFB	97.724	6.847		6.949		6.899		-		6.899	-	-	-
		Subtotal	97.724	6.847		6.949		6.899		-		6.899	-	-	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Interoperability Testing	Various	DLA, JTIC, WPAFB : FORT BELVOIR, SCOTT AFB	4.279	-		-		-		-		-	-	-	-
		Subtotal	4.279	-		-		-		-		-	-	-	N/A

	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	102.003	6.847		6.949		6.899		-		6.899	-	-	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605210D8Z / *Defense-Wide Electronic Procurement Capabilities*	**Project (Number/Name)** 021 / *Defense-Wide Electronic Procurement Capabilities- Contingency*

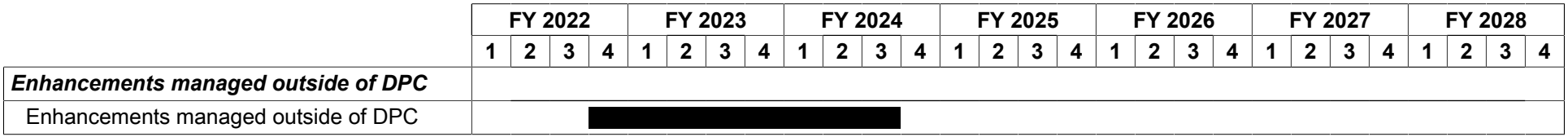


Exhibit R-4A, RDT&E Schedule Details: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605210D8Z / *Defense-Wide Electronic Procurement Capabilities*	**Project (Number/Name)** 021 / *Defense-Wide Electronic Procurement Capabilities- Contingency*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Enhancements managed outside of DPC				
Enhancements managed outside of DPC	4	2022	3	2024

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0605294D8Z / *Trusted and Assured Microelectronics*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	429.162	111.159	252.963	297.586	0.000	297.586	220.678	214.337	185.464	189.535	Continuing	Continuing
902: *Access to State-of-the-Art (SOTA) Microelectronics - Demonstration*	364.461	55.886	150.061	226.170	0.000	226.170	160.531	153.046	129.966	132.823	Continuing	Continuing
903: *Access to Advanced Packaging and Testing - Demonstration*	39.040	42.072	76.149	44.391	0.000	44.391	32.986	33.180	27.773	28.377	Continuing	Continuing
905: *Address DoD Unique Needs Radiation Hardening and non-CMOS - Demonstration*	25.661	13.201	26.753	27.025	0.000	27.025	27.161	28.111	27.725	28.335	Continuing	Continuing

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

This program supports the Department's initiatives to Build Sustainable and Long-Term Advantage, Defend the Homeland, and Deter Aggression.

This program supports microelectronics modernization activities that enable defense systems to keep pace with commercial microelectronics technological advances, reduce reliance on obsolete microelectronics, and mitigate the Department’s reliance on sole source foundries for assured state-of-the-art (SOTA) microelectronics. It addresses the challenges of 1) having enduring access to a multiplicity of modern manufacturing processes that require commercial volumes to maintain long term viability and 2) protecting the intellectual property (IP) of the microelectronic parts that are manufactured.

Microelectronics technology is a critical enabler for the development of new systems and sustainment of fielded systems required for all four 2022 National Defense Strategy (NDS) priorities. In addition, this PE directly supports the NDS priority of building a resilient Joint Force and defense ecosystem through modernization of key capabilities and fostering pathways to adapt SOTA commercial and dual-use technologies to Defense needs. This PE also supports the NDS objective of Making the Right Technology Investments by supporting the domestic microelectronics innovation ecosystem and partnering with industry to quickly incorporate market-driven commercial advances with military-relevant capabilities.

This Program Element supports the Office of the Under Secretary of Defense for Research and Engineering (OUSD(R&E)) Microelectronics Modernization Roadmap. The primary areas of focus of this roadmap include the following: access to state-of-the-art (SOTA) microelectronics technology, access to advanced packaging and test;; access to radiation hardened microelectronics; access to non-complementary metal oxide semiconductor (CMOS) SOTA microelectronics for radio frequency and optoelectronic applications; disruptive research and development; education and workforce development; trusted foundry and obsolescence.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0605294D8Z *I Trusted and Assured Microelectronics*

Recognizing that an assured supply of microelectronics is a U.S. Government-wide concern, this activity will interface with interagency partners to take into account interagency requirements, opportunities for collaboration, and strategic decisions that can be made to limit the overall cost of these requirements to the USG.

This activity is being led by the Under Secretary of Defense for Research and Engineering.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	113.536	302.963	302.818	-	302.818
Current President's Budget	111.159	252.963	297.586	-	297.586
Total Adjustments	-2.377	-50.000	-5.232	-	-5.232
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-50.000			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-2.377	-			
• Program Adjustments	-	-	-5.232	-	-5.232

Change Summary Explanation

FY 2024 reduction of $5.232 million is comprised of a realignment of $6.590 million to support the Historically Black Colleges and Universities/Minority Serving Institutions program, which is a priority of the Under Secretary of Defense for Research and Engineering (USD(R&E)), $0.316 million to support departmental priorities and an economic assumption increase of $1.674 million.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0605294D8Z / *Trusted and Assured Microelectronics*	Project (Number/Name) 902 / *Access to State-of-the-Art (SOTA) Microelectronics - Demonstration*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
902: *Access to State-of-the-Art (SOTA) Microelectronics - Demonstration*	364.461	55.886	150.061	226.170	0.000	226.170	160.531	153.046	129.966	132.823	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project establishes multiple strategic partnerships with existing commercial state-of-the-art (SOTA) domestic foundries to develop a data-driven, risk-based approach to supply chain protection and demonstrate the assured manufacture of advanced electronic components.

Successful implementation will transition these technologies to use in DoD programs, obtain access to multiple commercial microelectronics facilities, establish secure design capabilities, and solidify a data-driven approach to supply chain protection. It also includes keeping pace with the rapid advancements in microelectronics technology and the globalization of this industry sector. It will provide the basics for updating and strengthening the DoD assurance policy and includes collaborating with industry to develop data driven quantifiable standards.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Access to State-of-the-Art (SOTA) Microelectronics - Demonstration	55.886	150.061	226.170
Description: Foundry Access: This activity implements multiple foundries process design kit (PDK) environments ensuring the government is not dependent on one single source for critical components. Demonstrate hardware through dedicated and multi-project wafer runs at multiple foundries. Commercial foundries generate enormous amounts of data on their processes as a best practice for quality assurance to improve reliability and increase yield. The Foundry program collects and utilizes this data to generate and allow quantitative comparison of performance and security metrics in the design and test stage of the microelectronics lifecycle, thereby mitigating risk. Rapid Access to Microelectronic Prototypes (RAMP): This activity includes verifying the ability to fabricate classified and/or export-controlled designs in on-shore commercial foundries. Funding will establish multiple strategic partnerships with existing commercial domestic microelectronics design vendors and foundries to develop a data-driven, risk-based approach to supply chain protection and demonstrate the assured manufacture of advanced electronic components.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 902 / *Access to State-of-the-Art (SOTA) Microelectronics - Demonstration*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
This project demonstrates the technical means for protecting IP and obfuscating the final user function from the supply chain will be realized using personalization, programmability and software, following application specific integrated circuit (ASIC) manufacturing. Efforts are on-going to update International Traffic in Arms Regulations (ITAR) and Export Administration Regulations (EAR) policy in this area. Funding supports activities to enhance the export control regime so that it maintains or strengthens current protections while enabling access to commercial capabilities, products, and IP. Rapid Access to Microelectronic Prototypes – Commercial (RAMP-C): This project enables the DoD and the defense industrial base to collaborate with the commercial microelectronics industry to increase prototype development, demonstration, and address the war fighter's need to maintain and modernize weapon systems as the threat landscape shifts. This project enables T&AM program to demonstrate, by FY 2025, full access to U.S. commercial SOTA design, foundry, and advanced packaging capability and meet DoD's unique needs within two to three years for modernization, including for RH and photonics applications. The capability will reduce the time needed to replace microelectronics components that are generations behind the commercial sector, move away from off-shore sources for SOTA commercial integrated circuits, and accelerate the demonstration and adoption of quantifiable assurance methods throughout the microelectronics lifecycle and supply chain. Reducing the timeline by up to two years not only benefits export control and classified system protection, but also the requirements of the FY 2020 National Defense Authorization Act Section 224 for the DoD to implement commercial standards for the acquisition of assured microelectronics products. ***FY 2023 Plans:*** Foundry Access: • Continue to enhance access to SOTA fabrication ecosystem. • Maintain program of record access to assured fabrication flow and fund multi-project wafer production runs at multiple SOTA domestic sources. RAMP: Complete the RAMP prototype and establish a RAMP system operator that will allow Government acquisition programs access to a secure design and cloud capability. The RAMP operational platform will: • Continue to enhance secure design and cloud capability with new tools/techniques.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 902 / *Access to State-of-the-Art (SOTA) Microelectronics - Demonstration*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
• Continue to utilize traceability and provenance mechanisms to verify and vet data sources in a zero-trust architecture and enhance ability of DoD/Defense Industrial Base to design SOTA microelectronics. • Continue to quantify transition of designs to prototypes and programs of record and maintain persistence in lifecycle assurance data and intellectual property. RAMP-C: Continue to develop and mature a leading edge, commercially-viable, domestic U.S.-located wafer foundry ecosystem capability, on the order of more than 26,000 wafer starts per month for design and manufacturing of quantifiably assured, dual-use commercial and DoD custom integrated circuits. A successful WILL enable the following: • Access to a SOTA U.S. wafer foundry • Access to commercial and critical quantifiably assured dual-use COTS integrated circuits • Access to capabilities necessary to develop and demonstrate quantifiably assured custom DoD integrated circuits • The jump-start in commercial use of the domestic foundry by key U.S. fabless companies • Establishment and demonstration of a viable design ecosystem including access to 3rd party design modules • The reduction in the cost differential of building a U.S.-located wafer foundry verses off-shore • The enablement of commercially-supported and enduring U.S. logic foundry capability • Development of the DoD prototype demonstrator designs with DIB to accelerate technology transition ***FY 2024 Plans:*** Foundry Access: • Continue to enhance access to SOTA fabrication ecosystem. • Maintain program of record access to assured fabrication flow and fund multi-project wafer production runs at multiple SOTA domestic sources. RAMP: Continue to mature the RAMP operational capability that will: • Continue to enhance secure design and cloud capability with new tools/techniques. • Continue to utilize traceability and provenance mechanisms to verify and vet data sources in a zero-trust architecture and enhance ability of DoD/Defense Industrial Base to design SOTA microelectronics. • Continue to quantify transition of designs to prototypes and programs of record and maintain persistence in lifecycle assurance data and intellectual property.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 902 / *Access to State-of-the-Art (SOTA) Microelectronics - Demonstration*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
• Continue to demonstrate rapid transition of DoD-relevant field programmable gate array-based capabilities to structured ASICs, with security capabilities to protect DoD intellectual property (IP) during manufacture. RAMP-C: A leading edge (<7nm), commercially-viable, U.S.-located domestic wafer foundry ecosystem access is established. The ecosystem will have capability on the order of > 26,000 wafer starts per month for design and manufacturing of quantifiably assured, dual-use commercial and DoD custom integrated circuits. A successful project WILL enable the following: • Access to a SOTA U.S. wafer foundry • Access to commercial and critical quantifiably assured dual-use COTS integrated circuits • Access to capabilities necessary to develop and demonstrate quantifiably assured custom DoD integrated circuits • The jump-start in commercial use of the domestic foundry by key U.S. fabless companies • Establishment and demonstration of a viable design ecosystem including access to 3rd party design modules • The reduction in the cost differential of building a U.S.-located wafer foundry verses off-shore • The enablement of commercially-supported and enduring U.S. logic foundry capability • Development of the DoD prototype demonstrator designs with DIB to accelerate technology transition • Leverage the expertise of commercial industry to develop and demonstrate novel capabilities for design of State-of-the Art (SOTA) with assurance. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** This increase of $76.109 million between FY 2023 and FY 2024 enables the RAMP and RAMP-C programs within the T&AM program to demonstrate by FY 2025 full access to U.S. commercial SOTA design, foundry, and advanced packaging capability and meet DoD's unique needs within two to three years for modernization, including for RH and photonics applications. The capability will reduce the time needed to replace microelectronics components that are generations behind the commercial sector, move away from off-shore sources for SOTA commercial integrated circuits, and accelerate the demonstration and adoption of quantifiable assurance methods throughout the microelectronics lifecycle and supply chain. Reducing the timeline by up to two years not only benefits export control and classified system protection, but also the requirements of the 2020 National Defense Authorization Act Section 224 for the DoD to implement commercial standards for the acquisition of assured microelectronics products by 2023.			
Accomplishments/Planned Programs Subtotals	55.886	150.061	226.170

C. Other Program Funding Summary ($ in Millions)

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 902 / *Access to State-of-the-Art (SOTA) Microelectronics - Demonstration*

C. Other Program Funding Summary ($ in Millions)

Remarks

N/A

D. Acquisition Strategy

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 902 / *Access to State-of-the-Art (SOTA) Microelectronics - Demonstration*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Access to State-of-the-Art (SOTA) Microelectronics - Demonstration	MIPR	Defense Advanced Research Projects Agency, Air Force, Army, Navy, National Security Agency : Various	364.461	55.886	Mar 2022	150.061	Mar 2023	226.170	Mar 2024	-		226.170	Continuing	Continuing	-
		Subtotal	364.461	55.886		150.061		226.170		-		226.170	Continuing	Continuing	N/A

	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	364.461	55.886		150.061		226.170		-		226.170	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 902 / *Access to State-of-the-Art (SOTA) Microelectronics - Demonstration*

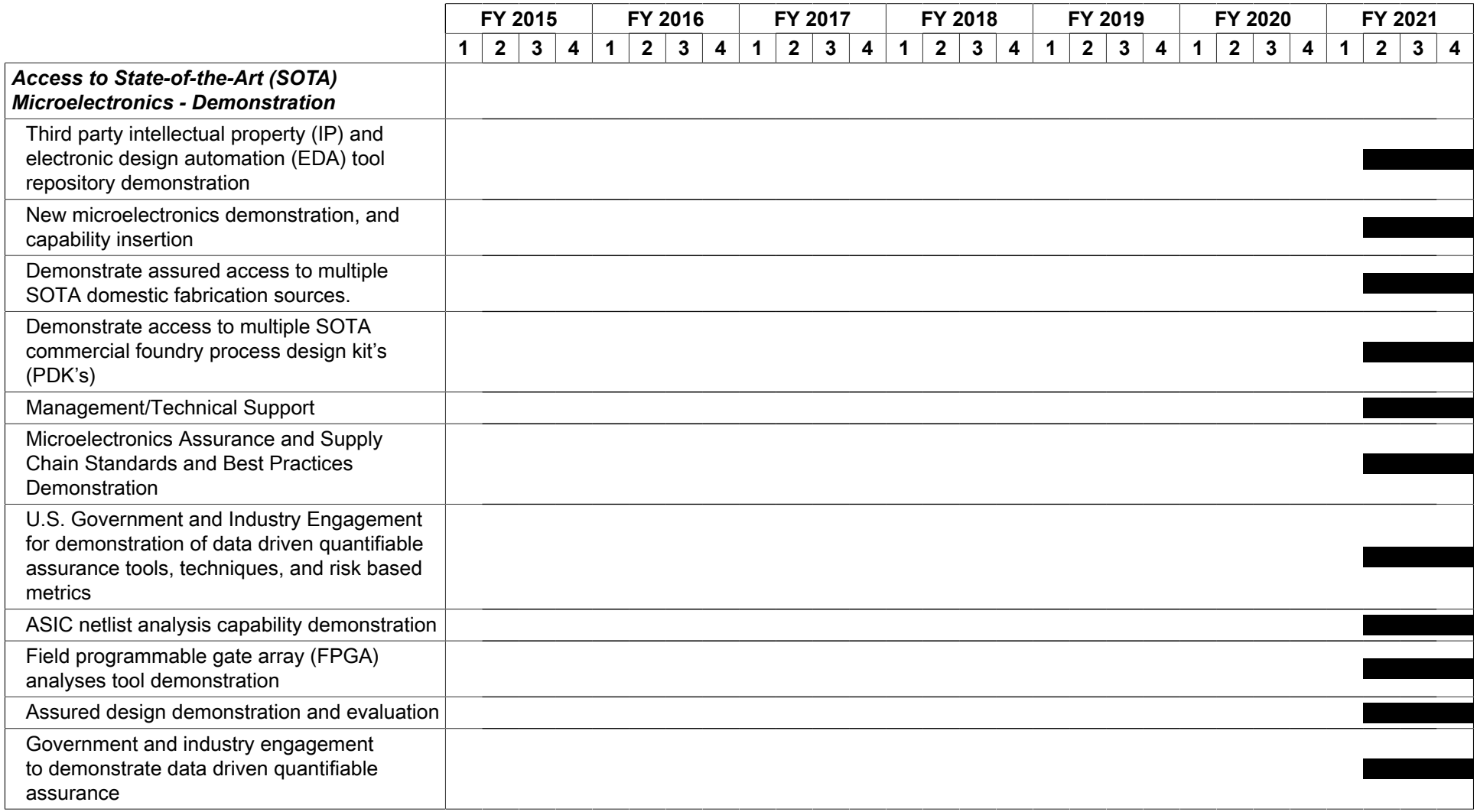


Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 902 / *Access to State-of-the-Art (SOTA) Microelectronics - Demonstration*

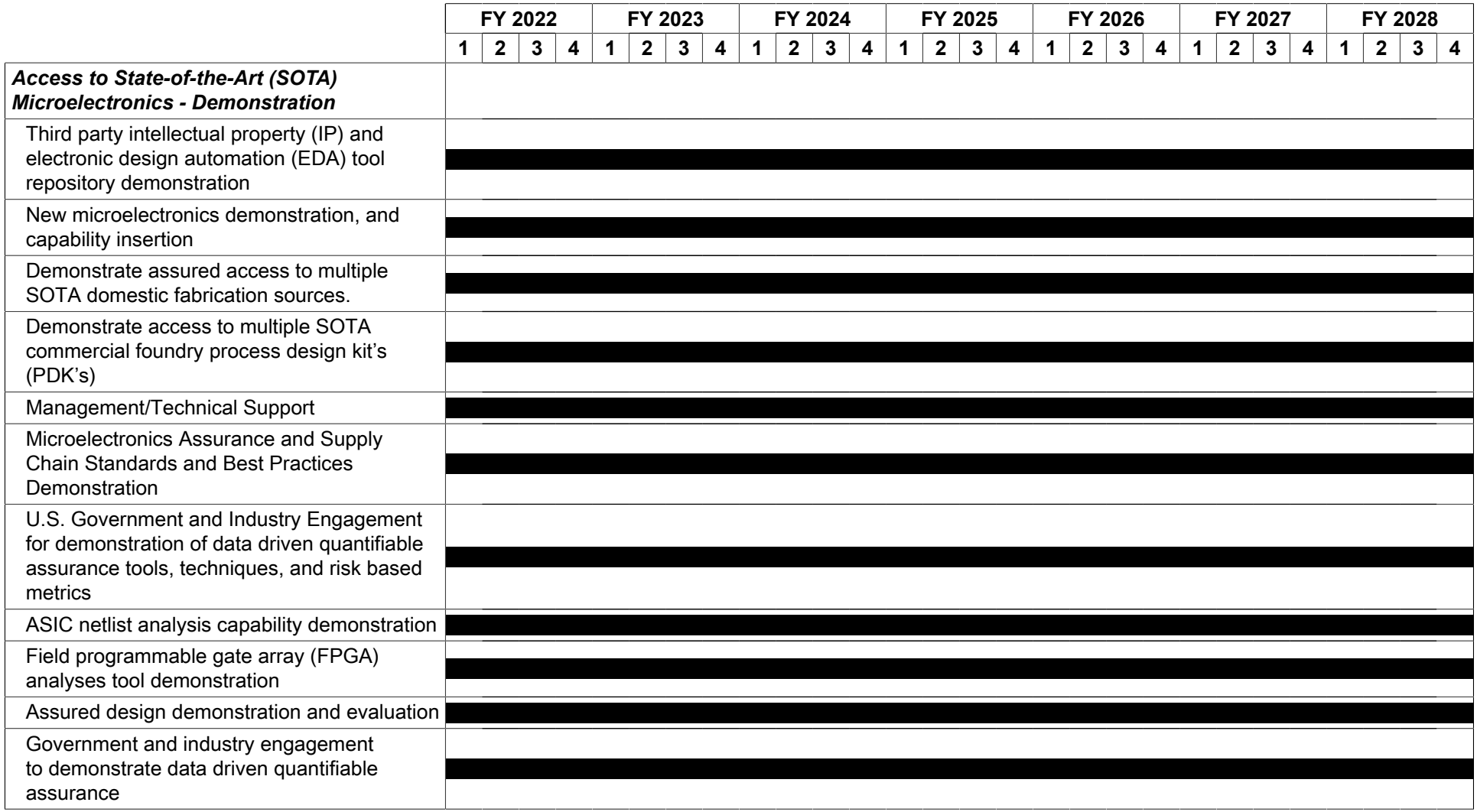


Exhibit R-4A, RDT&E Schedule Details: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 902 / *Access to State-of-the-Art (SOTA) Microelectronics - Demonstration*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Access to State-of-the-Art (SOTA) Microelectronics - Demonstration				
Third party intellectual property (IP) and electronic design automation (EDA) tool repository demonstration	2	2021	4	2028
New microelectronics demonstration, and capability insertion	2	2021	4	2028
Demonstrate assured access to multiple SOTA domestic fabrication sources.	2	2021	4	2028
Demonstrate access to multiple SOTA commercial foundry process design kit's (PDK's)	2	2021	4	2028
Management/Technical Support	2	2021	4	2028
Microelectronics Assurance and Supply Chain Standards and Best Practices Demonstration	2	2021	4	2028
U.S. Government and Industry Engagement for demonstration of data driven quantifiable assurance tools, techniques, and risk based metrics	2	2021	4	2028
ASIC netlist analysis capability demonstration	2	2021	4	2028
Field programmable gate array (FPGA) analyses tool demonstration	2	2021	4	2028
Assured design demonstration and evaluation	2	2021	4	2028
Government and industry engagement to demonstrate data driven quantifiable assurance	2	2021	4	2028

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0605294D8Z / *Trusted and Assured Microelectronics*	Project (Number/Name) 903 / *Access to Advanced Packaging and Testing - Demonstration*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
903: *Access to Advanced Packaging and Testing - Demonstration*	39.040	42.072	76.149	44.391	0.000	44.391	32.986	33.180	27.773	28.377	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project will leverage existing commercially available expertise and capability to deliver self-sustaining digital and radio frequency (RF) state-of-the-art (SOTA) heterogeneous integrated packaging (SHIP), assembly, and test capability.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Access to Advanced Packaging and Testing - Demonstration	42.072	76.149	44.391

Description: This project will deliver an on-shore SHIP assembly and test capability. It will demonstrate access to, personalization of, and customization for supporting the DoD programs. It will enable a revolutionary leap in system performance that will greatly reduce size, weight and power (SWaP) by incorporating the immense advances in SOTA commercial off the shelf (COTS) processing technologies, such as field programmable gate arrays (FPGAs), microprocessors, and Graphic Processing Units (GPUs).

Leading-edge semiconductor design and manufacturing technology forms the basis for many of the DoD modernization priorities. Most dual-use COTS parts used for modernization priorities are currently manufactured in Asian facilities that do not provide measurable assurance.

This program enhancement demonstrates the DoD access to leading-edge semiconductor technology through domestic U.S.-located sources of custom and dual-use leading edge integrated circuits utilizing heterogeneous integration and advanced packaging.

This enables implementation of complex, computation intensive AI algorithms for DoD AI and Autonomy applications. It will also facilitate use of integrated cyber-security methods/cryptography in the DoD hardware and utilization of the complex computational capability required for Active Electronically Scanned Array (AESA) Phase Array Radar System and Electronic Warfare (EW) and communications including 5G Radio access network (RAN) systems. The proposed large constellations of networked satellites will also require leading-edge semiconductor components to enable real time communication and on-satellite computation.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 903 / *Access to Advanced Packaging and Testing - Demonstration*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
The program prototypes will transition to military systems through strategic efforts based on collaboration with the DoD acquisition community, program offices, and the Defense Industrial Base. ***FY 2023 Plans:*** • Demonstrate DIB and DoD maturation leveraging commercial design using developed PDKs and ADKs to design custom devices. • Demonstrate DoD access to SOTA MCP products utilizing commercial packaging, assembly, and test and efficiencies gained in IP/design re-use to lower cost, risk and shorten schedules: Demonstrate the use of a catalog of designs, die, chiplets, package types, etc. Ensure Reuse and Standardization for sustainability and costs. • Accelerate and expand the development of multi-chip packaging (MCP) prototype demonstrators in collaboration with DoD Programs and the defense industry for process intensive applications and RF such as AESA Radar, cognitive EW and autonomy, while enhancing security for protecting IP and CPI. • Demonstrate prototype hardware and additional program-driven designs of increasing complexity and capability/performance. • Demonstrate the application of microelectronics quantifiable assurance guidance applied to microelectronics packaging to ensure product integrity and ensure confidentiality of critical IP. • Continue to demonstrate enhanced secure design and secure packaging with new tools, processes, and techniques. • Continue to demonstrate heterogeneous integration for secure packaging and test. • Continue to collaborate with the DoD acquisition community, program offices, and the Defense Industrial Base to ensure transition of the prototype devices into military systems. • Expand and accelerate demonstration of prototype hardware and additional program-driven designs of increasing complexity and capability/performance: Layered approach for IP & CPI protection Enhanced resistance to security and cyber threats Customized personalization per Program or MCP Risk reduction by much greater visibility into the supply chain and assembly process, including quantifiable data for material tracking, meteorology and process control ***FY 2024 Plans:*** • Continue to demonstrate enhanced secure design and secure packaging with new tools and techniques. • Continue to demonstrate heterogeneous integration for secure packaging and test. • Demonstrate prototype hardware and additional program-driven designs of increasing complexity and capability/performance. • Continue Secure Assembly & Test environment maturation with prototypes • Continue Advanced Packaging technologies maturation with prototypes			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 903 / *Access to Advanced Packaging and Testing - Demonstration*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
• Continue Advanced Packaging prototype targeted transition projects • Continue Advanced Packaging reliability and qualification risk reduction projects • Accelerate and expand the development of multi-chip packaging (MCP) prototype demonstrators in collaboration with DoD Programs and the defense industry for process intensive applications and RF such as AESA Radar, cognitive EW and autonomy, while enhancing security for protecting IP and CPI. • Expand and accelerate demonstration of prototype hardware and additional program-driven designs of increasing complexity and capability/performance: Layered approach for IP & CPI protection Enhanced resistance to security and cyber threats Customized personalization per Program or MCP Risk reduction by much greater visibility into the supply chain and assembly process, including quantifiable data for material tracking, meteorology and process control ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The decrease of $31.758 million between FY 2023 and FY 2024 follows the establishment of the initial advanced packaging and testing capability, which will continue to deliver prototype designs and hardware for accelerating program adoption and for qualification, and further develop the infrastructure and process that supports ITAR/EAR, proprietary and security requirements.			
Accomplishments/Planned Programs Subtotals	42.072	76.149	44.391

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0605294D8Z / *Trusted and Assured Microelectronics*	Project (Number/Name) 903 / *Access to Advanced Packaging and Testing - Demonstration*	

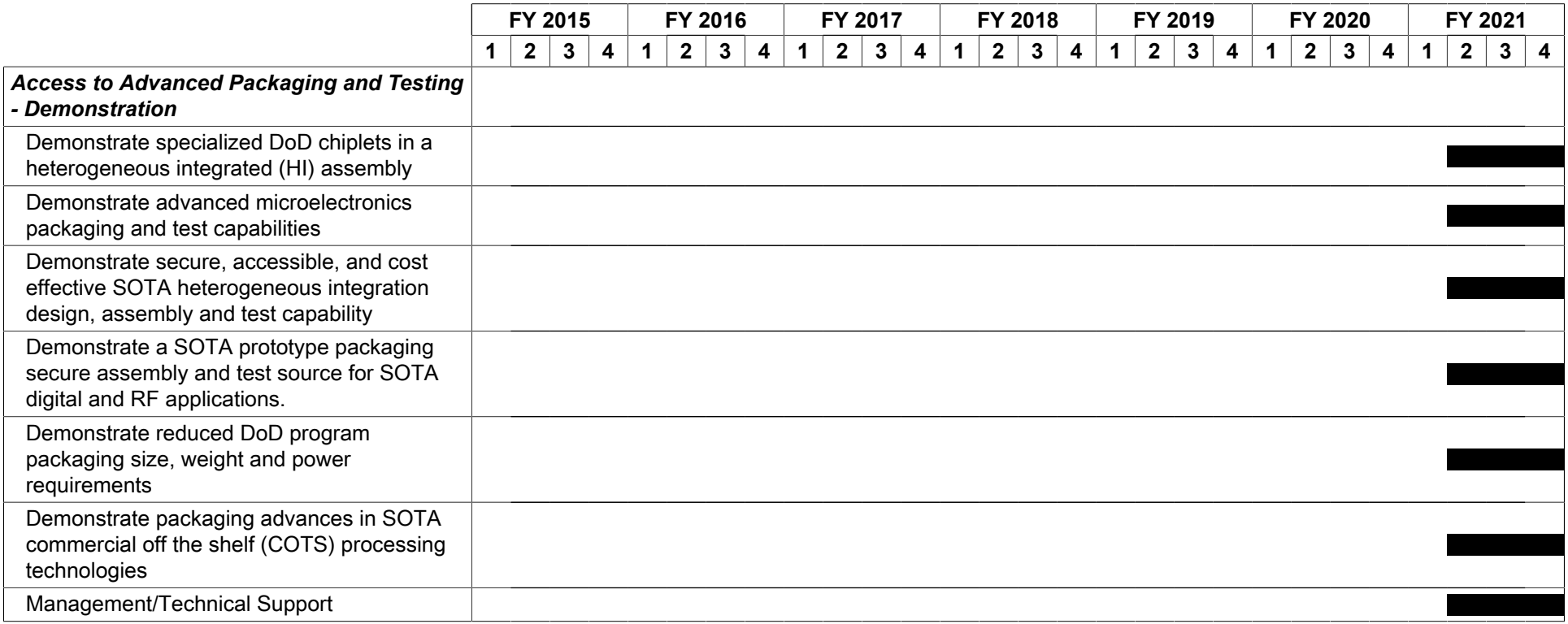
Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Access to Advanced Packaging and Testing - Demonstration	MIPR	Defense Advanced Research Projects Agency, Air Force, Army, Navy, National Security Agency : Various	39.040	42.072	Mar 2022	76.149	Mar 2023	44.391	Mar 2024	-		44.391	Continuing	Continuing	-
		Subtotal	39.040	42.072		76.149		44.391		-		44.391	Continuing	Continuing	N/A

	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	39.040	42.072		76.149		44.391		-		44.391	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 903 / *Access to Advanced Packaging and Testing - Demonstration*



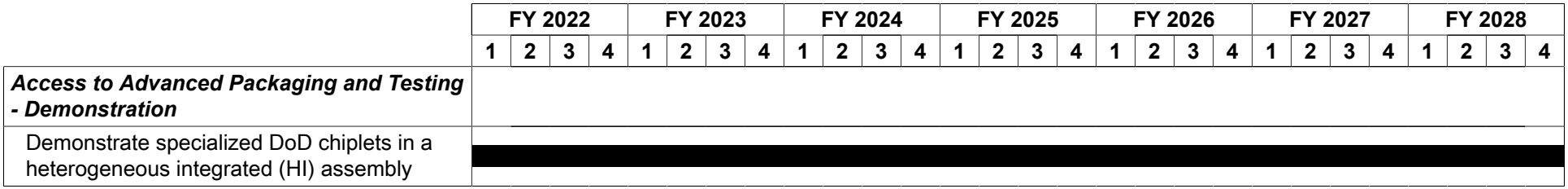


Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 903 / *Access to Advanced Packaging and Testing - Demonstration*

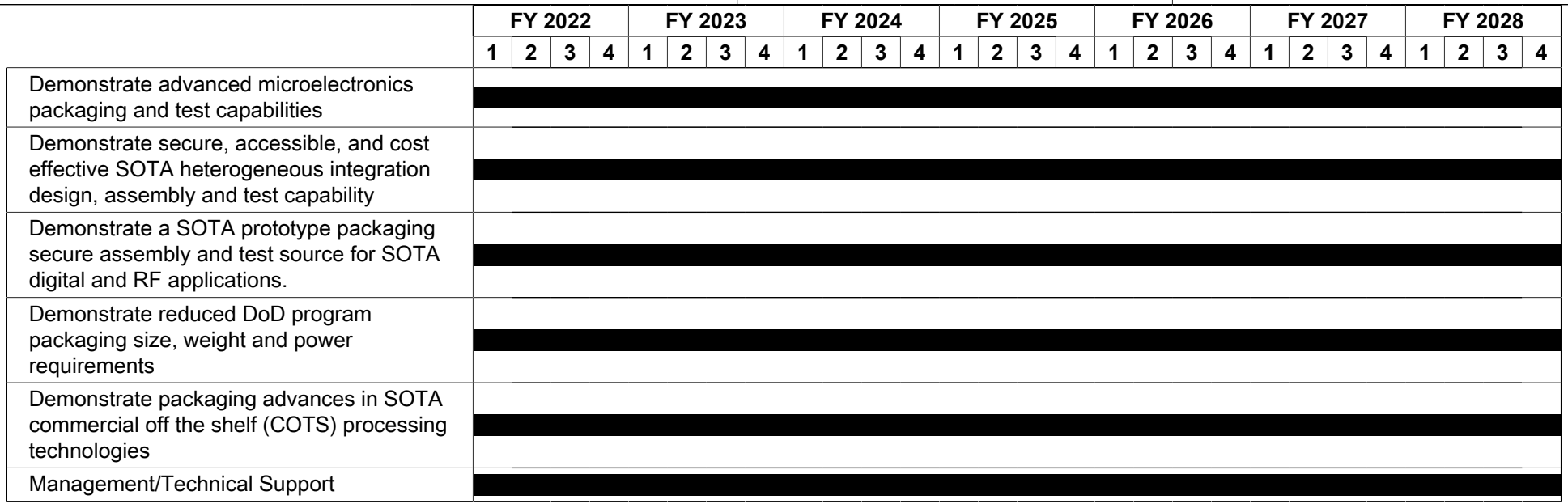


Exhibit R-4A, RDT&E Schedule Details: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 903 / *Access to Advanced Packaging and Testing - Demonstration*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Access to Advanced Packaging and Testing - Demonstration				
Demonstrate specialized DoD chiplets in a heterogeneous integrated (HI) assembly	2	2021	4	2028
Demonstrate advanced microelectronics packaging and test capabilities	2	2021	4	2028
Demonstrate secure, accessible, and cost effective SOTA heterogeneous integration design, assembly and test capability	2	2021	4	2028
Demonstrate a SOTA prototype packaging secure assembly and test source for SOTA digital and RF applications.	2	2021	4	2028
Demonstrate reduced DoD program packaging size, weight and power requirements	2	2021	4	2028
Demonstrate packaging advances in SOTA commercial off the shelf (COTS) processing technologies	2	2021	4	2028
Management/Technical Support	2	2021	4	2028

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0605294D8Z / *Trusted and Assured Microelectronics*	Project (Number/Name) 905 / *Address DoD Unique Needs Radiation Hardening and non-CMOS - Demonstration*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
905: *Address DoD Unique Needs Radiation Hardening and non-CMOS - Demonstration*	25.661	13.201	26.753	27.025	0.000	27.025	27.161	28.111	27.725	28.335	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project addresses the dual problems of commanding only a small market share while requiring an expansive range of unique microelectronics needs, from boutique and legacy components to state-of-the-art (SOTA) technologies. The Government must sustain specialty suppliers, given their criticality to national security. In particular, DoD needs access to a diverse microelectronics ecosystem to develop and acquire the application specific integrated circuit (ASICs) and personalized commercial off the shelf (COTS) components required for military radiation hardened and radio frequency and optical needs.

The Department frequently relies on commercial suppliers to optimize performance and reduce costs for sophisticated weapon system and secure network functionality. It is critical that the DoD has future access to subject matter expertise, technology, and manufacturing.

In addition to Rad Hard needs, the DoD requires access to RF and opto-electronic materials, foundries, and packaging facilities, in order to enable next generation sensors and communications. The DoD must leverage state-of-the-art microelectronic technologies driven by mega-trends such as 5G wireless and datacenters in order to combat emerging threats and provide overmatch technology to the warfighter. At the same time, the DoD must fill the gaps which are left unaddressed these dual-use mega-trends in order to satisfy mission requirements. By partnering in the maturation of state-of-the-art material sources, foundries, and packaging facilities, the DoD is able to tailor process development towards unique DoD interests and encourage open access design, which stimulates innovation and drives affordability. Additionally, critical investments must be made in the domestic supply chains supporting both RF Gallium Nitride (GaN) and integrated photonics in order to maintain the integrity and security of the Defense Industrial Base.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Address DoD Unique Needs - Radiation Hardening and non-CMOS - Demonstration	13.201	26.753	27.025
Description: Government-unique trusted design and manufacturing flows have been developed to enable a tier of trust for select ASIC parts; however, this approach addresses only a small subset of DoD microelectronics requirements (e.g., processors, memory, microcontrollers, field programmable gate arrays (FPGAs), and radiation-tolerant processors). The DoD will partner with the intelligence community, the Department of Energy, and the National Aeronautics and Space Administration to demonstrate radiation hardened components that permit systems to operate in space and other harsh environments. State-of-the-practice (SOTP) and SOTA technologies will be characterized and developed in support of Radiation			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 905 / *Address DoD Unique Needs Radiation Hardening and non-CMOS - Demonstration*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Hardened By Process (RHBP) and Radiation Hardened By Design (RHBD) activities in support the DoD modernization programs with radiation hardened requirements. A similar situation exists for radio frequency and optical applications. These two applications reflect only a small market with unique costs and specifications, which does not inherently create incentive for industrial investment. Within RF and opto-electronics, investments will be made in RF GaN and integrated photonic material sources, foundries, and packaging facilities in order to enable low-size, weight, and power devices which broadly access the millimeter wave spectrum, while providing high-bandwidth data transmission. ***FY 2023 Plans:*** Planned activities are as follows: • Continue to demonstrate SOTP and SOTA technologies utilizing RHBP and RHBD activities in support of DoD modernization programs with radiation hardened requirements. • Transition developed RH technologies into space and strategic programs. • Continue to mature large-diameter Nitrogen-Polar RF GaN material source and off-axis Silicon Carbide substrate. Foundries will assess epiwafers and provide feedback critical to baselining the N-Polar recipe. • Continue to mature towards MRL-6 multiple state-of-the-art RF GaN foundries offering open access to millimeter wave device design and advanced interconnect services. • Act upon industrial base assessment of the integrated photonics foundry ecosystem and mature strategic components of the domestic integrated photonics supply chain. • Demonstrate access to state-of-the-art RF GaN and integrated photonic foundries via advanced prototype demonstrators. ***FY 2024 Plans:*** Planned activities are as follows: • Continue to demonstrate SOTP and SOTA technologies utilizing RHBP and RHBD activities in support of DoD modernization programs with radiation hardened requirements. • Transition developed RH technologies into space and strategic programs. • Continue to mature large-diameter Nitrogen-Polar RF GaN material source and off-axis Silicon Carbide substrate. Foundries will assess epiwafers and provide feedback critical to baselining the N-Polar recipe. • Continue to mature towards MRL-6 multiple state-of-the-art RF GaN foundries offering open access to millimeter wave device design and advanced interconnect services. • Act upon industrial base assessment of the integrated photonics foundry ecosystem and mature strategic components of the domestic integrated photonics supply chain.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 905 / *Address DoD Unique Needs Radiation Hardening and non-CMOS - Demonstration*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
• Demonstrate access to state-of-the-art RF GaN and integrated photonic foundries via advanced prototype demonstrators. • Increase capacity for RHBD technologies to support additional DoD programs ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The increase of $0.272 million supports revised economic assumptions.			
Accomplishments/Planned Programs Subtotals	13.201	26.753	27.025

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 905 / *Address DoD Unique Needs Radiation Hardening and non-CMOS - Demonstration*

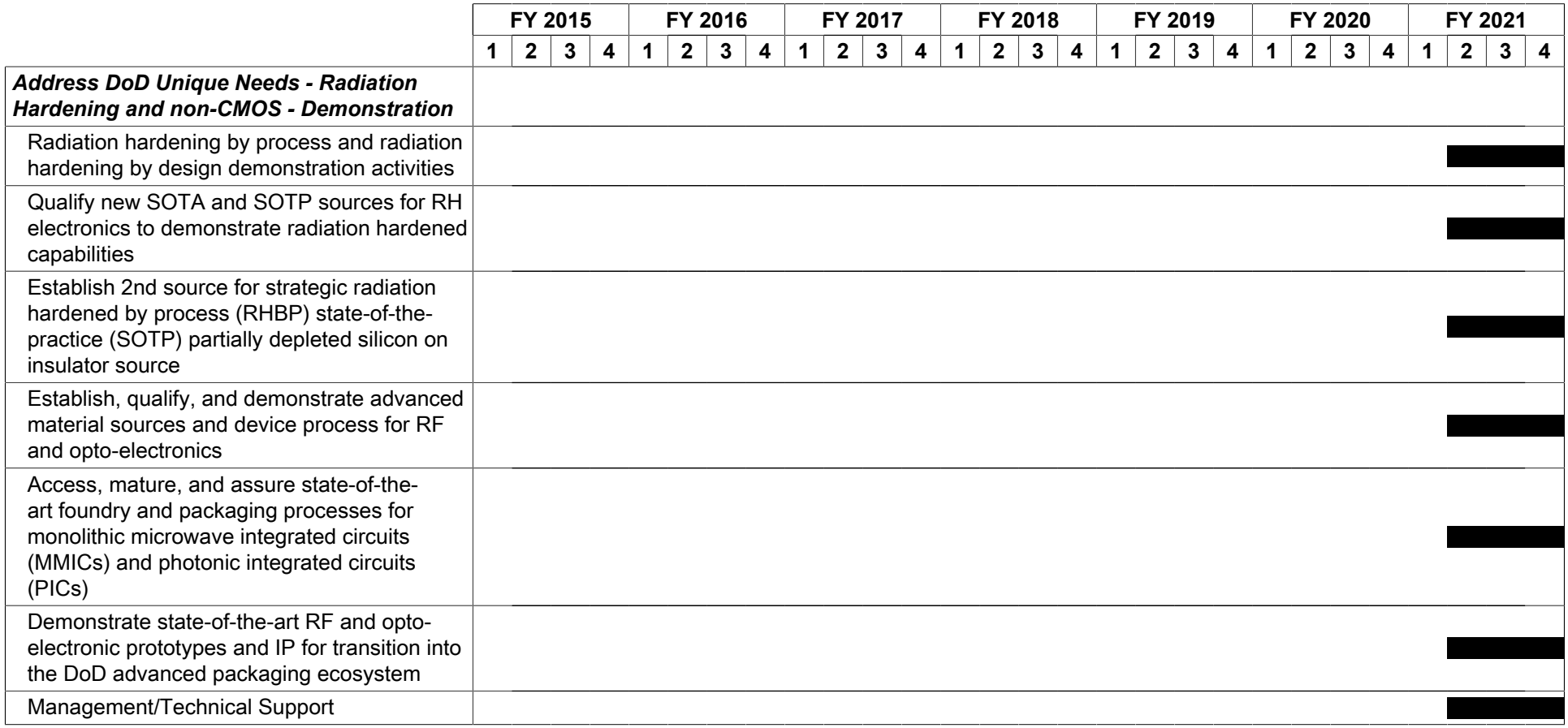
Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Address DoD Unique Needs - Demonstration	MIPR	Defense Advanced Research Projects Agency, Air Force, Army, Navy, National Security Agency : Various	25.661	13.201	Mar 2022	26.753	Mar 2023	27.025	Mar 2024	-		27.025	Continuing	Continuing	-
		Subtotal	25.661	13.201		26.753		27.025		-		27.025	Continuing	Continuing	N/A

	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	25.661	13.201		26.753		27.025		-		27.025	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 905 / *Address DoD Unique Needs Radiation Hardening and non-CMOS - Demonstration*



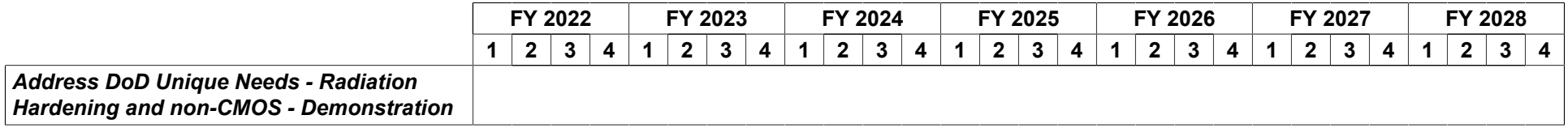


Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 905 / *Address DoD Unique Needs Radiation Hardening and non-CMOS - Demonstration*

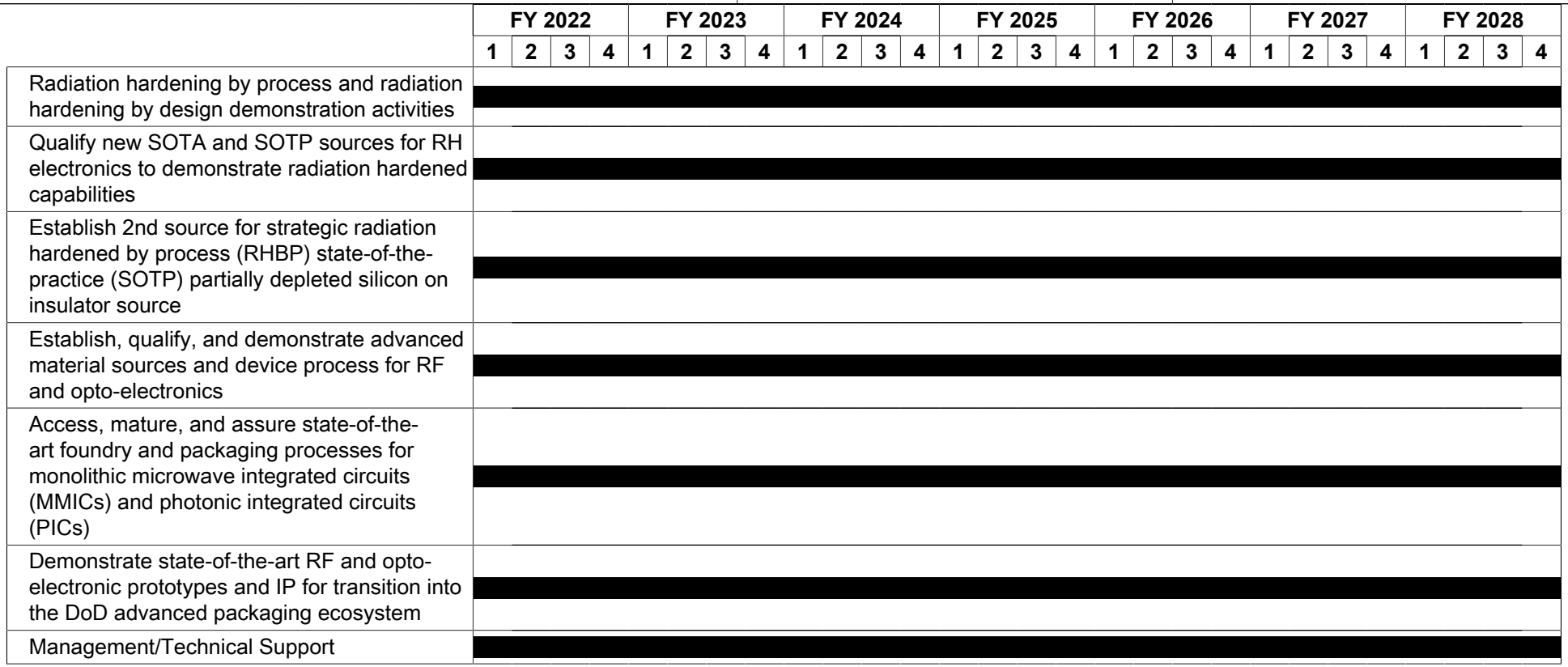


Exhibit R-4A, RDT&E Schedule Details: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605294D8Z / *Trusted and Assured Microelectronics*	**Project (Number/Name)** 905 / *Address DoD Unique Needs Radiation Hardening and non-CMOS - Demonstration*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Address DoD Unique Needs - Radiation Hardening and non-CMOS - Demonstration				
Radiation hardening by process and radiation hardening by design demonstration activities	2	2021	4	2028
Qualify new SOTA and SOTP sources for RH electronics to demonstrate radiation hardened capabilities	2	2021	4	2028
Establish 2nd source for strategic radiation hardened by process (RHBP) state-of-the-practice (SOTP) partially depleted silicon on insulator source	2	2021	4	2028
Establish, qualify, and demonstrate advanced material sources and device process for RF and opto-electronics	2	2021	4	2028
Access, mature, and assure state-of-the-art foundry and packaging processes for monolithic microwave integrated circuits (MMICs) and photonic integrated circuits (PICs)	2	2021	4	2028
Demonstrate state-of-the-art RF and opto-electronic prototypes and IP for transition into the DoD advanced packaging ecosystem	2	2021	4	2028
Management/Technical Support	2	2021	4	2028

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0605772D8Z / *Nuclear Command Control and Communications (NC3)*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	3.547	3.824	3.654	4.110	-	4.110	4.059	4.040	4.012	4.081	Continuing	Continuing
815: *Nuclear Command, Control and Communications (NC3)*	3.547	3.824	3.654	4.110	-	4.110	4.059	4.040	4.012	4.081	Continuing	Continuing

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

This program supports the Department's initiatives to Defend the Homeland, Provide Nuclear Deterrence, and Build Sustainable and Long-Term Advantage.

This program supports the Under Secretary of Defense for Acquisition and Sustainment roles as Principal Staff Assistant (PSA) for NC3 and NC3 Capability Portfolio Manager (CPM) as directed by the Secretary of Defense in the NC3 Governance Improvement (NGI) Implementation Plan and Directive Type Memorandum (DTM) 19-005. The role of the NC3 PSA and NC3 CPM is to ensure alignment of NC3 acquisition, procurement, modernization, sustainment, interoperability and resources to deliver effective current and future NC3 capabilities, and proactively manage the NC3 portfolio to align NC3 programs with DoD nuclear weapons platform and delivery systems sustainment and modernization efforts.

The NC3 Portfolio consists of approximately 200 systems, platforms, networks, and applications. The goals of the CPM are to 1) assess NC3 modernization programs and their integration, synchronization, and contribution to the NC3 enterprise, 2) monitor the readiness of operational NC3 systems, 3) identify performance gaps and make recommendations on technology upgrades and prototyping to enable the future capabilities to outpace the threat, and 4) support data-driven portfolio management by developing the necessary tools and processes to assess and manage integrated programmatic and technical risks. This includes the analytical expertise, and information storage and retrieval systems to support the continuing development of CPM for managing the complex NC3 enterprise. These efforts will simultaneously support the Commander, U.S. Strategic Command (USSTRATCOM) as NC3 Enterprise Lead; NC3 Enterprise Center (NEC); systems engineering and architecture development entities; the Under Secretary of Defense for Research and Engineering (USD(R&E)), the Joint Staff, and the Services. This program supports the capability portfolio-based approach (DoD Directive 7045.02, “Capability Portfolio Management”).

This program funds development of new tools, technical assessments, and planning for the CPM to manage the NC3 enterprise. This includes:
1) developing analytical tools for improving NC3 enterprise-level management and programmatic and technical risk assessments;
2) supporting the office of primary responsibility for NC3 enterprise capability portfolio management, to include assessing current capability, complying with statutory mandates, and conducting NC3-related studies, analyses, and policy updates;
3) assessing DoD Component plans, programs, and budgets for adequacy and execution (including courses of action development and recommendations);
4) identifying, prototyping, evaluating, and recommending new technology for inclusion in the NC3 system; and
5) developing NC3 corrective action and risk mitigation plans to support the NC3 CPM investment recommendations to senior DoD leadership.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0605772D8Z *I Nuclear Command Control and Communications (NC3)*

.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	3.969	3.758	3.853	-	3.853
Current President's Budget	3.824	3.654	4.110	-	4.110
Total Adjustments	-0.145	-0.104	0.257	-	0.257
• Congressional General Reductions	-	-0.104			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	-0.145	-	0.257	-	0.257

Change Summary Explanation

FY 2024 increase is for studies and analysis support to strengthen decision-making on NC3 acquisition risks and opportunities in support of the Nuclear Posture Review and NC3 Deputy Management Action Group (DMAG).

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0605772D8Z / *Nuclear Command Control and Communications (NC3)*	Project (Number/Name) 815 / *Nuclear Command, Control and Communications (NC3)*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
815: *Nuclear Command, Control and Communications (NC3)*	3.547	3.824	3.654	4.110	-	4.110	4.059	4.040	4.012	4.081	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This program supports development and operation of analytical tools to evaluate authoritative data (cost, schedule, performance, risk) on NC3 Portfolio programs to maximize portfolio alignment to strategic priorities and capabilities. It will create integrated development and delivery schedules for NC3 programs. These tools will forecast system/capability degradation as well as plans for capability replacement, improvement, or replacement in the context of the larger NC3 enterprise. It also provides the technical expertise to support risk management analysis (with an emphasis on system design, development and acquisition) of the NC3 enterprise and will develop strategies for synchronizing NC3 preplanned improvements. It will support the timely exchange of program and capability status information between elements of the NC3 enterprise, the OSD staff, and the combatant commands with a goal of increasing the use of electronic means to provide current and accurate information on key elements of the NC3 enterprise.

The effort will develop robust, integrated capability plans and schedules for NC3 capabilities to clarify system dependencies and identify disconnects. It will also support cross-department collaboration for development of enterprise-wide approaches for capability management. This includes: (1) vertical and horizontal integration activities within the Department and with the interagency where appropriate; (2) a coordinated portfolio-based approach to planning, programming, budgeting and execution; (3) reform efforts at the legislative, governance, policy, management and execution levels; 4) protection of information and technology that support or enables technology-based capability development for the NC3 warfighting domain and 5) supports the identification, evaluation, and incorporation of promising technology for inclusion in the NC3 system.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Nuclear Command, Control and Communications (NC3)	3.824	3.654	4.110
Description: FY 2022 Accomplishments: Supported NC3 governance, oversight, and decision-making to include the Deputy Secretary of Defense chaired NC3 Enterprise Review (October 2021), Deputy Secretary of Defense chaired NC3 DMAG (May 2022), Under Secretary of Defense for Acquisition and Sustainment chaired NC3 Integrated Acquisition Portfolio Review (IAPR) (February 2022), and multiple NC3 Systems Engineering and Authorities Boards with detailed programmatic cost, schedule, and performance analysis for senior executive decisions on resource allocations and strategic direction. Established the process to track health of NC3 modernization programs and conducted quarterly analysis of 36 NC3 programs to identify programmatic risk (cost, schedule, and performance) challenges and developed strategies to correct deficiencies and maintain critical path. Identified and analyzed under-resourced programs and secured an additional $1.07 billion for NC3			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605772D8Z / *Nuclear Command Control and Communications (NC3)*	**Project (Number/Name)** 815 / *Nuclear Command, Control and Communications (NC3)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
capabilities in the FY2023 President's Budget. Collected and baselined cost estimates for all NC3 modernization programs to identify resource disconnects in the FY2024 Program Objective Memorandum leading into FY 2024 program review. Conducted a detailed "Root Cause" Analysis of 16 delayed programs in support of a NC3 Enterprise Lead tasking aimed at mitigating operational risk through corrective action on selected acquisition programs, allocation of additional resources, and implementation of technical and/or operational alternatives. ***FY 2023 Plans:*** Conduct analysis and support the annual NC3 Enterprise Review DMAG with the Deputy Secretary of Defense and Vice Chairman of the Joint Chiefs of Staff, the Systems Engineering and Authorities (SEA) Board, Integrated Acquisition Portfolio Reviews, and other Senior Leader NC3 meetings. Support programmatic (cost, schedule, and performance) analysis on the NC3 portfolio of programs, systems, and facilities. Work collaboratively with the NC3 Enterprise Center (NEC), Services, and DoD Agencies to develop strategies to correct deficiencies and accelerate modernization. Establish a new acquisition governance forum to address corrective actions on delayed acquisition programs and oversee implementation of a portfolio acquisition strategy for next generation programs. Establish a Plan of Action with Milestones for identified corrective actions and adapt quarterly data call to Services to ensure data requested supports corrective actions. Coordinate on the USSTRATCOM FY 2025 to FY 2029 NC3 Capability Planning Guidance (CPG), draft program review recommendations on NC3 high risk programs, and initiate POM2025 issue artifacts in support of program and budget review efforts to align NC3 investment. ***FY 2024 Plans:*** Conduct analysis and support the NC3 Enterprise Review DMAG, NC3 Integrated Acquisition Portfolio Reviews, the SEA Board, and other Senior Leader NC3 meetings. Implement a strategy to protect critical information for NC3 next generation capabilities. Establish guidance and tools for program offices to comply with elevated security classification levels. Work with the National Security Agency to identify and certify new technical solutions (e.g. zero trust) for information protection across the NC3 research and development communities and the industrial base.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605772D8Z / *Nuclear Command Control and Communications (NC3)*	**Project (Number/Name)** 815 / *Nuclear Command, Control and Communications (NC3)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Develop and execute a FY2026 budget strategy to address funding needs and budget sufficiency for the NC3 portfolio. Coordinate on the USSTRATCOM FY 2026 to FY 2030 NC3 CPG, draft program review recommendations on NC3 high risk programs, and initiate POM2026 issue artifacts in support of program and budget review efforts to align NC3 investment. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2023 to FY 2024 increase is for studies and analysis support to strengthen decision-making on NC3 acquisition risks and opportunities in support of the Nuclear Posture Review and NC3 DMAG.			
Accomplishments/Planned Programs Subtotals	3.824	3.654	4.110

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

Utilize existing fixed-price and cost-plus contracts (where appropriate) to continue implementation of NC3 Capability Portfolio Management, provide technical expertise for NC3 system evaluation and strategic planning, and development of NC3 analytical tools.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0605772D8Z / *Nuclear Command Control and Communications (NC3)*	Project (Number/Name) 815 / *Nuclear Command, Control and Communications (NC3)*	

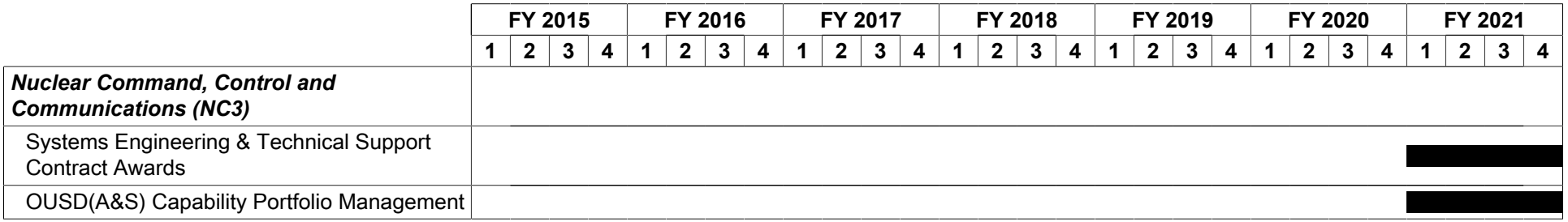
Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
NC3 Capability Portfolio Management	C/CPFF	OUSDA DASD SSIPM : Pentagon	3.547	3.824		3.654		4.110		-		4.110	Continuing	Continuing	-
		Subtotal	3.547	3.824		3.654		4.110		-		4.110	Continuing	Continuing	N/A

	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	3.547	3.824		3.654		4.110		-		4.110	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605772D8Z / *Nuclear Command Control and Communications (NC3)*	**Project (Number/Name)** 815 / *Nuclear Command, Control and Communications (NC3)*



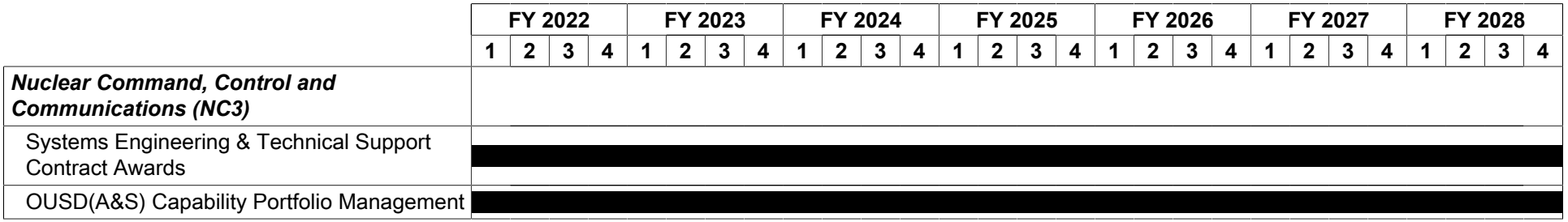


Exhibit R-4A, RDT&E Schedule Details: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605772D8Z / *Nuclear Command Control and Communications (NC3)*	**Project (Number/Name)** 815 / *Nuclear Command, Control and Communications (NC3)*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Nuclear Command, Control and Communications (NC3)				
Systems Engineering & Technical Support Contract Awards	1	2021	4	2028
OUSD(A&S) Capability Portfolio Management	1	2021	4	2028

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0305304D8Z / *DoD Enterprise Energy Information Management (EEIM)*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	21.607	2.133	8.121	8.159	-	8.159	7.684	7.680	7.683	7.819	-	-
305: *RP Information Management*	19.066	2.133	7.461	7.290	-	7.290	6.892	6.890	6.893	7.038	-	-
307: *RP Clearinghouse*	2.541	0.000	0.660	0.869	-	0.869	0.792	0.790	0.790	0.781	-	-

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

This PE supports the National Defense Strategy (NDS) for 2023 to build a more lethal force through modernization of key capabilities, the NDS defense objective of establishing an unmatched twenty-first century National Security Innovation Base that effectively supports Department operations and sustains security and solvency, and the NDS strategic approach of reforming the Department's business practices by simultaneously increasing performance and affordability while still minimizing risk. Established in FY 2013, and tasked with supporting the Department's goals for audit readiness, energy efficiency, Real Property accountability, and to improve data quality and integration across the full spectrum of Sustainment business functions. DoD Real Property Information Management is used to maintain accurate and accessible data for all DoD real property assets. To manage this information we must conduct Business Process Re-engineering activities, developing and publishing data standards. Funding is also used to support the Assistant Secretary of Defense (ASD) Sustainment Senior Real Property Officer accountability requirements, such as, reconciliation of enterprise real property inventory records and development of asset management processes, business rules and associated data standards. A major component of this effort is fielding an enterprise Data Analytics and Integration Support (DAIS) platform coupled with an independent verification and validation capability, providing access to real time data through Web Services Description Language (WSDL) in support of timely, data-driven decision-making. The DAIS Portal also hosts a build out of data stores and portal requirements for Energy Resiliency and Conservation Investment Program (ERCIP) management as well as, the Construction Management Portal. A funding line was added to manage the RDT&E funding for the DoD Siting Clearinghouse. The program was stood up as a congressional requirement. This program is charged by statute to identify technical mitigation measures necessary to overcome degradation of radar from the proliferation of industrial wind turbine development. This research and development is necessary to work with Federally Funded Research and Development Centers (FFRDCs) to study potential technical improvements to radar.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0305304D8Z / *DoD Enterprise Energy Information Management (EEIM)*

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	2.214	8.121	7.868	-	7.868
Current President's Budget	2.133	8.121	8.159	-	8.159
Total Adjustments	-0.081	0.000	0.291	-	0.291
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.081	-			
• Program Adjustments	-	-	0.291	-	0.291

Change Summary Explanation

FY 2024 funding increase supports the Clearing House program.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0305304D8Z / *DoD Enterprise Energy Information Management (EEIM)*	Project (Number/Name) 305 / *RP Information Management*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
305: *RP Information Management*	19.066	2.133	7.461	7.290	-	7.290	6.892	6.890	6.893	7.038	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Real Property Inventory fulfills requirements of Executive Orders to achieve and maintain real property accountability and is a key component supporting both audit readiness and life-cycle asset management activities. This funding provides the department independent verification and validation needed to reconcile data errors, promoting improved data quality, and facilitating interoperability with Service systems to provide an enterprise view of asset management across the real property lifecycle from acquisition to disposal. Oversight and configuration management of business rules and standards are used to determine requirements, manage inventory records, and improve business processes. This initiative includes development and procurement of the enterprise data warehouse for integrating existing and future Sustainment systems and database needs. The required Real Property Unique Identifier (RPUID) process is included in this enterprise system.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Real Property Accountability	2.133	7.461	7.290
Description: The ASD Sustainment is the Senior Real Property Officer for the DoD, responsible for accountability and utilization of all DoD Real Property Assets. This funding provides the department an enterprise data warehouse coupled with an independent verification and validation capability. The DoD Real Property Accountability efforts are mandated by Executive Order and Public Law for improved reporting and utilization of federal real property, and to support data-driven decisions. ***FY 2023 Plans:*** Continue to support reconciliation and audit corrective action plan efforts by identifying errors/inconsistencies in Real Property inventory records, asset accountability and management processes, and business rules and associated data. Bring Data Analytics and Integration Support (DAIS) platform and Web Services Description Language (WSDL) implementation to IOC and complete links to ADVANA. Ensure improved data quality supporting multiple analyses and provide quality management mechanism for all of the DoD Real Property information. Continue to support radar studies as planned through the Wind Turbine Interference Mitigation Forum. ***FY 2024 Plans:*** Continue to support reconciliation and audit corrective action plan efforts by identifying errors/inconsistencies in Real Property inventory records, asset accountability and management processes, and business rules and associated data. Bring DAIS platform and WSDL implementation to IOC and complete links to ADVANA. Ensure improved data quality supporting multiple analyses			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0305304D8Z / *DoD Enterprise Energy Information Management (EEIM)*	**Project (Number/Name)** 305 / *RP Information Management*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
and provide quality management mechanism for all of the DoD Real Property information. Continue to support radar studies as planned through the Wind Turbine Interference Mitigation Forum. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2024 decrease for minor programmatic changes.			
Accomplishments/Planned Programs Subtotals	2.133	7.461	7.290

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

Program utilizes Washington Headquarters Services Acquisition Directorate for EEIM contract support requirements.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0305304D8Z / *DoD Enterprise Energy Information Management (EEIM)*	**Project (Number/Name)** 305 / *RP Information Management*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
EI&E Data Analytics & Integration Platform	C/FFP	FTC : Herndon VA	3.739	0.000		-		-		-		-	Continuing	Continuing	-
		Subtotal	3.739	0.000		-		-		-		-	Continuing	Continuing	N/A

Remarks

Operations, maintenance and continued development of reports and tools for DAIS are planned to be added as a task in the main BSI support contract in FY22. Tis is in support of our continued effort to reduce the number of contracts managed by DASD Real Property.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
BSI Support Contract Base Plus 4 Option Years	C/FFP	ANSER : Mark Center	10.945	2.133	Apr 2022	2.600	Apr 2023	-		-		-	Continuing	Continuing	-
Defense Installation Spatial Data Infrastructure (DISDI) IGI&S Portal	MIPR	USACE : CRREL	1.398	-		1.461		-		-		-	Continuing	Continuing	-
BSI Support Contract Re-compete (Base Plus 4)	C/FFP	TBD : Mark Center	2.984	-		-		2.800	Apr 2024	-		2.800	Continuing	Continuing	-
Continue to support radar studies as planned through the Wind Turbine Interference Mitigation Forum.	FFRDC	TBD : TBD	-	-		3.400		4.490	Jun 2024	-		4.490	Continuing	Continuing	-
		Subtotal	15.327	2.133		7.461		7.290		-		7.290	Continuing	Continuing	N/A

Remarks

DAIS support contract goes away in FY22 and BSI support contract will continue to support DAIS as a added task 14.

	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	19.066	2.133		7.461		7.290		-		7.290	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0305304D8Z / *DoD Enterprise Energy Information Management (EEIM)*	Project (Number/Name) 305 / *RP Information Management*	

	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract

Remarks

NA

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0305304D8Z / *DoD Enterprise Energy Information Management (EEIM)*	**Project (Number/Name)** 305 / *RP Information Management*

ID	Task Name	Start	Finish
1	EI&E DBS PfM Reviews	10/01/18	continuous
2	Develop BEA Artifacts	01/01/22	30/01/2024
3	Business Process Re-Engineering	01/01/17	09/30/22
4	RPIM Updates	11/01/20	Continuous
5	Basing Decision Tree BPR	10/01/21	03/20/24
6	IV&V	10/01/18	continuous
7	EI&E Processes Auditability	10/01/20	Continuous
8	EI&E Data Analytics & Integration	10/01/21	Continuous
9	DISDI IGI&S Portal	10/01/21	09/30/23

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0305304D8Z / *DoD Enterprise Energy Information Management (EEIM)*	**Project (Number/Name)** 305 / *RP Information Management*

ID	Task Name	Start	Finish
1	EI&E DBS PfM Reviews	10/01/18	continuous
2	Develop BEA Artifacts	01/01/22	30/01/2024
3	Business Process Re-Engineering	01/01/17	09/30/22
4	RPIM Updates	11/01/20	Continuous
5	Basing Decision Tree BPR	10/01/21	03/20/24
6	IV&V	10/01/18	continuous
7	EI&E Processes Auditability	10/01/20	Continuous
8	EI&E Data Analytics & Integration	10/01/21	Continuous
9	DISDI IGI&S Portal	10/01/21	09/30/23
10	Support Radar Studies	10/1/2021	Continuous

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0305304D8Z / *DoD Enterprise Energy Information Management (EEIM)*	**Project (Number/Name)** 305 / *RP Information Management*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
PfM				
EI&E DBS PfM Reviews	1	2018	4	2024
Develop EI&E BEA Artifacts	2	2022	2	2024
Real Property BPRs	1	2017	4	2022
Real Property Asset Management				
RPIM Updates	1	2020	4	2024
Basing Moves Decision Tree BPR	1	2021	2	2024
IV&V	1	2018	1	2024
Real Property Process & System Auditability	1	2020	4	2024
Real Property Data Analytics & Integration	1	2021	4	2024
DISDI IGI&S Portal, Map, tools, and reports development and integration	1	2021	4	2023

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0305304D8Z / *DoD Enterprise Energy Information Management (EEIM)*	Project (Number/Name) 307 / *RP Clearinghouse*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
307: *RP Clearinghouse*	2.541	0.000	0.660	0.869	-	0.869	0.792	0.790	0.790	0.781	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The DoD Siting Clearinghouse is charged by statute to identify technical mitigation measures necessary to overcome degradation of radar from the proliferation of industrial wind turbine development. This research and development is necessary to work with Federally Funded Research and Development Centers (FFRDCs) to study potential technical improvements to radar.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: RP Clearinghouse	0.000	0.660	0.869
Description: The DoD Siting Clearinghouse works with FFRDCs to identify technical mitigation measures necessary to overcome degradation of radar from the proliferation of industrial wind turbine development. This research and development is necessary to study potential technical improvements to radar. ***FY 2023 Plans:*** Continue to support radar studies as planned through the Wind Turbine Interference Mitigation Forum. ***FY 2024 Plans:*** Continue to support radar studies as planned through the Wind Turbine Interference Mitigation Forum. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2024 increase supports the DoD Clearinghouse reflecting congressional emphasis on increased mission capability. Funding continues to support radar studies as planned through the Wind Turbine Interference Mitigation Forum.			
Accomplishments/Planned Programs Subtotals	0.000	0.660	0.869

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

N/A

D. Acquisition Strategy

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0305304D8Z / *DoD Enterprise Energy Information Management (EEIM)*	Project (Number/Name) 307 / *RP Clearinghouse*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
DISDI Portal	C/FFP	USACE Contracted Vendor : USACE	0.005	0.000	Mar 2022	-		-		-		-	Continuing	Continuing	-
		Subtotal	0.005	0.000		-		-		-		-	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Platform Resilience Mission Assurance (PRMA)	MIPR	ARMAMENT RDEC : BLDG 91 4TH AVE, PICATINNY ARSENAL NJ 07806-5000	0.536	-		-		0.869	Jun 2024	-		0.869	Continuing	Continuing	-
Continue to support radar studies as planned through the Wind Turbine Interference Mitigation Forum.	FFRDC	TBD : TBD	2.000	0.000	May 2022	0.660	May 2023	-		-		-	Continuing	Continuing	-
		Subtotal	2.536	0.000		0.660		0.869		-		0.869	Continuing	Continuing	N/A

Remarks

NA

	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	2.541	0.000		0.660		0.869		-		0.869	Continuing	Continuing	N/A

Remarks

NA

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0305304D8Z / *DoD Enterprise Energy Information Management (EEIM)*	**Project (Number/Name)** 307 / *RP Clearinghouse*

ID	Task Name	Start	Finish
1	EI&E DBS PfM Reviews	10/01/18	continuous
2	Develop BEA Artifacts	01/01/22	30/01/2024
3	Business Process Re-Engineering	01/01/17	09/30/22
4	RPIM Updates	11/01/20	Continuous
5	Basing Decision Tree BPR	10/01/21	03/20/24
6	IV&V	10/01/18	continuous
7	EI&E Processes Auditability	10/01/20	Continuous
8	EI&E Data Analytics & Integration	10/01/21	Continuous
9	DISDI IGI&S Portal	10/01/21	09/30/23
10	Support Radar Studies	10/1/2021	Continuous

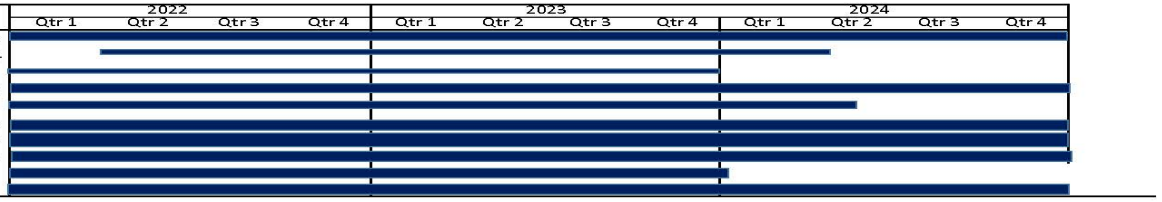


Exhibit R-4A, RDT&E Schedule Details: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0305304D8Z / *DoD Enterprise Energy Information Management (EEIM)*	**Project (Number/Name)** 307 / *RP Clearinghouse*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
RP Siting Clearinghouse				
Develop FY 2021 Program	1	2020	3	2020
FY 2021 Studies Evaluations	1	2021	4	2021
Develop FY 2022 Program	1	2021	4	2021
FY 2022 Studies Evaluations	1	2022	4	2022
Develop FY 2023 Program	1	2022	4	2022
FY 2023 Studies Evaluations	1	2023	2	2023
Develop FY 2024 Program	1	2024	4	2024
FY 2024 Studies Evaluations	1	2024	4	2024

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0305310D8Z / *CWMD Systems: System Development Demonstration*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	56.175	19.413	16.048	14.471	0.000	14.471	14.425	15.602	17.350	17.732	-	-
813: *CWMD Systems: System Development & Demonstration*	56.175	19.413	16.048	14.471	0.000	14.471	14.425	15.602	17.350	17.732	-	-

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

This program supports the Department's initiatives to Deter Aggression, Defend the Homeland, Provide Nuclear Deterrence, and Build Sustainable and Long-Term Advantage.

The Countering Weapons of Mass Destruction (CWMD) Systems research and development activities (RDAs) enhance DoD's capabilities to campaign across the domains of threats and spectrums of conflict by: "improving our understanding of the operational environment – including in the information domain; sowing doubt among competitors that they would be able to achieve their objectives and conduct unattributed coercive actions; disrupting competitor actions that would afford them warfighting advantages; reinforcing our own warfighting advantages; and enhancing our interoperability and access to address acute forms of coercion." (2022 National Defense Strategy).

RDAs provide enhanced offensive Counterproliferation capabilities. The CWMD Systems portfolio enables DoD to prevent adversary development, acquisition, transfer, deployment, and use of weapons of mass destruction. Likewise, the portfolio's investments deliver capabilities to "take action against actors of concern and reduce access to WMD development pathways" and, "delays further development, degrades capabilities where possible, and, if necessary, prevents WMD use". (2023 DoD Strategy to Counter Weapons of Mass Destruction)

The CWMD Systems portfolio is executing along cohesive lines of effort (LOEs) designed to prepare the Joint Force for a Future Operating Environment in which adversary pursuit or possession of WMDs pose threats ranging from existential to tactical, and limit U.S. strategic choices. These LOEs create unique options across the continuum of conflict, including exquisite tactical situational awareness, the ability to rapidly generate options, low visibility methods of maneuver, and the capability to employ immediate effects without diminishing future capabilities. These LOEs enable active campaigning to support Integrated Deterrence that mitigate risk to mission and risk to force.

The Office of the Secretary of Defense uses the CWMD Systems portfolio to invest strategically in projects across the Military Services, Combatant Commands, and Defense Agencies. Funding is prioritized for projects that close Joint Force warfighter capability gaps. An annual investment strategy is used to meet emergent operational and capability needs validated by the Joint Force, yielding new fielded capabilities within one to two years.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0305310D8Z / *CWMD Systems: System Development Demonstration*

The CWMD Systems: Systems Development and Demonstration program invests in maturation of prototypes; integration of technologies, systems and components; developmental and operational test and evaluation; and transition to fielded capabilities that counter WMD proliferation. This program accelerates and enables transition of mature technologies to fielded capabilities by leveraging significant science and technology (S&T) investments made by the Department of Defense, other Federal agencies, and industry.

This program funds labor, materials, and travel to support the requirements of this program, performed by a government agency or by private individuals or organizations under a contract with the government, for activities and acquisitions including Research, Development, Test & Evaluation (RDT&E), assessments and analyses, research studies, education, and other activities related to capability development and fielding.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	20.132	16.048	18.717	0.000	18.717
Current President's Budget	19.413	16.048	14.471	0.000	14.471
Total Adjustments	-0.719	0.000	-4.246	0.000	-4.246
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Transfer to PE 0603161D8Z	-	-	-4.246	0.000	-4.246
• Program Adjustments	-0.719	-	-	-	-

Change Summary Explanation

FY 2024 funding decrease result of transfer of Innovative Technologies project to DASD(NCB/NM) PE 0603161D8Z.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0305310D8Z / *CWMD Systems: System Development Demonstration*	Project (Number/Name) 813 / *CWMD Systems: System Development & Demonstration*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
813: *CWMD Systems: System Development & Demonstration*	56.175	19.413	16.048	14.471	0.000	14.471	14.425	15.602	17.350	17.732	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

N/A

A. Mission Description and Budget Item Justification

The Countering Weapons of Mass Destruction (CWMD) Systems portfolio aligns with the National Defense Strategy objective of “dissuading, preventing, or deterring state adversaries and non-state actors from acquiring, proliferating, or using weapons of mass destruction.”

The CWMD Systems portfolio enhances warfighter lethality by developing capabilities to exploit and defeat critical nodes of nuclear, chemical, and biological weapons and ballistic missile programs and proliferation networks; and developing offensively-oriented capabilities to disrupt Weapons of Mass Destruction (WMD) proliferation networks and detect, disable, or defeat WMD and delivery systems. Investments result in capabilities fielded to the Joint Force, enabling it to reduce WMD threats and create options for the United States to prevent WMD use.

The Office of the Secretary of Defense uses the CWMD Systems portfolio to invest strategically in projects across the Military Services, Combatant Commands, and Defense Agencies. Funding is prioritized for projects that close Joint Force warfighter capability gaps. An annual investment strategy is used to meet emergent operational and capability needs validated by the Joint Force, yielding new fielded capabilities within one to two years.

The CWMD Systems: Systems Development and Demonstration program invests in maturation of prototypes; integration of technologies, systems and components; developmental and operational test and evaluation; and transition to fielded capabilities that counter WMD proliferation. This program accelerates and enables transition of mature technologies to fielded capabilities by leveraging significant science and technology (S&T) investments made by the Department of Defense, other Federal agencies, and industry. Resulting fielded capabilities illuminate WMD networks; exploit vulnerabilities in networks, programs, facilities, and weapons systems; and disable or defeat WMD and their delivery systems.

This program funds labor, materials, and travel to support the requirements of this program, performed by a government agency or by private individuals or organizations under a contract with the government, for activities and acquisitions including RDT&E, assessments and analyses, research studies, education, and other activities related to capability development and fielding.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: P*813 / CWMD Systems: System Development & Demonstration	19.413	16.048	14.471

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0305310D8Z / *CWMD Systems: System Development Demonstration*	**Project (Number/Name)** 813 / *CWMD Systems: System Development & Demonstration*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Description: The CWMD Systems: Systems Development and Demonstration program invests in maturation of prototypes; integration of technologies, systems and components; developmental and operational test and evaluation; and transition to fielded capabilities that counter Weapons of Mass Destruction (WMD) proliferation. Significant Science and Technology (S&T) investments in prototype development by the Department of Defense, other Federal agencies, and industry are leveraged, capitalizing on mature technologies to accelerate and enable transition to fielded capabilities. Resulting fielded capabilities illuminate WMD networks; exploit vulnerabilities in networks, programs, facilities, and weapons systems; and disable or defeat WMD and their delivery systems. ***FY 2023 Plans:*** • Transitioned and fielded operational CWMD capabilities to US Special Operations Command. • Partnered with the Military Services and Defense Agencies to mature and transition advanced prototypes to fielded CWMD capabilities. • Delivered capabilities that enhanced Air Force Technical Applications Center (AFTAC) ability to support nuclear treaty monitoring and nuclear event detection. • Continued maturation of prototypes, systems, and components for test and evaluation by end-users and transition to fieldable CWMD capabilities under other classified projects. ***FY 2024 Plans:*** • Develop, transition, and field operational CWMD capabilities to US Special Operations Command. • Partner with the Military Services and Defense Agencies to mature and transition advanced prototypes to fielded CWMD capabilities. • Continue maturation of prototypes, systems, and components for test and evaluation by end-users and transition to fieldable CWMD capabilities under other classified projects. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The FY 2024 funding decrease is representative of program adjustments to align with National Defense Strategy priorities.			
Accomplishments/Planned Programs Subtotals	19.413	16.048	14.471

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0305310D8Z / *CWMD Systems: System Development Demonstration*	**Project (Number/Name)** 813 / *CWMD Systems: System Development & Demonstration*

D. Acquisition Strategy

The Office of the Deputy Assistant Secretary of Defense for Threat Reduction and Arms Control (ODASD(TRAC)) establishes annual priorities based on national and the DoD strategies and senior leader guidance. Based on those priorities, TRAC solicits project proposals from Combatant Commands, Military Services, and Defense Agencies, and interagency partners. To be selected, a proposed project must have a validated requirement, an engaged requirement champion, a viable acquisition strategy, and a qualified program management office. A technology project must identify its starting and desired end-state Technology Readiness Level. Likewise, the end-user for any proposed project must demonstrate a long-term plan for acceptance and sustainment of a fieldable capability. Project period of performance is typically 12-24 months.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0305310D8Z / *CWMD Systems: System Development Demonstration*	**Project (Number/Name)** 813 / *CWMD Systems: System Development & Demonstration*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Engineering & manufacturing development of information systems & components	C/T&M	TBD : TBD	28.087	-		-		-		-		-	-	-	-
Systems development & demonstration, and initial operational test & evaluation	C/T&M	TBD : TBD	22.470	-		-		-		-		-	-	-	-
Program management support	C/T&M	TBD : TBD	5.618	-		-		-		-		-	-	-	-
Develop and transition fieldable CWMD capabilities to US Special Operations Command and its components	MIPR	USSOCOM : TBD	-	8.438	Jan 2022	8.586	Jan 2023	7.708	Jan 2024	-		7.708	-	-	N/A
Partner with the Services to develop advanced prototypes and fielded CWMD capabilities.	MIPR	TBD : TBD	-	3.257	Jan 2022	2.600	Jan 2023	2.302	Jan 2024	-		2.302	-	-	N/A
Deliver toolkits and applications that enhance Air Force Technical Applications Center (AFTAC) capabilities to support nuclear treaty monitoring and nuclear event detection.	MIPR	AFTAC : TBD	-	3.444	Jan 2022	2.744	Jan 2023	2.446	Jan 2024	-		2.446	-	-	N/A
Continue maturation of prototypes, systems, and components for test and evaluation by end-users and transition to fieldable capabilities of other classified projects.	MIPR	TBD : TBD	-	4.274	Jan 2022	2.118	Jan 2023	2.015	Jan 2024	-		2.015	-	-	N/A
		Subtotal	56.175	19.413		16.048		14.471		-		14.471	-	-	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0305310D8Z / *CWMD Systems: System Development Demonstration*	Project (Number/Name) 813 / *CWMD Systems: System Development & Demonstration*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract

Remarks

N/A

	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	56.175	19.413		16.048		14.471		-		14.471	-	-	N/A

Remarks

NA

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0305310D8Z / *CWMD Systems: System Development Demonstration*	**Project (Number/Name)** 813 / *CWMD Systems: System Development & Demonstration*

CWMD Systems: Operational System Development
BA 5 / PE 0305310D8Z

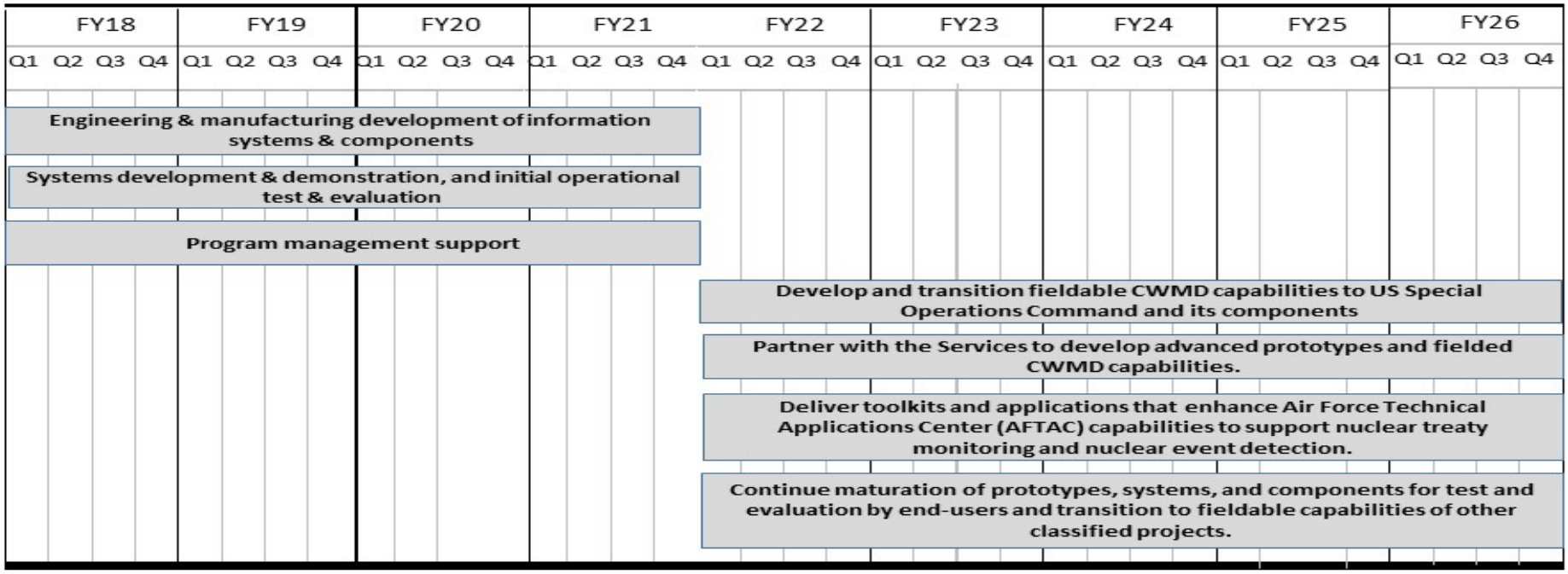

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0305310D8Z / *CWMD Systems: System Development Demonstration*	**Project (Number/Name)** 813 / *CWMD Systems: System Development & Demonstration*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Develop and transition fieldable Countering Weapons of Mass Destruction (CWMD) capabilities to US Special Operations Command and its components				
Develop and transition fieldable CWMD capabilities to US Special Operations Command and its components	2	2022	4	2026
Partner with the Services to develop advanced prototypes and fielded CWMD capabilities.				
Partner with the Services to develop advanced prototypes and fielded CWMD capabilities.	2	2022	4	2026
Deliver toolkits and applications that enhance Air Force Technical Applications Center (AFTAC) capabilities to support nuclear treaty monitoring and nuclear event detection.				
Deliver toolkits and applications that enhance Air Force Technical Applications Center (AFTAC) capabilities to support nuclear treaty monitoring and nuclear event detection.	2	2022	4	2026
Continue maturation of prototypes, systems, and components for test and evaluation by end-users and transition to fieldable capabilities of other classified projects.				
Continue maturation of prototypes, systems, and components for test and evaluation by end-users and transition to fieldable capabilities of other classified projects.	2	2022	4	2026
Engineering & manufacturing development of information systems & components				
Engineering & manufacturing development of information systems & components	2	2020	4	2021
Systems development & demonstration, and initial operational test & evaluation				
Systems development & demonstration, and initial operational test & evaluation	2	2020	4	2021
Program management support				
Program management support	2	2020	4	2021

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0505167D8Z / *Domestic Prepare Against WMD*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	3.770	-	3.770	3.770	4.230	4.200	4.200	Continuing	Continuing
784: *Domestic Prepare Against WMD*	-	0.000	0.000	3.770	-	3.770	3.770	4.230	4.200	4.200	Continuing	Continuing

Note

New Start (Y/N): Yes

A. Mission Description and Budget Item Justification

As a FY 2024 new start, this program supports the Department's initiatives to Deter Aggression, Defend the Homeland, Provide Nuclear Deterrence, and Build Sustainable and Long-Term Advantage.

The Radiological and Nuclear (Rad/Nuc) Detection Gear Modernization and Procurement for the Joint Force research and development activities (RDAs) enhance DoD's capabilities to campaign across the domains of threats and spectrums of conflict by: improving our capability to operate in the Radiological and Nuclear environment – including in the information and early warning domain; reinforcing our own warfighting advantages by providing increased capability to detect and identify radiological and nuclear threats; and enhancing our interoperability and access to address acute forms of coercion. This program is specifically geared to provide improved rad/nuc detection, indications and identification capability to the warfighter and to upgrade obsolete equipment (2022 National Defense Strategy).

RDAs provide enhanced Rad/Nuc capabilities. The Domestic Prepare against WMD portfolio enables DoD to provide Joint force and National Guard capability development for radiological and nuclear (R/N) capability development, acquisition and modernization funding to prepare for or to respond to any emergency involving nuclear, and radiological events in the United States; will ensure DoD strategic direction aligns with the National Defense Strategy's priority for Homeland Defense; is a necessary action in the Homeland to improve resilience; and promotes integrated deterrence of WMD with state, local and other federal agencies.

The Domestic Prepare against WMD portfolio is executing along cohesive lines of effort (LOEs) designed to prepare the Joint Force for a Future Operating Environment in which adversary pursuit or possession of WMDs pose threats ranging from existential to tactical, and limit U.S. strategic choices.

The Office of the Secretary of Defense uses the Domestic Prepare against WMD portfolio to invest strategically in projects across the Military Services, Combatant Commands, and Defense Agencies. Funding is prioritized for projects that close Joint Force warfighter capability gaps. An annual investment strategy is used to meet emergent operational, and capability needs validated by the Joint Force and the National Guard Bureau, yielding new fielded capabilities within one to two years.

The Domestic Prepare against WMD portfolio: Systems Development and Demonstration program invests in maturation of prototypes; integration of technologies, systems and components; developmental and operational test and evaluation; and transition to fielded capabilities that improve capability to detect and identify radiological and nuclear threats. This program bridges the gap between basic research to accelerate and enable transition of technologies to fielded capabilities by leveraging significant science and technology (S&T) investments made by the Department of Defense, other Federal agencies, and industry.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0505167D8Z *I Domestic Prepare Against WMD*

This program funds labor, materials, and travel to support the requirements of this program, performed by a government agency or by private individuals or organizations under a contract with the government, for activities and acquisitions including RDT&E, assessments and analyses, research studies, education, and other activities related to capability development and fielding.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	0.000	0.000	0.000	-	0.000
Current President's Budget	0.000	0.000	3.770	-	3.770
Total Adjustments	0.000	0.000	3.770	-	3.770
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• New Start	-	-	3.770	0.000	3.770

Change Summary Explanation

FY 2024 New Start

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense											Date: March 2023	
Appropriation/Budget Activity 0400 / 5					R-1 Program Element (Number/Name) PE 0505167D8Z / *Domestic Prepare Against WMD*				Project (Number/Name) 784 / *Domestic Prepare Against WMD*			
COST ($ in Millions)	**Prior Years**	**FY 2022**	**FY 2023**	**FY 2024 Base**	**FY 2024 OCO**	**FY 2024 Total**	**FY 2025**	**FY 2026**	**FY 2027**	**FY 2028**	**Cost To Complete**	**Total Cost**
784: *Domestic Prepare Against WMD*	-	0.000	0.000	3.770	-	3.770	3.770	4.230	4.200	4.200	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

FY 2024 New Start

A. Mission Description and Budget Item Justification

As a FY 2024 new start, this program supports the Department's initiatives to Deter Aggression, Defend the Homeland, Provide Nuclear Deterrence, and Build Sustainable and Long-Term Advantage.

The Radiological and Nuclear (Rad/Nuc) Detection Gear Modernization and Procurement for the Joint Force research and development activities (RDAs) enhance DoD's capabilities to campaign across the domains of threats and spectrums of conflict by: improving our capability to operate in the Radiological and Nuclear environment – including in the information and early warning domain; reinforcing our own warfighting advantages by providing increased capability to detect and identify radiological and nuclear threats; and enhancing our interoperability and access to address acute forms of coercion. This program is specifically geared to provide improved rad/nuc detection, indications and identification capability to the warfighter and to upgrade obsolete equipment (2022 National Defense Strategy).

RDAs provide enhanced Rad/Nuc capabilities. The Domestic Prepare against WMD portfolio enables DoD to provide Joint force and National Guard capability development for radiological and nuclear (R/N) capability development, acquisition and modernization funding to prepare for or to respond to any emergency involving nuclear, and radiological events in the United States; will ensure DoD strategic direction aligns with the National Defense Strategy's priority for Homeland Defense; is a necessary action in the Homeland to improve resilience; and promotes integrated deterrence of WMD with state, local and other federal agencies.

The Domestic Prepare against WMD portfolio is executing along cohesive lines of effort (LOEs) designed to prepare the Joint Force for a Future Operating Environment in which adversary pursuit or possession of WMDs pose threats ranging from existential to tactical, and limit U.S. strategic choices.

The Office of the Secretary of Defense uses the Domestic Prepare against WMD portfolio to invest strategically in projects across the Military Services, Combatant Commands, and Defense Agencies. Funding is prioritized for projects that close Joint Force warfighter capability gaps. An annual investment strategy is used to meet emergent operational, and capability needs validated by the Joint Force and the National Guard Bureau, yielding new fielded capabilities within one to two years.

The Domestic Prepare against WMD portfolio: Systems Development and Demonstration program invests in maturation of prototypes; integration of technologies, systems and components; developmental and operational test and evaluation; and transition to fielded capabilities that improve capability to detect and identify radiological and nuclear threats. This program bridges the gap between basic research to accelerate and enable transition of technologies to fielded capabilities by leveraging significant science and technology (S&T) investments made by the Department of Defense, other Federal agencies, and industry.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0505167D8Z / *Domestic Prepare Against WMD*	**Project (Number/Name)** 784 / *Domestic Prepare Against WMD*

This program funds labor, materials, and travel to support the requirements of this program, performed by a government agency or by private individuals or organizations under a contract with the government, for activities and acquisitions including RDT&E, assessments and analyses, research studies, education, and other activities related to capability development and fielding.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Domestic Prepare Against WMD	-	-	3.770
Description: The Domestic Prepare Against WMD: Systems Development and Demonstration program invests in maturation of prototypes; integration of technologies, systems and components; developmental and operational test and evaluation; and transition to Rad/Nuc Defense fielded capabilities. Significant S&T investments in prototype development by the Department of Defense, other Federal agencies, and industry are leveraged, capitalizing on mature technologies to accelerate and enable transition to fielded capabilities. Resulting fielded capabilities protect the warfighter, support indications and early warning, command and control, defend vulnerabilities in networks, programs, facilities, and weapons systems; and enable the disablement or defeat of WMD and their delivery systems. ***FY 2024 Plans:*** • Develop, transition, and field operational Rad/Nuc Detection, Indications and Early warning and Command Control capabilities to the Joint Force and the National Guard Bureau. • Partner with the Military Services and Defense Agencies to mature and transition advanced prototypes to fielded rad/nuc detection and identification capabilities. • Continue maturation of prototypes, systems, and components for test and evaluation by end-users and transition to fieldable rad/Nuc Detection and identification capabilities under other classified projects. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2024 new start. The FY 2024 funding increase provides resourcing of Research & Development projects for Rad/Nuc detection, and improves rad/nuc defense capabilities fielded to the joint force.			
Accomplishments/Planned Programs Subtotals	-	-	3.770

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

N/A

D. Acquisition Strategy

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0505167D8Z / *Domestic Prepare Against WMD*	Project (Number/Name) 784 / *Domestic Prepare Against WMD*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
• Develop, transition, and field operational Rad/Nuc Detection, Indications and Early warning and Command Control capabilities to the Joint Force and the National Guard Bureau.	C/TBD	TBD : TBD	-	-		-		1.280	Apr 2024	-		1.280	Continuing	Continuing	-
• Partner with the Military Services and Defense Agencies to mature and transition advanced prototypes to fielded rad/nuc detection and identification capabilities.	C/TBD	TBD : TBD	-	-		-		1.280	Apr 2024	-		1.280	Continuing	Continuing	-
• Continue maturation of prototypes, systems, and components for test and evaluation by end-users and transition to fieldable rad/Nuc Detection and identification capabilities under other classified p	C/TBD	TBD : TBD	-	-		-		1.210	Apr 2024	-		1.210	Continuing	Continuing	-
		Subtotal	-	-		-		3.770		-		3.770	Continuing	Continuing	N/A

	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	-		-		3.770		-		3.770	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0505167D8Z / *Domestic Prepare Against WMD*	**Project (Number/Name)** 784 / *Domestic Prepare Against WMD*

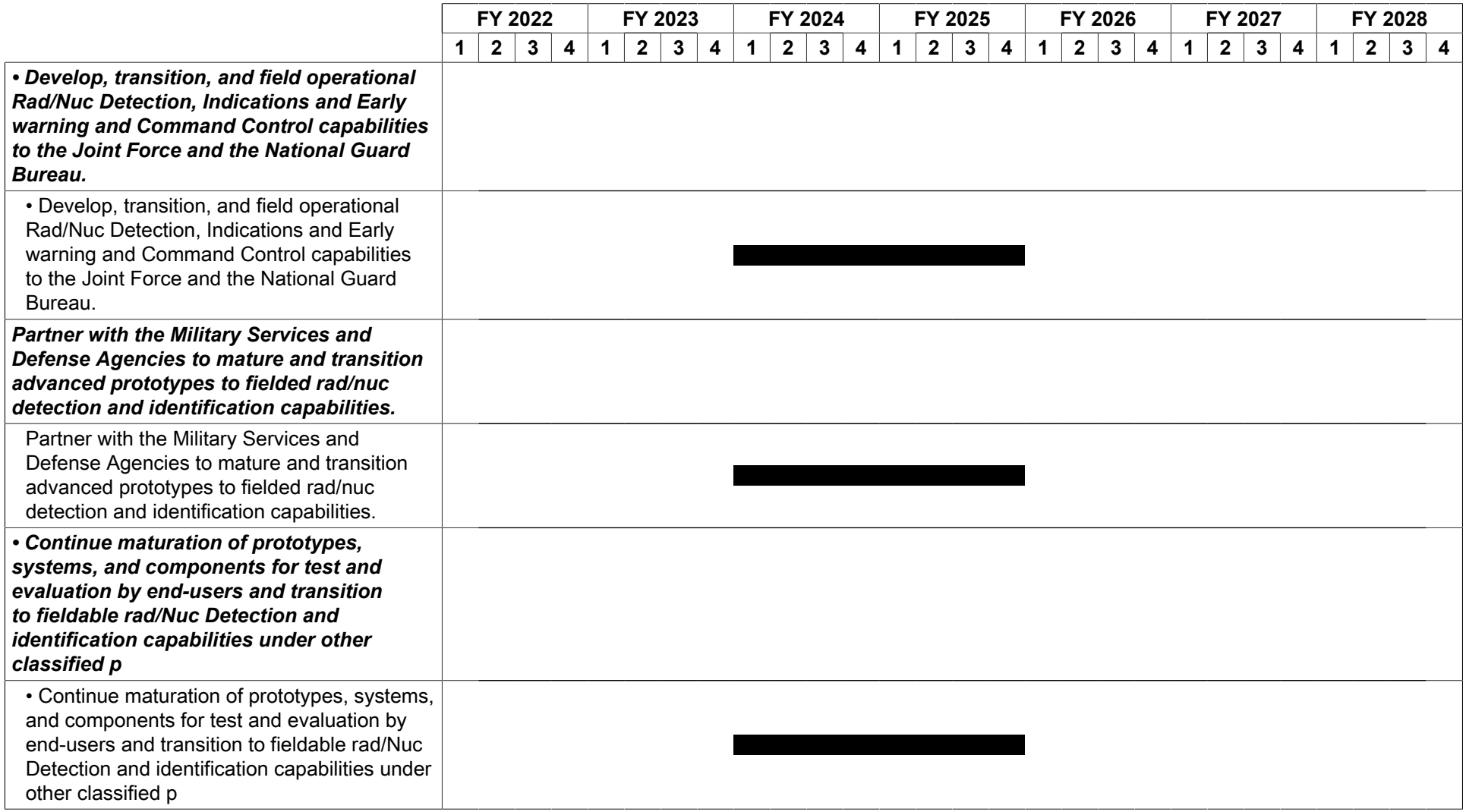

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0505167D8Z / *Domestic Prepare Against WMD*	**Project (Number/Name)** 784 / *Domestic Prepare Against WMD*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
• Develop, transition, and field operational Rad/Nuc Detection, Indications and Early warning and Command Control capabilities to the Joint Force and the National Guard Bureau.				
• Develop, transition, and field operational Rad/Nuc Detection, Indications and Early warning and Command Control capabilities to the Joint Force and the National Guard Bureau.	1	2024	4	2025
Partner with the Military Services and Defense Agencies to mature and transition advanced prototypes to fielded rad/nuc detection and identification capabilities.				
Partner with the Military Services and Defense Agencies to mature and transition advanced prototypes to fielded rad/nuc detection and identification capabilities.	1	2024	4	2025
• Continue maturation of prototypes, systems, and components for test and evaluation by end-users and transition to fieldable rad/Nuc Detection and identification capabilities under other classified p				
• Continue maturation of prototypes, systems, and components for test and evaluation by end-users and transition to fieldable rad/Nuc Detection and identification capabilities under other classified p	1	2024	4	2025

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 6: *RDT&E Management Support*	**R-1 Program Element (Number/Name)** PE 0604774D8Z / *Defense Readiness Reporting System (DRRS)*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	67.469	7.435	8.878	12.746	-	12.746	11.508	10.681	10.906	11.136	-	-
774: *Defense Readiness Reporting System (DRRS)*	67.469	7.435	8.878	12.746	-	12.746	11.508	10.681	10.906	11.136	-	-

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

This program supports the Department's initiatives to Take Care of People and Build Sustainable and Long-Term Advantage.

This funding supports the Defense Readiness Reporting System - Strategic (DRRS-S), the comprehensive readiness reporting system for the Department of Defense mandated under Title 10 U.S. Code. The system measures, in an objective, accurate, and timely manner, the capability of the armed forces to carry out the National Security Strategy prescribed by the President, as well as, the defense planning guidance provided by the Secretary of Defense, and the National Military Strategy prescribed by the Chairman of the Joint Chiefs of Staff. DRRS-S hosts information and applications used to support the Geographic and Functional Combatant Commanders, the Services, Combat Support Agencies, the Joint Staff and the Office of the Secretary of Defense.

DRRS-S is the evolution of readiness reporting to a more comprehensive system, better able to meet the Department's current and future readiness information challenges. Included in these challenges is the expansion in scope of the entities who can, and do report readiness. Shifting from solely resource centric readiness reporting to a resource informed mission/capabilities based reporting system, oriented towards the National Military Strategy (NMS), makes substantially more complex demands on readiness reporting, but portrays a far more relevant and holistic picture of readiness. DRRS-S allows the Department to assess readiness globally based on the program's integrated ability to project and sustain a mix of constructed forces. Additionally, the challenges associated with sourcing and evaluating the readiness of our forces engaged in on-going real operations, mean that force managers need applications that will query the entire Department for suitable, available organizations to meet current needs. DRRS-S continues to incorporate more data and develop more capable functionality to meet the evolving needs of both the operational employers of the Force, but also those responsible for Force Generation.

The National Defense Authorization Act for FY 2019 made revisions to Title 10 U.S. Code and provided the Department of Defense direction requiring growth in the DRRS-S program and identified the program's need to maintain the technical currency necessary to quickly meet future challenges associated with providing senior leaders with relevant and timely information. Such initiatives include implementing the complex data structures and visualization tools needed to operationalize the Global Force Management - Data Initiative, and reporting at lower organizational levels consistent with how Forces are employed.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 6: *RDT&E Management Support*	**R-1 Program Element (Number/Name)** PE 0604774D8Z / *Defense Readiness Reporting System (DRRS)*

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	7.167	8.902	12.673	-	12.673
Current President's Budget	7.435	8.878	12.746	-	12.746
Total Adjustments	0.268	-0.024	0.073	-	0.073
• Congressional General Reductions	-	-0.024			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	0.268	-	0.073	-	0.073

Change Summary Explanation

FY 2024 minimal program adjustment to support the Defense Readiness Reporting System - Strategic (DRRS-S).

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0604774D8Z / *Defense Readiness Reporting System (DRRS)*	Project (Number/Name) 774 / *Defense Readiness Reporting System (DRRS)*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
774: *Defense Readiness Reporting System (DRRS)*	67.469	7.435	8.878	12.746	-	12.746	11.508	10.681	10.906	11.136	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This funding supports the Defense Readiness Reporting System - Strategic (DRRS-S), the comprehensive readiness reporting system for the Department of Defense mandated under Title 10 U.S. Code. The system measures, in an objective, accurate, and timely manner, the capability of the armed forces to carry out the National Security Strategy prescribed by the President, as well as the defense planning guidance provided by the Secretary of Defense, and the National Military Strategy prescribed by the Chairman of the Joint Chiefs of Staff. DRRS-S hosts information and applications used to support the Geographic and Functional Combatant Commanders, the Services, Combat Support Agencies, the Joint Staff and the Office of the Secretary of Defense.

DRRS-S is the evolution of readiness reporting to a more comprehensive system, better able to meet the Department's current and future readiness information challenges. Included in these challenges is the expansion in scope of the entities who can, and do report readiness. Shifting from solely resource centric readiness reporting, to a resource informed mission/capabilities based reporting system, oriented towards the National Military Strategy (NMS), makes substantially more complex demands on readiness reporting, but portrays a far more relevant and holistic picture of readiness. DRRS-S allows the Department to assess readiness globally based on the program's integrated ability to project and sustain a mix of constructed forces. Additionally, the challenges associated with sourcing and evaluating the readiness of our forces engaged in on-going real operations mean that force managers need applications that will query the entire Department for suitable, available organizations to meet current needs. DRRS-S continues to incorporate more data and develop more capable functionality to meet the evolving needs of both the operational employers of the Force, but also those responsible for Force Generation.

The National Defense Authorization Act for FY 2019 made revisions to Title 10 U.S. Code directing the Department of Defense to take actions which required growth in the DRRS-S program. The legislation identified the program's need to achieve and maintain the technical currency necessary to quickly meet future challenges associated with providing senior leaders with relevant and timely information. Such initiatives include implementing the complex data structures and visualization tools required to operationalize the Global Force Management - Data Initiative, and reporting at lower organizational levels consistent with how the Department's forces are employed.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Defense Readiness Reporting System	7.435	8.878	12.746
Description: The Defense Readiness Reporting System (DRRS) establishes a capabilities-based, adaptive, near real-time readiness information system for DoD. DRRS measures the readiness of military forces and supporting infrastructure to meet missions and goals assigned by the Secretary of Defense. The realization of DRRS required integrating a host of key technologies to achieve an information system that supports distributed, collaborative, and dynamic readiness reporting in addition			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0604774D8Z / *Defense Readiness Reporting System (DRRS)*	**Project (Number/Name)** 774 / *Defense Readiness Reporting System (DRRS)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
to continuous tool-based assessment. The primary technical goal was the creation of a highly reliable and securely integrated readiness data environment to leverage and extend current readiness information systems. DRRS contains readiness metrics and supporting data for forces and support organizations. ***FY 2023 Plans:*** • Integration into DRRS-S of data sources and the creation of new functionality necessary to support readiness reporting reform efforts. • Refinement of Service-specific input tools for improved performance within the DRRS application. • Continued enhancement of program architecture to make use of hosting technology advancements. • Incorporate new and enhanced functionality required by evolving readiness reporting needs. • Continued GFM DI integration and functionality development. • Replacement of vulnerable & legacy software components. ***FY 2024 Plans:*** • Integration into DRRS-S of data sources and the creation of new functionality necessary to support readiness reporting reform efforts. • Refinement of Service-specific input tools for improved performance within the DRRS application. • Continued enhancement of program architecture to make use of hosting technology advancements. • Incorporate new and enhanced functionality required by evolving readiness reporting needs. • Continued GFM DI integration and functionality development. • Replacement of vulnerable & legacy software components. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The FY 2024 funding increase reflects planned surge in development efforts to support implementation of readiness reporting reforms, temporarily delayed by the consolidation of reporting systems with DRRS-S and reporting policy revision.			
Accomplishments/Planned Programs Subtotals	7.435	8.878	12.746

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 6: *RDT&E Management Support*	**R-1 Program Element (Number/Name)** PE 0604875D8Z / *Joint Systems Architecture Development*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	44.877	7.529	6.610	8.426	0.000	8.426	8.105	7.599	7.596	7.754	Continuing	Continuing
875: *Portfolio Systems Acquisition (PSA)*	33.722	3.780	3.854	4.744	0.000	4.744	4.580	4.325	4.323	4.412	Continuing	Continuing
220: *Electronic Warfare Executive Committee*	11.155	3.749	2.756	3.682	0.000	3.682	3.525	3.274	3.273	3.342	Continuing	Continuing

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

This program supports the Department's Initiative to Build Sustainable and Long-Term Advantage.

The Joint Systems Architecture Development (JSAD) program directly supports the National Defense Strategy, which is to increase lethality in defending the nation against global threats. All efforts within the Office of the Deputy Assistant Secretary of Defense (DASD) for Platform and Weapon Portfolio Management (PWPM) strive to deliver the warfighter the best equipment and systems, and to do so by performing top down, national security strategy-driven capabilities-based planning by fully leveraging Department and acquisition reform initiatives.

Department of Defense (DoD) Instruction 5000.02 and Chairman of the Joint Chiefs of Staff Instruction 3170.01 promulgate capabilities-based requirements and acquisition processes. The JSAD program enables collaborative efforts to achieve these goals with a focus on Major Defense Acquisition Programs (MDAPs). These efforts entail use of Capability Portfolio Management, as well as application of mission engineering to develop mission threads; assessments of joint capability areas and joint integrating concepts, development of system-related data, integrated roadmaps to support acquisition investment decisions, and assessments of MDAPs in a capability area context. Activities in the JSAD project are divided into three areas:(1) capability-based analysis; (2) roadmaps; and (3) support tools and guidance. Capability-based analysis provides analysis of the different technology, functionality, and integration impacts of systems on warfighting capability. Acquisition roadmaps guide systems development and associated investment plans. JSAD support tools and guidance initiatives develop systems data, and tools, exploit modeling and simulation and architecture efforts to improve DoD’s overall assessment capability. These efforts guide the development and improve the testing and fielding of integrated systems of systems in order to achieve Joint mission capabilities across the operational domain to defend against any global threats..

The Department uses enterprise-wide approaches which include:(1) horizontal integration within the Department and unity of effort through greater interagency collaboration; (2) engaging in a coordinated and portfolio-based approach to planning, programming, budgeting and execution; and (3) significant reforms at the governance, management and execution levels. To accomplish this intent, there needs to be a focused goal and concerted emphasis on shifting from systems acquisition to capabilities-based portfolio management (or portfolio systems acquisition). This program enables collaborative efforts to implement the Quadrennial Defense Review (QDR) direction in order to achieve portfolio systems acquisition goals. The program is broken up into two focus areas; Capability Portfolio Management and Reform Initiatives.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 6: *RDT&E Management Support*	**R-1 Program Element (Number/Name)** PE 0604875D8Z / *Joint Systems Architecture Development*

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	7.815	6.610	8.591	-	8.591
Current President's Budget	7.529	6.610	8.426	-	8.426
Total Adjustments	-0.286	0.000	-0.165	-	-0.165
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	-0.286	-	-0.165	-	-0.165

Change Summary Explanation

FY 2024 minimal decrease due to programmatic adjustments.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0604875D8Z / *Joint Systems Architecture Development*	Project (Number/Name) 875 / *Portfolio Systems Acquisition (PSA)*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
875: *Portfolio Systems Acquisition (PSA)*	33.722	3.780	3.854	4.744	0.000	4.744	4.580	4.325	4.323	4.412	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Department continues to use enterprise-wide approaches which are met through: (1) horizontal integration within the Department and unity of effort through greater interagency collaboration; (2) engaging in a coordinated and portfolio-based approach to planning, programming, budgeting and execution; and (3) significant reforms at the governance, management and execution levels. The Adaptive Acquisition Framework Process continues providing acquisition reform, provides the Defense Acquisition Executive and the Service Acquisition Executives alternative acquisition paths for rapid prototyping and rapid acquisition, in an effort to use the fastest, most affordable, and efficient way to deliver new weapon systems capabilities to support the operator while continuing to maintain disciplined systems engineering approaches. The Department will continue improving requirements with mature technologies while it maintains disciplined systems engineering approaches. To accomplish this direction, there needed to be a focused goal and concerted emphasis on shifting from acquisition of individual systems to Capability Portfolio Management. This program enables collaborative efforts to implement the NDR direction outlined above and achieve portfolio systems acquisition goals and to develop and implement acquisition reform initiatives.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Portfolio Systems Acquisition (PSA)	3.780	3.854	4.744
Description: The program is broken up into two focus areas, Portfolio Management and Reform Initiatives, and consolidates work previously performed under various other Program Elements			
FY 2023 Plans: - Further develop Capability Portfolio Management practices, including supporting Mission Engineering principles in an effort to make both practices more widespread in use through the Office of the Secretary of Defense, the Joint Staff, and the services. - Further develop portfolio management of programs falling within the Air, Ground, Maritime and Electromagnetic Warfare mission areas, to include application of mission engineering analysis of kill chains. - Identify portfolio and program synergies, reduce duplication, and identify opportunities for cost savings. - Provide technical expertise in support of warfare area portfolios.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0604875D8Z / *Joint Systems Architecture Development*	**Project (Number/Name)** 875 / *Portfolio Systems Acquisition (PSA)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
- Asses progress of program management initiatives and continue support to a variety of certification and qualification standards activities. - Update roadmaps and, where appropriate, generate new roadmaps to guide investments in critical areas (e.g., future vertical lift, unmanned systems, ground vehicles, weapons/munitions, and Integrated Air and Missile Defense (IAMD)). - Analytical support for the ground combat vehicle portfolio. - Analytical support for the naval warfare portfolio. - Analytical support for the munitions process, from requirements generation to demilitarization. - Further implement Mission Engineering practices within A&S to evaluate warfighter priority mission areas with a rigorous, data-driven analytic process to determine how systems work together in an operationally relevant environment and identify ways to integrate technology and systems to provide affordable capability solutions for our warfighters. - Respond to Government Accountability Office inquiries. - Respond to DOD Inspector General inquiries. - Review Council on Foreign Investment in the United States cases. - Reshape focus and drive solution-oriented outcomes and decisions in all senior-level leadership meetings for the F-35 program to include Executive Steering Groups and other information and decision forums. - Collaborate and shape outcomes across all Programming and Budget Review activities such as Strategic Portfolio Reviews, Issue Teams, Competitive Area Studies. - Provide support and participate, as needed, in the Joint Capabilities Integration and Development process, to include functional warfare working groups, Functional Capabilities Boards, Joint Capabilities Boards and Joint Requirements Oversight Council. - Lead, participate in, and provide support to the Strategic Portfolio Reviews and assigned issue paper teams. - Provide support to the Deputy's Management Action Group and shape outcomes through analytical efforts.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0604875D8Z / *Joint Systems Architecture Development*	**Project (Number/Name)** 875 / *Portfolio Systems Acquisition (PSA)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
- Provide support to the Secretary's Weekly Priority Review. - Provide support to the 3 Star Programmer's meetings. ***FY 2024 Plans:*** - Continue efforts to further develop Capability Portfolio Management practices, including supporting Mission Engineering principles in an effort to make both practices more widespread in use through the Office of the Secretary of Defense, the Joint Staff, and the services. - Further develop portfolio management of programs falling within the Air, Ground, Maritime and Electromagnetic Warfare mission areas, to include application of mission engineering analysis of kill chains. - Continue to identify portfolio and program synergies, reduce duplication, and identify opportunities for cost savings. - Continue to provide technical expertise in support of warfare area portfolios. - Continue to assess progress of program management initiatives and continue support to a variety of certification and qualification standards activities. - Continue to update roadmaps and, where appropriate, generate new roadmaps to guide investments in critical areas (e.g., future vertical lift, unmanned systems, ground vehicles, weapons/munitions, and Integrated Air and Missile Defense (IAMD)). - Continue analytical support for the ground combat vehicle portfolio. - Continue analytical support for the naval warfare portfolio. - Continue analytical support for the munitions process, from requirements generation to demilitarization. - Further implement Mission Engineering practices within A&S to evaluate warfighter priority mission areas with a rigorous, data-driven analytic process to determine how systems work together in an operationally relevant environment and identify ways to integrate technology and systems to provide affordable capability solutions for our warfighters. - Respond to Government Accountability Office inquiries.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0604875D8Z / *Joint Systems Architecture Development*	**Project (Number/Name)** 875 / *Portfolio Systems Acquisition (PSA)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
- Respond to DOD Inspector General inquiries. - Review Council on Foreign Investment in the United States cases. - Continue to reshape focus and drive solution-oriented outcomes and decisions in all senior-level leadership meetings for the F-35 program to include Executive Steering Groups and other information and decision forums. - Continue to collaborate and shape outcomes across all Programming and Budget Review activities such as Strategic Portfolio Reviews, Issue Teams, Competitive Area Studies. - Continue to provide support and participate, as needed, in the Joint Capabilities Integration and Development process, to include functional warfare working groups, Functional Capabilities Boards, Joint Capabilities Boards and Joint Requirements Oversight Council. - Continue to lead, participate in, and provide support to the Strategic Portfolio Reviews and assigned issue paper teams. - Continue to provide support to the Deputy's Management Action Group and shape outcomes through analytical efforts. - Continue to provide support to the Secretary’s Weekly Priority Review. - Continue to provide support to the 3 Star Programmer's meetings. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The increase from FY23 to FY24 is a result of re-phasing due to underexecution. Funds were deducted from FY23 and re-phased to FY24 and FY25.			
Accomplishments/Planned Programs Subtotals	3.780	3.854	4.744

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0604875D8Z / *Joint Systems Architecture Development*	Project (Number/Name) 220 / *Electronic Warfare Executive Committee*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
220: *Electronic Warfare Executive Committee*	11.155	3.749	2.756	3.682	0.000	3.682	3.525	3.274	3.273	3.342	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Electromagnetic Warfare (EW) Executive Committee (EXCOM) - co-chaired by the Under Secretary of Defense for Acquisition & Sustainment (USD(A&S)), and the Vice Chairman of the Joint Chiefs of Staff (VCJCS) - is tasked to provide senior oversight, coordination, budget/capability harmonization, and advice on EW matters to the Secretary of Defense, Deputy Secretary of Defense, and the Deputy's Management Action Group. This program develops, maintains, and implements the overarching DoD EW Strategy and Implementation Plan to achieve Electromagnetic Spectrum superiority. This program provides technical analyses, technology assessments, capability and capability gap identification, intelligence and threat evaluations to inform DoD EW requirements, acquisition programs, and investment decisions. This program also advances EW needs in modeling, simulation, test, exercises, experimentation, and training.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Electronic Warfare Executive Committee	3.749	2.756	3.682
Description: Funds will be used to conduct analytic assessments of fielded and planned U.S. EW capabilities, threat analysis, and physics-based modeling and simulation of electronic warfare capabilities to support the Deputy Secretary of Defense-directed EW, EXCOMM, and provide support to the EMSO CFT. ***FY 2023 Plans:*** - Mission engineering analyses and integration to incorporate soft kill and Electromagnetic Warfare effects and weapon systems in critical mission thread areas in order to meet evolving threats. - Develop plans and conduct DOTMLPF-P initiatives to implement the Department's EW strategy. - Perform the necessary analytic underpinning to develop and field advanced EW capabilities, including EW manning, training, exercises, modeling and simulation. - Identify opportunities for Cross-Service EW collaboration, including EW research and development, acquisition programs, multi-purpose hardware and software, and other initiatives to increase EW investment efficiencies and promote interoperability. ***FY 2024 Plans:*** - Continue mission engineering analyses and integration to incorporate soft kill and Electromagnetic Warfare effects and weapon systems in critical mission thread areas in order to meet evolving threats.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0604875D8Z / *Joint Systems Architecture Development*	**Project (Number/Name)** 220 / *Electronic Warfare Executive Committee*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
- Continue to develop plans and conduct DOTMLPF-P initiatives to implement the Department's EW strategy. - Continue to perform the necessary analytic underpinning to develop and field advanced EW capabilities, including EW manning, training, exercises, modeling and simulation. - Continue to identify opportunities for Cross-Service EW collaboration, including EW research and development, acquisition programs, multi-purpose hardware and software, and other initiatives to increase EW investment efficiencies and promote interoperability. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The increase from FY23 to FY24 is a result of re-phasing due to underexecution. Funds were deducted from FY23 and re-phased to FY24 and FY25.			
Accomplishments/Planned Programs Subtotals	3.749	2.756	3.682

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 6: *RDT&E Management Support*	**R-1 Program Element (Number/Name)** PE 0604940D8Z / *Central Test and Evaluation Investment Program (CTEIP)*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	2,422.572	994.683	1,267.535	833.792	-	833.792	788.960	550.008	457.189	466.333	-	-
940: *Central Test and Evaluation Investment Program (CTEIP)*	2,422.572	994.683	1,267.535	833.792	-	833.792	788.960	550.008	457.189	466.333	-	-

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

This program supports the Department's initiatives to defend the homeland, deter strategic attacks and aggression while prevailing in conflict, building enduring advantage, and building a resilient Joint Force and defense ecosystem. Since its inception in FY 1990, Central Test and Evaluation Investment Program (CTEIP) provides the development of critically needed, high-priority Test and Evaluation (T&E) capabilities for joint/multi-Service requirements. CTEIP investments address strategic requirements related to Hypersonics, Directed Energy, Cyber, Electronic Warfare, Nuclear Effects, Space, Autonomy, and Multi-Domain Operations. Other Investments in test infrastructure align with objectives in the Strategic Plan for DoD T&E Resources for high priority test needs and common range Infrastructure. The CTEIP uses a corporate investment approach to combine T&E needs from Service, Defense, and other Government agencies in order to maximize opportunities for joint efforts and avoid unwarranted duplication of test capabilities. CTEIP evaluates and selects for execution, proposals that align to the NDS and USD(R&E) priorities, provide the greatest return on investment, make efficient use of limited test resources, leverage Service investment, and promote joint solutions to fill test capability gaps. CTEIP provides enterprise solutions that benefit the whole Department. These investments are needed so test capabilities keep pace with U.S. and adversary technical advances as well as, with quickly changing threats.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	994.151	819.358	834.052	-	834.052
Current President's Budget	994.683	1,267.535	833.792	-	833.792
Total Adjustments	0.532	448.177	-0.260	-	-0.260
• Congressional General Reductions	-	-0.423			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	448.600			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	0.532	-	-0.260	-	-0.260

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 6: *RDT&E Management Support*	**R-1 Program Element (Number/Name)** PE 0604940D8Z *I Central Test and Evaluation Investment Program (CTEIP)*

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2022	FY 2023
Project: 940: *Central Test and Evaluation Investment Program (CTEIP)*		
Congressional Add: *Central Test and Evaluation Investment Development (CTEIP)*	-	448.600
Congressional Add Subtotals for Project: 940	-	448.600
Congressional Add Totals for all Projects	-	448.600

Change Summary Explanation

The FY 2023 increase of $448.177 million is comprised of a realignment of $0.423 million for other Departmental and administrative priorities and a Congressional add of $448.600 million that will provide enhanced capabilities and increased throughput to meet increasing test demand. The $448.600 million provides $150M for hypersonic test facility modular assemblies, $98.200 million for 4-foot multi-sonic wind tunnel, $10.300 million for modeling and simulation of hypersonic test facilities, $30.000 million for hypersonic test facilities, $10.100 million for hypersonic ground testing capability, $53.000 million for hypersonics high speed test track, $52.000 million for hypersonics scramjet wind tunnel, $54.000 million for hypersonics aeroshell test facility, and $6.000 million for a spectrum superiority testbed.

The FY 2024 decrease of $0.260 million is a realignment for other Departmental and administrative priorities.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0604940D8Z / *Central Test and Evaluation Investment Program (CTEIP)*	Project (Number/Name) 940 / *Central Test and Evaluation Investment Program (CTEIP)*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
940: *Central Test and Evaluation Investment Program (CTEIP)*	2,422.572	994.683	1,267.535	833.792	-	833.792	788.960	550.008	457.189	466.333	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Central Test and Evaluation Investment Program (CTEIP) develops critically needed, high-priority Test and Evaluation (T&E) capabilities for joint/multi-Service requirements. CTEIP efforts include Hypersonics, Directed Energy, Cyber, Electronic Warfare, Nuclear Effects, Space, Autonomy and Multi-Domain Operations. Other Investments in test infrastructure align with objectives in the Strategic Plan for DoD T&E Resources for high priority test needs and common range Infrastructure.

The CTEIP uses a corporate investment approach to combine T&E needs from Service, Defense, and other Government agencies in order to maximize opportunities for joint efforts and avoid unwarranted duplication of test capabilities. CTEIP evaluates and selects for execution, proposals that align to the NDS and USD(R&E) priorities, provide the greatest return on investment, make efficient use of limited test resources, leverage Service investment; and promote joint solutions to fill test capability gaps. CTEIP provides enterprise solutions that benefit the Department as a whole.

The CTEIP provides critically needed T&E investments which align to USD(R&E) priorities and the Strategic Plan for DoD T&E Resources. These investments are needed so that test capabilities keep pace with U.S. and adversary technical advances as well as with quickly changing threats. The CTEIP includes special studies, analyses, project improvements, quick reaction efforts and strategic planning related to test capabilities and infrastructure. CTEIP investments increase efficiency and reduce the cost of testing on DoD's major ranges and test facilities. CTEIP continues to serve as the focal point for fostering common architectures throughout the test and training communities to enhance the sharing of resources and linkages between test and training ranges.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Central Test and Evaluation Investment Program	994.683	818.935	833.792
Description: -Develop autonomous systems test capability to provide digital robotic and autonomous systems integrated virtual environment for testing DoD autonomous ground vehicle systems and an open-air range environment capability to test full scale autonomous vehicles. -Develop autonomous teaming for a suite of capabilities furthering UAS systems integration into controlled airspace and the test tools for integrating manned-unmanned teaming between ranges. Demonstration at Pax River, MD has been successful. Initial capabilities will be delivered to NAS Pax River, MD, Redstone Arsenal, AL and Edwards AFB, CA. -Develop counter UAS lethality diagnostics to provide a shielded enclosure for flight controllers, lethality and HPM diagnostics for cUAS operations.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0604940D8Z / *Central Test and Evaluation Investment Program (CTEIP)*	**Project (Number/Name)** 940 / *Central Test and Evaluation Investment Program (CTEIP)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
-Counter UAS effort to develop a prototype high-fidelity X-band radar for tracking cUAS capabilities against commercially available small UAS. This provides a Common Operating Picture system for real-time awareness, data collection and analysis. -Countering UAS jamming operations to develop an open-air capability for creating a mission relevant RF test environment for testing CUAS systems at NAWCAD Webster Field, MD. -Naval autonomous systems test capabilities will establish an M&S capability to test the performance of Naval surface ship autonomous systems software. -Advanced optical range tracking systems is developing the next generation suite of optical tracking systems to increase performance, reduce costs and establish secure reliable optical tracking capability on DoD open-air ranges. -A short-wave infrared zoom lens develops a short-wave IR metric zoom lens to be mounted on multiple DoD tracking systems to track, determine effects phenomenology, and TSPI of aerial directed energy targets at night and in obscuration. -Vehicle real-time test instrumentation will reduce the size, weight and power for vehicle test data collection by replacing three unique data collectors with one modular, scalable data collector with increased storage capacity. This capability supported Abrams M1A2 System Enhancement Package (SEP) V3 and Bradley M2/M3A4 FOT&E and will support future vehicle tests. -A hybrid tracking system will develop a modular system of sensors to provide a range of capabilities for providing time, space position information, in GPS denied environments, for aircraft and weapon testing. -The recent joint instrumentation suite upgrade will acquire a missile attitude instrument suite used to capture 6-DOF TSPI and validate RF and IR missile models, while meeting requirements associated with OCONUS transport and operation. -A littoral electromagnetic range will establish a secure, well-instrumented coastal test environment at NIWC, San Diego to validate emerging commercial and government electromagnetic systems and tactics. -A maritime tomahawk upgrade provides an additional telemetry frequency to Block V Tomahawk test assets enabling range safety control and telemetry in support of stream raid/simultaneous engagements.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0604940D8Z / *Central Test and Evaluation Investment Program (CTEIP)*	**Project (Number/Name)** 940 / *Central Test and Evaluation Investment Program (CTEIP)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
-Multi-spectral data collection develops a test capability for T&E of integrated multi-spectral threat warning receivers and infrared countermeasures against complex multi-spectral threats. This effort will field co-located RF and IR mobile threat simulators and a portable C2 node for realistic threat presentation to engage the SUT. -An over water location and impact tracking system develops an open ocean weapons impact scoring system to provide persistent, relocatable range capability for beyond line of sight, high precision weapon scoring and range surveillance. -Directed Energy efforts include a high speed data recorder which develops a ruggedized, shielded, man-portable high-speed data recording system for HPM directed energy testing; a radiometrically-device Instrument for Laser Evaluation develops a diagnostic system for confirming performance of current and future HEL systems; a remote target sensor which develops a system capable of measuring HPM effects on internal components attacked by HPM systems; an S-Band threat source which develops a frequency agile S-band HPM threat source for MIL-STD 464C vulnerability testing; a tethered HPM recorder and electronic attack target effort which accelerates development of instrumentation necessary for testing UAS vulnerabilities in an HPM threat environment; and a system placement analysis capability which upgrades existing capability to provide 3D outdoor effects test planning needed to support testing of Counter UAS HPM systems. -HPM capabilities being developed include a portable electronic field sensor that covers a wide area measurement system to characterize the HPM E-field and test blue HPM effectiveness against airborne threats; a VHF threat simulator which develops a test source to support wideband VHF MIL STD 464C testing of a full-sized target such as an aircraft. -Closed loop PESA simulator develops two transportable, closed-loop threat radar systems replicating the performance of a classified, widely fielded long-range surface-to-air missile system. -Direct injection of electro optical, infra red project will develop test capability in which EO/IR imagery is directly injected into the systems' core computer via sensor emulators. -Provide an attack drone for Army T&E develops an electronic attack package for BQM-167 drone target that can target multiple radar systems under test (SUT)s at multiple frequency bands. -Develop IADS enhancements with networked threat emulation to provide a comprehensive threat-representative IADS capability at Electronic Combat Range, China Lake and other facilities providing four threat-representative Command Posts to existing EW capabilities.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0604940D8Z / *Central Test and Evaluation Investment Program (CTEIP)*	**Project (Number/Name)** 940 / *Central Test and Evaluation Investment Program (CTEIP)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
-Interactive CNI RF environment simulator will address ISTF shortfalls in CNI RF testing on modern aircrafts by expanding upon current ISTF capability to provide an operationally relevant ground test environment. -An electronic warfare cyber techniques, effects and characteristics project development provides an RF and cyber effects test environment for Electromagnetic Maneuver Warfare. -Electronic Warfare airborne instrumentation which will provide interoperability was initiated to maximize airborne instrumentation interoperability between the CTEIP developed Common Range Integrated Instrumentation Systems and Air Force/Navy Tactical Combat Training System II, and established a blueprint merging baselines into a common system. Development will continue from FY 2021-2026 which includes upgrading CRIIS encryption to NSA requirements as well as data link and ground software upgrades to increase interoperability between CRIIS and TCTS-II on test and training ranges. -Joint EW DIADS integration effort upgrades DIADS M&S capacities to support expansion of EW testing across western test ranges. -Electronic warfare effort for open air battle tracking will establish an enterprise architecture and approach to implement multi-range aircraft instrumentation interoperability and network connectivity to meet test and training needs for air warfare missions. This includes upgrading aircraft instrumentation and multi-range aircraft compatibility and simulated effects needed to provide enlarged, realistic, interoperable battlespace as aircraft transit multiple ranges during a large-scale test and training scenario. -Air-to-Ground radar environment will develop capabilities for testing high-density air-to-air, air-to-ground, and advanced signals in an ISTF environment. The radar environment simulator will provide digital RF memory devices that capture, store, delay, scale, and return radar signals to the radar under test. -A reconfigurable closed-loop threat simulator will provide a means for quickly evaluating single and multi-aircraft EA/EP effectiveness and survivability against a dense RF environment of emergent threat systems. Integrated closed loop radar simulators of modern threats are required to fully stress the SUTs in a threat representative environment. -Provide a next-generation EW environment generator to enable multi-ship correlation of simulated signals to a specific emitter or emitters. -Hypersonic test capability improvement to develop a clean air, variable Mach ground test capability for DT&E of full-scale hypersonic boost glide and scramjet weapon systems. Procurement and detailed design continued in FY 2021.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0604940D8Z / *Central Test and Evaluation Investment Program (CTEIP)*	**Project (Number/Name)** 940 / *Central Test and Evaluation Investment Program (CTEIP)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
-Develop a mid-pressure arc heater to expand the DoD H2 Hypersonic Test Facility to provide higher enthalpy at the mid-pressure altitudes to enable ground testing of Prompt Global Strike, Maneuvering Reentry Vehicles, and SCRamJet components such as nose cones, fins, and other leading-edge surfaces. -Develop a next generation aeroshell test capability arc heater facility that increases DoD's capacity to conduct aerothermal materials testing in support of hypersonic missiles, ballistic missiles, and other high altitude ballistic/maneuvering munitions. The system will more than double the annual test capacity. -Weather effects upgrades provide the current test track the ability to provide a small-scale rain and snow erosion test capability to validate vehicle structural design. -Develop a 6 DoF vibration tables for HEL systems mounted on ships, ground vehicles, and aircraft. -Develop a high pressure air compressor to provide additional air capability at AEDC to reduce recharge time resulting in more test runs per week at the Aerodynamic and Propulsion Test Unit and J5. -Develop an improved sled track rocket that provides a new modular rocket propulsion system for the three DoD high speed test tracks including an improved capability to ground test full scale components at hypersonic speeds. -Provide a scoring system (a radar on a raft) motion compensation table to develop a radar pedestal motion compensation mechanism and test and verification system to support weapon lethality testing in broad open ocean environments. -A Mach 7 test capability at the AEDC tunnel 9 will be returned to service to provide a full-scale aerothermal structural capability for seeker aperture development. -M&S effort to support boost glide Thermal analysis software upgrades, provides a tool set for improving capabilities for predicting aerothermal and ablation response to high speed, high temperature flow in ground and flight test environments. -M&S enhancements for weather effects develops advanced material response models validated with ground test data to predict weather erosion in flight. -Provide reconfigurable RF target simulator upgrades an Eglin AFB facility to test prototype sensors in a simulated hypersonic target and scene environment.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0604940D8Z / *Central Test and Evaluation Investment Program (CTEIP)*	**Project (Number/Name)** 940 / *Central Test and Evaluation Investment Program (CTEIP)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
-Provide non-ballistic radar tracking algorithms and the supporting infrastructure to track non-ballistic hypersonic vehicles for Reagan Test Site. -Reagan Test Site Kiernan Reentry Measurements Site Technology Refresh will refresh KREMS Radar hardware and software systems to increase system functionality and system capability. -Accelerated vehicle durability testing develops a multi-axle vehicle chassis simulator and a drive train simulator to test heavy 4 and 5 axle vehicle performance and reliability. -This effort is comprised of eleven development efforts providing upgraded and new RCS measurement capabilities to measure and evaluate advanced low observable technologies in increasingly complex and cluttered environments. -A scene projector effort will improve high fidelity, high temperature scene protectors for installed system and hardware in the loop laboratory testing of sensors and seekers for high speed weapons and missile engagements. -Develop a dense plasma focus capability to provide an ultra-short pulse simulation capability to test the vulnerability of missile components to very short, intense bursts of neutrons from a fusion-based nuclear weapon. -Fast burst reactor upgrade develops new high purity, high enriched uranium rings and safety blocks for the fast burst reactor at White Sands Missile Range, NM to conduct neutron vulnerability testing of missile and other components. -Heavy ion test facility upgrade for Single Event Effects (SEE) testing. A Single Event Effects (SEE) adds an additional SEE Beamline to increase capacity of testing natural space radiation. -Upgrade a survivability and vulnerability rarefaction waveform eliminator to provide an improved louver system for the large blast simulator to prevent debris hitting the test object. -Upgrade a survivability and vulnerability Xenon lamp facility to provide an improved control system and subsonic wind capability for this system. -Upgrade an X-Ray simulator for test of nuclear survivability and replaces three DoD X-ray simulators that measure the susceptibility of missile components to damage from high dose warm and cold x-rays experienced in space.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0604940D8Z / *Central Test and Evaluation Investment Program (CTEIP)*	**Project (Number/Name)** 940 / *Central Test and Evaluation Investment Program (CTEIP)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
-Develop an advanced communication threat testing uplink capability that provides EW threat representative uplink jamming system for T&E of satellite system responsiveness against threat systems. -Develop a threat representative torpedo that will tactically and acoustically emulates threat torpedoes that are not currently available for surface or sub-surface ship testing. -IR and RF threat M&S upgrades 10 RF and 10 IR authoritative Intelligence Community missile models supporting the DoD Threat Model Analysis Program (TMAP), Enhanced Missile SIGnature (EMSIG) and other high-fidelity seeker models. -Provide a maritime survivability library and threat M&S tool which evaluates the lethality of emerging anti-ship weapons, using artificial intelligence/machine learning techniques. -Multispectral target simulator and emitter upgrades modernizes IR missile plume simulator emitters to meet current and future systems' fidelity requirements, as well as improve the simulators' availability and sustainability replacing obsolete equipment and augmenting the available standby emitters. -Provide a towed array threat emulator that is threat representation and will provide a modular towed array/architecture to add to the Submarine Launched Countermeasure Emulator for full duplex submarine countermeasure testing. -Provide a laser optical simulator – for high altitude that will develop a dual laser threat simulation capability to evaluate space-based ISR sensors against surrogate ground and air based laser threats. -Develop a threat representative multi-modal global navigation satellite system jammer to provide denial and deception jamming of PNT information during operational test and training. -Complete the development of the Common Operational Picture system for management of Threat Force assets. -Provide a threat representative Electronic Attack capability against 5G systems for denial, degradation and deception of service attacks during operational test and training. -Provide an airborne towed plume simulator that will provide an infrared threat missile plume-simulator to support rotary wing Aircraft Survivability. -Cyber Test Tools:			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0604940D8Z / *Central Test and Evaluation Investment Program (CTEIP)*	**Project (Number/Name)** 940 / *Central Test and Evaluation Investment Program (CTEIP)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
- Develop an avionics test bed providing a common framework to allow embedded avionics components to engage in an error-free state while component level cybersecurity T&E is performed. - Automate the construction of harnesses that the fuzzer can then use to launch and feed inputs to a Linux based system under test. - This tool develops a test bench and cyber tools to assess the cyber vulnerabilities of the main communication and control channels and data links. - Network system integration and test environment for Cyber Test Capabilities expands an existing application to include cyber capabilities to monitor, check for, alert on, identify messaging, and identify the source of the messaging that is modified, or indicates a modification “tip-off” capability. - Develop a non-IP cybersecurity tool which will provide a Non-IP threat attack tool suite for Navy vessel cyber testing. - Test tool for unencrypted datalinks develops a wideband RF Cybersecurity test tool for exploiting unencrypted Radio Frequency datalinks by capturing datalink information and generating RF messages in real time. - Test tool for high speed bus threat for a fiber channel test tool to support a variety of additional attacks focused on the Fiber Channel architecture. ***FY 2023 Plans:*** -Joint EW Dominance capability to acquire multiple advanced electronic warfare threat simulators to faithfully represent modern, complex EW test scenarios and provide necessary threat density. Deliver and integrate threat representative open and closed loop capabilities at the Joint Pacific Alaska Range Complex, Nellis Test and Training Range, China Lake, and Point Mugu to enable evaluation of advanced airborne electronic attack platforms and electronic support aircraft including F-35, EA-18G, F/A-18, NGJ, B-1, B-2, and B-21. -Capability to test and evaluate vulnerability and susceptibility of microelectronics to effects encountered in nuclear and space environments. Test capability will develop and field instrumentation to simulate realistic neutron and gamma environments in a controlled environment. -Transportable instrumentation suite to assess lethality and determine terminal area scoring location and profile of hypersonic weapons in the broad open area ocean. Capability will be capable of operating in both Pacific and Atlantic oceans. -Develop and build next generation sled track at Holloman AFB to enable controlled, repeatable, and recoverable testing of hypersonic weapons (Mach 5+). Capability will install over 9 miles of 3-rail sled track and will extend current water trays to enable safe recovery of test vehicles. Effort will also make necessary spot repairs at China Lake SNORT test track and Eglin high speed test track to ensure additional capacity for all weapon testing.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0604940D8Z / *Central Test and Evaluation Investment Program (CTEIP)*	**Project (Number/Name)** 940 / *Central Test and Evaluation Investment Program (CTEIP)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
-Secure Telemetry and High-bandwidth Data Processing will enable near-real time telemetry collection and data distribution for hypersonic weapon endgame testing. SATCOM and ground-based TM networks will be installed at Reagan Test Site (Kwajalein Atoll) as well fiber connectivity between data collection sites at individual islands around the atoll. Capability will enable immediate collection and processing of data from the test vehicle and will result in vastly improved turnaround time for test results. -Continue development of DoD Microelectronics Ecosystem, hardening our next generation of microelectronics for survivability against nuclear effects (neutrons, x-ray, gamma, etc.) on the battlefield, and accelerate the testing of microelectronics used in strategic systems and space systems. -Continue development and begin fielding of Flight Test Instrumentation and Terminal Area Scoring for broad ocean area precision scoring capabilities to test lethality and impact location of nuclear modernization systems (Ground Based Strategic Deterrent, Trident, etc.). -Continue to upgrade High Speed Test Track capabilities to realistically test end-game missile lethality (seeker, warhead detonation, intercept effectiveness, etc.) at DoD high speed test tracks which are located at Holloman, China Lake, and Eglin. -Continue to develop Secure Telemetry and High Bandwidth Data Processing thru improvement of cybersecurity and the acceleration of test analysis capability at numerous long-range missile test ranges to support faster acquisition of hypersonic and nuclear modernization systems. ***FY 2024 Plans:*** -Continuing development of Joint Electronic Warfare Dominance Test Infrastructure by acquiring multiple threat-representative wideband radars to adequately test and assess our fifth-generation aircraft in a contested environment. -Continue development of DoD Microelectronics Ecosystem, hardening our next generation of microelectronics for survivability against nuclear effects (neutrons, x-ray, gamma, etc.) on the battlefield, and accelerate the testing of microelectronics used in strategic systems and space systems. -Continue development and begin fielding of Flight Test Instrumentation and Terminal Area Scoring for broad ocean area precision scoring capabilities to test lethality and impact location of nuclear modernization systems (Ground Based Strategic Deterrent, Trident, etc.). -Continue to upgrade High Speed Test Track capabilities to realistically test end-game missile lethality (seeker, warhead detonation, intercept effectiveness, etc.) at DoD high speed test tracks which are located at Holloman, China Lake, and Eglin.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0604940D8Z / *Central Test and Evaluation Investment Program (CTEIP)*	**Project (Number/Name)** 940 / *Central Test and Evaluation Investment Program (CTEIP)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
-Continue to develop Secure Telemetry and High Bandwidth Data Processing thru improvement of cybersecurity and the acceleration of test analysis capability at numerous long-range missile test ranges to support faster acquisition of hypersonic and nuclear modernization systems. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2024 increase to support high speed test tracks..			
Accomplishments/Planned Programs Subtotals	994.683	818.935	833.792

	FY 2022	FY 2023
Congressional Add: Central Test and Evaluation Investment Development (CTEIP)	-	448.600
FY 2023 Plans: Details are classified.		
Congressional Adds Subtotals	-	448.600

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 6: *RDT&E Management Support*	**R-1 Program Element (Number/Name)** PE 0604942D8Z *I Assessments Evaluations*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	47.298	22.392	4.607	5.810	-	5.810	5.802	5.729	5.700	5.772	Continuing	Continuing
822: *Director, Special Programs (DSP)*	11.661	9.166	4.607	5.810	-	5.810	5.802	5.729	5.700	5.772	Continuing	Continuing
823: *National Assessment Group (NAG)*	35.637	13.226	0.000	0.000	-	0.000	0.000	0.000	0.000	-	Continuing	Continuing

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

This program is reported in accordance with Title 10, United States Code, Section 119(a)(1) in the Special Access Program Annual Report to Congress. For further information, please contact the Director of Special Programs, OUSD(A&S)/DSP.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	17.879	4.607	4.524	-	4.524
Current President's Budget	22.392	4.607	5.810	-	5.810
Total Adjustments	4.513	0.000	1.286	-	1.286
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	4.513	-	1.286	-	1.286

Change Summary Explanation

FY 2023 and FY 2024 Increase is internal adjustments for a classified program.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense											Date: March 2023	
Appropriation/Budget Activity 0400 / 6					R-1 Program Element (Number/Name) PE 0604942D8Z / *Assessments Evaluations*				Project (Number/Name) 822 / *Director, Special Programs (DSP)*			
COST ($ in Millions)	**Prior Years**	**FY 2022**	**FY 2023**	**FY 2024 Base**	**FY 2024 OCO**	**FY 2024 Total**	**FY 2025**	**FY 2026**	**FY 2027**	**FY 2028**	**Cost To Complete**	**Total Cost**
822: *Director, Special Programs (DSP)*	11.661	9.166	4.607	5.810	-	5.810	5.802	5.729	5.700	5.772	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Classified Program.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Director, Special Program	9.166	4.607	5.810
Description: Detailed Information is Classified. ***FY 2023 Plans:*** Detailed information is Classified. ***FY 2024 Plans:*** Detailed Information is Classified. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2024 increase is to support classified program.			
Accomplishments/Planned Programs Subtotals	9.166	4.607	5.810

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0604942D8Z / *Assessments Evaluations*	Project (Number/Name) 823 / *National Assessment Group (NAG)*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
823: *National Assessment Group (NAG)*	35.637	13.226	0.000	0.000	-	0.000	0.000	0.000	0.000	-	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Classified program.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: National Assessment Group (NAG) ***Description:*** Detailed information is Classified.	13.226	-	-
Accomplishments/Planned Programs Subtotals	13.226	-	-

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 6: *RDT&E Management Support*	**R-1 Program Element (Number/Name)** PE 0605100D8Z / *Joint Mission Environment Test Capability (JMETC)*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	510.188	70.217	189.199	187.421	-	187.421	195.786	198.188	195.534	199.445	-	-
087: *JMETC Distributed Test*	243.777	16.056	53.403	114.899	-	114.899	124.752	125.855	122.255	124.700	-	-
088: *JMETC National Cyber Range (NCR) Complex*	266.411	54.161	135.796	72.522	-	72.522	71.034	72.333	73.279	74.745	-	-

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

This program supports the Department's initiatives to defend the homeland, deter strategic attacks and aggression while prevailing in conflict, building enduring advantage, and building a resilient Joint Force and defense ecosystem. The Joint Mission Environment Test Capability (JMETC) program provides a Department of Defense (DoD) enterprise-wide test capability to support system-to-system interoperability testing, mission-level environment testing, and cyber event operations, including cyber testing, cyber training, cyber experimentation, and cyber mission rehearsal. The JMETC program implements the infrastructure capabilities defined in the DoD “Testing in a Joint Environment Roadmap” to provide acquisition program managers a robust nation-wide capability to “test like we fight”. The JMETC program provides a persistent, distributed test and evaluation (T&E) capability that supports system development to measure and improve interoperability performance and cyber resiliency, which otherwise would not be readily available to Service/Component acquisition programs. The JMETC program is funded within the Research, Development, Test and Evaluation (RDT&E) Management Support Budget Activity because it provides test capability in support of RDT&E programs. By linking distributed facilities, as well as providing the necessary tools, services and subject matter expertise, the JMETC program allows acquisition programs to efficiently evaluate their warfighting capability in a realistic joint mission environment. The JMETC program has been aligned to advance the National Defense Strategy (NDS), to test the development of resilient, survivable, federated networks and information ecosystems from the tactical level up to strategic planning, as well as test and assess cyber defenses, building a more lethal force.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 6: *RDT&E Management Support*	**R-1 Program Element (Number/Name)** PE 0605100D8Z *I Joint Mission Environment Test Capability (JMETC)*

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	71.410	126.079	187.421	-	187.421
Current President's Budget	70.217	189.199	187.421	-	187.421
Total Adjustments	-1.193	63.120	0.000	-	0.000
• Congressional General Reductions	-	-0.380			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	63.500			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustment	-1.193	-	-	-	-

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2022	FY 2023
Project: 088: *JMETC National Cyber Range (NCR) Complex*		
Congressional Add: *Data Management/Big Data Analytics*	-	60.000
Congressional Add: *Artiticial Intelligence Hub Infrastructure*	-	3.500
Congressional Add Subtotals for Project: 088	-	63.500
Congressional Add Totals for all Projects	-	63.500

Change Summary Explanation

The FY 2023 increase of $63.120 million is comprised of a realignment of $-0.380 for higher departmental priorities and a congressional add of $63.500 million to accelerate implementation and testing of Joint All Domain Command and Control (JADC2) and the testing of kill webs and testing the cyber vulnerabilities and integration of trusted artificial intelligence (AI) and autonomous systems in partnership with the Chief Digital and Artificial Intelligence Office (CDAO).

FY 2024 no funding change.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605100D8Z / *Joint Mission Environment Test Capability (JMETC)*	Project (Number/Name) 087 / *JMETC Distributed Test*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
087: *JMETC Distributed Test*	243.777	16.056	53.403	114.899	-	114.899	124.752	125.855	122.255	124.700	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Joint Mission Environment Test Capability (JMETC) program provides a Department of Defense (DoD) enterprise-wide test capability to support system-to-system interoperability testing, mission-level environment testing, and cyber event operations, including cyber testing, cyber training, cyber experimentation, and cyber mission rehearsal. The JMETC program implements the infrastructure capabilities defined in the DoD "Testing in a Joint Environment Roadmap" to provide acquisition program managers a robust nation-wide capability to "test like we fight". The JMETC program provides a persistent, distributed test and evaluation (T&E) capability that supports system development to measure and improve interoperability performance and cyber resiliency, which otherwise would not be readily available to Service/Component acquisition programs. The JMETC program is funded within the Research, Development, Test and Evaluation (RDT&E) Management Support Budget Activity because it provides test capability in support of RDT&E programs. By linking distributed facilities, as well as providing the necessary tools, services and subject matter expertise, the JMETC program allows acquisition programs to efficiently evaluate their warfighting capability in a realistic joint mission environment. The JMETC Program has been aligned to advance the National Defense Strategy (NDS), to test the development of resilient, survivable, federated networks and information ecosystems from the tactical level up to strategic planning, as well as test and assess cyber defenses, building a more lethal force.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: JMETC Distributed Test	16.056	53.403	114.899
Description: The JMETC Distributed Test project continued expansion of the JMETC Secret Network (JSN) infrastructure to meet requirements. The JMETC Distributed Test project supported DoD distributed test and training events to include: system interoperability certification; system interoperability assessments; command and control systems; air and missile defense; 4th and 5th Generation Aircraft; unmanned aircraft; precision-guided bombs; munitions; missile tracking and guidance; infrared countermeasures; Joint Fires; Joint Close Air Support; and coalition exercises. The JMETC Distributed Test project provided test planning support to users and organizations to conduct interoperability testing on numerous DoD systems including: command and control systems; information warfare; air and missile defense; intelligence, surveillance, and sensor systems; surface ships; anti-surface warfare; anti-submarine warfare; tactical radar systems; precision-guided bombs; unmanned aircraft; autonomous aircraft; manned fixed wing aircraft; helicopters; and enterprise information systems. The JMETC Distributed Test project assisted customers with the use of distributed test tools and troubleshooting of the end-to-end network infrastructures. In addition, the JMETC team provided on-site support for the execution of large-scale, complex distributed events.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0605100D8Z / *Joint Mission Environment Test Capability (JMETC)*	**Project (Number/Name)** 087 / *JMETC Distributed Test*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
The JMETC Distributed Test project continued to develop and demonstrate Knowledge Management and Big Data Analytics tools and technologies, in support of JMETC customer needs and requirements. The JMETC Distributed Test project demonstrated a common data analytics framework (CHEETAS) that reduced data access time from weeks to hours and enables big data analytics, data mining, and machine learning application for large T&E data sets. This analytics framework was demonstrated in support of 5th generation platform test and evaluation and during long range missile flight test data reduction efforts ***FY 2023 Plans:*** -The JMETC Distributed Test Project will initiate the establishment of an All-Domain Test Range to meet the joint test and evaluation needs of the Services and the in-theater experimentation campaign needs of the Combatant Commands. -The JMETC Distributed Test Project will initiate transition of a DARPA capability for testing simulated and live fielded weapon systems from all operational domains together in a common, distributed environment to evaluate and integrate new joint command and control (C2) systems, novel operational concepts, experimental weapon systems and capabilities. -The JMETC Distributed Test Project will initiate expansion of existing RDT&E networks across the DoD to meet new in-theater test and experimentation needs. -The JMETC Distributed Test Project will initiate a reference implementation of Modular Open Systems Architecture and data-centric approaches to C2 both to enable testing new versions of those standards as well as to serve as the test repository for universal C2 interfaces. -The JMETC Distributed Test project will continue to optimize the JMETC Secret Network (JSN) infrastructure to meet requirements, adding or removing sites as necessary. -The JMETC Distributed Test project will continue supporting DoD distributed test and training events. -The JMETC Distributed Test project will continue providing test planning support to users and organizations to conduct interoperability testing on numerous DoD systems. -The JMETC Distributed Test project will continue to assist customers with the use of distributed test tools and troubleshooting of the end-to-end network infrastructures, to include continued expansion of T&E tools as a service in the GovCloud. In addition, the JMETC team will provide on-site support for the execution of large-scale, complex distributed events.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0605100D8Z / *Joint Mission Environment Test Capability (JMETC)*	**Project (Number/Name)** 087 / *JMETC Distributed Test*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
-The JMETC Distributed Test project will continue to modernize post-test enterprise service capabilities, to include Knowledge Management and an enterprise framework for updated Big Data Analytics tools and technologies, in support of JMETC customer needs and requirements. -The JMETC Distributed Test project will initiate the development of a federated enterprise T&E data repository to support the evaluation of large data sets, including Artificial Intelligence (AI) data. The JMETC Distributed Test project will also initiate the build out of digital engineering tools and infrastructure to support the development of multi-Service, modernized warfighting capabilities in a digital environment, to include digital engineering infrastructure to support AI development.- The JMETC Distributed Test project will continue to support new and emerging acquisition programs. ***FY 2024 Plans:*** -The JMETC Distributed Test Project will continue the buildout of an All-Domain Test Range to meet the joint test and evaluation needs of the Services and the in-theater experimentation campaign needs of the Combatant Commands. -The JMETC Distributed Test Project will continue transition of a DARPA capability for testing simulated and live fielded weapon systems from all operational domains together in a common, distributed environment to evaluate and integrate new joint command and control (C2) systems, novel operational concepts, experimental weapon systems and capabilities. -The JMETC Distributed Test Project will expand of T&E tools as a service in the GovCloud. In addition, the JMETC team will provide on-site support for the execution of large-scale, complex distributed events. -The JMETC Distributed Test project will continue to modernize Knowledge Management post-test enterprise service capabilities. -The JMETC Distributed Test project will continue the development of a federated enterprise T&E data repository to support the evaluation of large data sets, including Artificial Intelligence (AI) data. The JMETC Distributed Test project will continue the build out and acquisition of digital engineering tools and infrastructure to support the development of multi-Service, modernized warfighting capabilities in a digital environment, to include digital engineering infrastructure to support AI development. -The JMETC Distributed Test project will continue to support new and emerging acquisition programs. -The JMETC Distributed Test Project will continue expansion of existing RDT&E networks across the DoD to meet new All-Domain Test Range needs supporting Combatant Command experimentation.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0605100D8Z / *Joint Mission Environment Test Capability (JMETC)*	**Project (Number/Name)** 087 / *JMETC Distributed Test*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
-The JMETC Distributed Test Project will continue development of a reference implementation of Modular Open Systems Architecture and data-centric approaches to C2 both to enable testing new versions of those standards as well as to serve as the test repository for universal C2 interfaces. -The JMETC Distributed Test project will continue to optimize the JMETC Secret Network (JSN) infrastructure to meet requirements, adding or removing sites as necessary. -The JMETC Distributed Test project will continue supporting DoD distributed test and training events. -The JMETC Distributed Test project will continue providing test planning support to users and organizations to conduct interoperability testing on numerous DoD systems. -The JMETC Distributed Test project will continue to assist customers with the use of distributed test tools and troubleshooting of the end-to-end network infrastructures, to include continued expansion of T&E tools as a service in the GovCloud. In addition, the JMETC team will provide on-site support for the execution of large-scale, complex distributed events. -The JMETC Distributed Test project will continue to modernize Knowledge Management post-test enterprise service capabilities. -The JMETC Distributed Test project will continue the development of a federated enterprise T&E data repository to support the evaluation of large data sets, including Artificial Intelligence (AI) data. The JMETC Distributed Test project will continue the build out and acquisition of digital engineering tools and infrastructure to support the development of multi-Service, modernized warfighting capabilities in a digital environment, to include digital engineering infrastructure to support AI development. -The JMETC Distributed Test project will continue to support new and emerging acquisition programs. -The JMETC Distributed Test project will transition work developed by DARPA and integrate the capabilities into the National Cyber Range, the distributed test networks, and remote test nodes (located at different test sites), to support the testing of JADC2 systems and applications. The primary focus will be in support of INDOPACOM experimentation and exercise campaigns. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The increase in FY 2024 is the transition of DARPA developed tools and test laboratories to TRMC for continued development in support of INDOPACOM requirements.			
Accomplishments/Planned Programs Subtotals	16.056	53.403	114.899

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0605100D8Z / *Joint Mission Environment Test Capability (JMETC)*	**Project (Number/Name)** 087 / *JMETC Distributed Test*

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense											Date: March 2023	
Appropriation/Budget Activity 0400 / 6					R-1 Program Element (Number/Name) PE 0605100D8Z / *Joint Mission Environment Test Capability (JMETC)*				Project (Number/Name) 088 / *JMETC National Cyber Range (NCR) Complex*			
COST ($ in Millions)	**Prior Years**	**FY 2022**	**FY 2023**	**FY 2024 Base**	**FY 2024 OCO**	**FY 2024 Total**	**FY 2025**	**FY 2026**	**FY 2027**	**FY 2028**	**Cost To Complete**	**Total Cost**
088: *JMETC National Cyber Range (NCR) Complex*	266.411	54.161	135.796	72.522	-	72.522	71.034	72.333	73.279	74.745	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The National Cyber Range Complex (NCRC) is comprised of cyber ranges and a secure distributed network infrastructure to service the cyber range user community. The NCRC currently consists of five functional cyber ranges, including the National Cyber Range in Florida as well as four Regional Service Delivery Points (RSDP) located in Hawaii, Alabama, Maryland, and Massachusetts. To enhance DoD cyber range test and training capability and capacity, the NCRC is being expanded with additional cyber ranges co-located with key Service organizations at Naval Information Warfare Center Atlantic (NIWC LANT),SC; Naval Air Station Patuxent River (NAS Pax River), MD; and 46th Test Wing Eglin Air Force Base (AFB), FL to support an increase of cyber testing of DoD systems as well as training of cyber warfighters. The JMETC Multiple Independent Level of Security (MILS) Network (JMN) currently links 82 sites across the DoD, industry, and academia, providing secure access between cyber ranges, laboratories, and facilities. Both the cyber ranges and the network infrastructure are accredited to support multiple levels of security classifications, specifically configured to meet particular cyber event requirements. The NCRC investments have been aligned to support the National Defense Strategy in improving cyber defense, cyber resilience, cyber lethality, and the continued integration of cyber capabilities into the full spectrum of military operations.

The NCRC conducts cyberspace test and training events for the full spectrum of DoD customers including research, development, acquisition, testing, training and operational Cyber Mission Forces (CMF). The NCRC executes wide variety of event types including science and technology (S&T) demonstrations, developmental test and evaluation (DT&E), operational test and evaluation (OT&E), security controls assessments, capability assessments, cyberspace operations training, development and refinement of cyberspace tactics, techniques, and procedures (TTP), cyber forensics/malware analysis) and cyberspace operations mission rehearsal. The NCRC enables acquisition programs to conduct cybersecurity test and evaluation in an operationally representative cyberspace environment enabling identification, validation and mitigation of vulnerabilities. The NCRC also supports training, mission rehearsal and certification of the CMF in support of US Cyber Command by enabling operational forces to efficiently evaluate cyber warfighting capability in a realistic joint mission environment to include bi-lateral and multi-national exercises.

The NCRC provides secure facilities, technology, processes, and workforce to rapidly create hi-fidelity, mission-representative friendly, neutral, and adversarial cyberspace environments.

The NCRC also facilitates integration of distributed organizations with different missions and workforce relevant to cyber operations (e.g., cyber operators, penetrations testers, cyber assessors, cyber observers, cyber analysts, etc.). The NCRC supports cyber activities across of a full spectrum of DoD systems, including weapon platforms, C4I systems, business systems, network devices, and other systems vulnerable to a cyber-attack. The NCRC extensively utilizes automation to minimize human error, to reduce the time required to set-up for a cyber event, and to ensure repeatable results. In addition, the NCRC employs post-event sanitization techniques on all assets after exposure to malicious code to restore back to a known, clean state, which allows for reuse in future events.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0605100D8Z / *Joint Mission Environment Test Capability (JMETC)*	**Project (Number/Name)** 088 / *JMETC National Cyber Range (NCR) Complex*

The NCRC has a multidisciplinary workforce with software, systems, network, virtualization, automation, system administration, and cybersecurity subject matter expertise. In support of successful planning and execution of hosted events, the NCRC workforce helps users define and refine their event objectives, assists with identifying and prioritizing potential vulnerabilities, designs virtualized cyber environments, develops customized traffic generation and instrumentation solutions, integrates 3rd party hardware and software, executes cyber events on behalf of the user, provides cooperative vulnerability and penetration assessments, performs detailed cyber analysis, and delivers detailed reports with actionable information to decision makers. In addition, the NCRC workforce supports both the Executive Agent for Cyber Test Ranges and the Executive Agent for Cyber Training Ranges, to identify and address relevant needs, define and promulgate standards, and seek efficiencies through focused investments.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: JMETC National Cyber Range Complex (NCRC)	54.161	72.296	72.522
Description: -The NCRC continued support for over a hundred cyber events, providing cybersecurity T&E support to Major Defense Acquisition Programs (MDAP), Major Automated Information Systems (MAIS) Acquisition Programs, and smaller acquisition programs, as well as cybersecurity training to multiple COCOMS and Service organizations. -The NCRC continued support for cyber testing of systems and subsystems across multiple domains (land, air, sea, and space) relevant to manned and unmanned aircraft, surface ships, command and control systems, data management platforms, weapons platforms, satellites, radars, and missile defense systems. -The NCRC continues to support Cyber Table Tops (CTT) which help acquisition programs identify and prioritize potential vulnerabilities for further assessment and mitigation early in the acquisition lifecycle. -The NCRC continued support to Service Cyber Mission Forces (CMF) with training, certification, mission rehearsal and TTP development focused events. -The NCRC continued support to numerous DoD organizations in cyber activities, including Army CEC Test and Evaluation, Army Combat Capabilities Development Command, Army PEO C3T, Army PEO IEW&S, Army PEO M&S, Army PEO STRI, Army Test and Evaluation Command(ATEC), Defense Research Projects Agency (DARPA), Defense Threat Reduction Agency (DTRA), Integrated Air Missile Defense (IAMD), Joint Staff J6, Missile and Space Intelligence Center (MSIC), Missile Defense Agency (MDA), Mississippi National Guard, NAVAIR PEO(A), NAVAIR PEO(U&W), Naval Air Warfare Center Aircraft Division (NAWCAD), Naval Air Warfare Center Training Systems Division (NAWCTSD), Naval Air Warfare Center Weapons Division (NAWCWD), Naval Air Warfare Center Weapons Division (NAWCWD) China Lake, Naval Air Warfare Center Weapons Division (NAWCWD) Point Mugu, Naval Information Warfare Center (NIWC) Atlantic, Naval Undersea Warfare Center (NUWC) Division Newport, NAVSEA PEO Ships, NAVSEA Red Team, NSWC Dahlgren, Office Secretary of Defense Research and Engineering OUSD(R&E), US Army INSCOM G7, USCYBERCOM, USINDOPACOM, and USMC Information Maneuver Division, and several partner nations.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0605100D8Z / *Joint Mission Environment Test Capability (JMETC)*	**Project (Number/Name)** 088 / *JMETC National Cyber Range (NCR) Complex*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
-Activities continued to establish new government-controlled cyber range facilities, to include facility conversion work, procurement of computing resources, physical security accreditation, and development of training courseware for utilization of core NCRC cyber range tools by new NCRC workforce members. -The NCRC established a multi-award IDIQ contract to expand the pool of NCRC contractor workforce members with a diverse set of required knowledge and skills to perform key functions at each NCRC location. Task Orders awards underneath the multi-award IDIQ continue to be executed. -The NCRC implemented an NCRC unclassified (NCRC-U) capability to provide increased access by government, academia, and industry to cyber range resources. The NCRC-U capability hosted cyber T&E workforce development activities for multiple government customers and academia to strengthen cyber vulnerability assessment expertise. ***FY 2023 Plans:*** -The NCRC will continue implementing improvements needed to increase capacity to support increased demand at the current and future cyber ranges. -The NCRC will continue to build out additional dedicated Persistent Testing and Training Environments to support testing and training customers. -The NCRC will continue to operate in support of the growing acquisition program cybersecurity T&E requirements. -The NCRC will continue to provide Cyber Table Top support for acquisition programs to help identify and prioritize potential vulnerabilities early in the development lifecycle. -The NCRC will continue to provide support to US Cyber Command, Joint Staff, and other training and certification events by developing representative blue, red and gray environments. -The NCRC will continue to support DOT&E cyber assessments. -The NCRC will continue to support US Cyber Command and other COCOMS with their training, team certification and mission rehearsal activities.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0605100D8Z / *Joint Mission Environment Test Capability (JMETC)*	**Project (Number/Name)** 088 / *JMETC National Cyber Range (NCR) Complex*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
-The NCRC will conduct engineering activities to plan for technical refresh of emerging end of life and end of service computing assets. -The NCRC will continue to assess cyber range requirements in close cooperation with the Executive Agents for Cyber Test Ranges and Cyber Training Ranges to build priority cyber range capability and capacity to meet identified RDT&E community and CMF needs. -The NCRC will continue to assist the Executive Agents for Cyber Test Ranges and Cyber Training Ranges to determine requirements and standards needed to integrate these cyber range facilities with existing acquisition system hardware-in-the-loop, software-in-the-loop, and systems integration laboratories to test systems and train operators in a realistic cyber contested environment. -The NCRC will continue to expand the JMN connectivity as needed to provide access to cyber range resources. -The NCRC will continue to initiate new cyber range capability and development to directly address test and training needs. -The NCRC will continue activities to establish new government-controlled cyber range facilities, to include facility conversion work, procurement and installation of computing resources, physical security accreditation, and information system security accreditation. -The NCRC will initiate testing of cyber vulnerabilities associated with trusted artificial intelligence systems. -The NCRC will continue workforce development and Unclassified cyber test event execution at the NCRC-U capability. -The distributed cyber test team will develop enterprise software applications providing a force multiplier of tools & capabilities using artificial intelligence to support cyber and kill web testing (in a JADC2 construct). In addition, the distributed cyber test team will continue to partner and transition technology developed by DARPA and supporting INDOPACOM.			
FY 2024 Plans: -The NCRC will continue implementing improvements needed to increase capacity to support increased demand at the current and future cyber ranges. -The NCRC will continue to build out additional dedicated Persistent Testing and Training Environments to support testing and training customers.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0605100D8Z / *Joint Mission Environment Test Capability (JMETC)*	**Project (Number/Name)** 088 / *JMETC National Cyber Range (NCR) Complex*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
-The NCRC will continue to operate in support of the growing acquisition program cybersecurity T&E requirements. -The NCRC will continue to provide Cyber Table Top support for acquisition programs to help identify and prioritize potential vulnerabilities early in the development lifecycle. -The NCRC will continue to provide support to US Cyber Command, Joint Staff, and other training and certification events by developing representative blue, red and gray environments. -The NCRC will continue to support DOT&E cyber assessments. -The NCRC will continue to support US Cyber Command and other COCOMS with their training, team certification and mission rehearsal activities. -The NCRC will conduct engineering activities to plan for technical refresh of emerging end of life and end of service computing assets. -The NCRC will continue to assess cyber range requirements in close cooperation with the Executive Agents for Cyber Test Ranges and Cyber Training Ranges to build priority cyber range capability and capacity to meet identified RDT&E community and CMF needs. -The NCRC will continue to assist the Executive Agents for Cyber Test Ranges and Cyber Training Ranges to determine requirements and standards needed to integrate these cyber range facilities with existing acquisition system hardware-in-the-loop, software-in-the-loop, and systems integration laboratories to test systems and train operators in a realistic cyber contested environment. -The NCRC will continue to expand the JMN connectivity as needed to provide access to cyber range resources. -The NCRC will continue to initiate new cyber range capability and development to directly address test and training needs. -The NCRC will continue activities to build out new government-controlled cyber range facilities, to include facility conversion work, procurement and installation of computing resources, physical security accreditation, and information system security accreditation.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0605100D8Z / *Joint Mission Environment Test Capability (JMETC)*	**Project (Number/Name)** 088 / *JMETC National Cyber Range (NCR) Complex*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
-The NCRC will continue testing of cyber vulnerabilities associated with trusted artificial intelligence systems. -The NCRC will continue workforce development and Unclassified cyber test event execution at the NCRC-U capability. -The distributed cyber test team will complete the transition of technology from DAPRA to the TRMC in support of INDOPACOM requirements. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2024 minimal increase due to programmatic adjustments.			
Accomplishments/Planned Programs Subtotals	54.161	72.296	72.522

	FY 2022	FY 2023
Congressional Add: Data Management/Big Data Analytics ***FY 2023 Plans:*** Program details are classified.	-	60.000
Congressional Add: Artitiicial Intelligence Hub Infrastructure ***FY 2023 Plans:*** Program details are classified.	-	3.500
Congressional Adds Subtotals	-	63.500

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 6: *RDT&E Management Support*	**R-1 Program Element (Number/Name)** PE 0605128D8Z / *Classified Program*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	1,087.709	108.112	145.800	0.000	-	0.000	0.000	0.000	0.000	0.000	-	-
128: *Classified Program*	1,087.709	108.112	145.800	0.000	-	0.000	0.000	0.000	0.000	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

Classified

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	108.112	0.000	0.000	-	0.000
Current President's Budget	108.112	145.800	0.000	-	0.000
Total Adjustments	0.000	145.800	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	145.800			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2022	FY 2023
Project: 128: *Classified Program*		
Congressional Add: *Classified*	108.112	145.800
Congressional Add Subtotals for Project: 128	108.112	145.800
Congressional Add Totals for all Projects	108.112	145.800

Change Summary Explanation

N/A

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 6: *RDT&E Management Support*	**R-1 Program Element (Number/Name)** PE 0605128D8Z / *Classified Program*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023
Congressional Add: Classified	108.112	145.800
FY 2022 Accomplishments: Classified		
FY 2023 Plans: Classified		
Congressional Adds Subtotals	108.112	145.800

D. Other Program Funding Summary ($ in Millions)

N/A

Remarks

N/A

E. Acquisition Strategy

N/A

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 6: *RDT&E Management Support*	**R-1 Program Element (Number/Name)** PE 0605142D8Z / *Systems Engineering*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	335.320	38.629	38.585	39.949	-	39.949	37.648	36.206	36.878	37.677	Continuing	Continuing
142: *Systems Engineering*	326.949	16.325	16.752	22.179	-	22.179	20.703	20.300	20.906	21.363	Continuing	Continuing
842: *Mission Engineering*	8.371	12.388	12.630	13.073	-	13.073	12.780	12.531	12.904	13.184	Continuing	Continuing
144: *Program Engagement and Independent Assessments*	0.000	9.916	9.203	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
152: *Engineering Architectures*	-	-	-	4.697	-	4.697	4.165	3.375	3.068	3.130	Continuing	Continuing

Note

New Start (Y/N): No

In FY 2024, funding will be realigned from Project Code 144 and Project Code 842 to fund a new Project Code, P152 (Engineering Architectures). In FY 2024, funds remaining after realignment within Program Engagement and Independent Assessments, Project Code 144 will then be re-aligned to Development Test & Evaluation, Program Element 0605804D8Z, Project Code 149. The reason for the latter re-alignment is to consolidate funding for Engineering and Development Test and Evaluation, respectively.

These changes reflect the new organization of the Office of Systems Engineering and Architecture (SE&A); a direct report to the Office of the Under Secretary of Defense for Research and Engineering (USD(R&E)). The USD(R&E) plans to strengthen the Systems Engineering activities and expand those activities to include providing assistance with systems of systems architectures. In FY 2024, new Project Code 152 (Engineering Architectures) is being created and funding is being re-aligned to support emerging needs to provide technical assistance to Joint Capabilities that are developing system of systems architectures.

A. Mission Description and Budget Item Justification

This program element establishes dedicated funding to carry out the duties as described in Title 10 U.S.C, Section 133a and the Department of Defense (DoD) Directive 5137.02 dated July 15, 2020. The program supports the Department's initiatives to Build a Sustainable and Long-Term Advantage, and Build a Resilient Joint Force and Defense Ecosystem.

This program funds advancement of the engineering practice across the Department of Defense (DoD), conduct of mission engineering/mission integration activities to support the joint warfighting concepts, and program engagements/independent assessments for major defense acquisition programs in accordance with the National Defense Strategy and in support of the critical technology areas advanced by the Under Secretary of Defense for Research and Engineering. Specific activities include:
1. Systems Engineering (P142): Advance engineering practice by modernizing the discipline and develop the DoD-wide policy, guidance, and standards for engineering and test & evaluation; cultivating workforce talent and providing advocacy and oversight for the Department’s engineering and test & evaluation workforce; and establishing and maintaining active engineering communities of practice to solve cross-cutting engineering challenges and share best practices.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 6: *RDT&E Management Support*	**R-1 Program Element (Number/Name)** PE 0605142D8Z / *Systems Engineering*

2. Mission Engineering (P842): Analysis of approaches to realizing mission capabilities vs. anticipated adversary capabilities in relevant operational contexts. This analysis leads to the development of government reference architectures for achieving mission capability, identification of opportunities to align technology investments to accelerate capability delivery or modify existing systems, and recommendations for adjustments to joint warfighting concepts.
3. Program Engagement and Independent Assessments (P144): Conduct of independent technical risk assessments (ITRAs) and other program assessments to advise the DoD leadership (including Milestone Decision Authorities) on progress towards achieving key performance parameters, technology maturation, interoperability, and cyber security posture.
4. Engineering Architectures (P152): Starting in FY 2024, a new Project Code P152 will be funded with re-aligned funds from P144 and P842. P152 activities will include the following functions: i) provide technical assistance to support on-going and future DoD System of System Architecture efforts for Joint capabilities; and ii) develop and provide DoD-level guidance to ensure systems engineering rigor is being applied to the development of systems of systems architectures.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	39.904	39.009	50.381	-	50.381
Current President's Budget	38.629	38.585	39.949	-	39.949
Total Adjustments	-1.275	-0.424	-10.432	-	-10.432
• Congressional General Reductions	-	-0.424			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	-1.275	-	-10.432	-	-10.432

Change Summary Explanation

FY 2024 funding reduction is comprised of a re-alignment of $1.096 million to support the Historically Black Colleges and Universities/Minority Serving Institutions program, which is a priority of the Under Secretary of Defense for Research and Engineering (USD(R&E)); $0.053 million to support departmental priorities; and $9.283 million realignment of Program Engagement and Independent Assessments, Project Code 144 to Development Test & Evaluation, Program Element 0605804D8Z, Project Code 149. The reason for the latter re-alignment is to consolidate funding for Engineering and Development Test and Evaluation, respectively.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605142D8Z / *Systems Engineering*	Project (Number/Name) 142 / *Systems Engineering*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
142: *Systems Engineering*	326.949	16.325	16.752	22.179	-	22.179	20.703	20.300	20.906	21.363	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Project Code 142 activities include the following functions:

• Support acceleration of USD(R&E)'s modernization initiatives/critical technology areas and Principal Directors' Science and Technology (S&T) roadmap investments.

• Develop improved DoD-level policy, guidance, and workforce development efforts ensuring systems engineering rigor in defense systems to drive the development of fully capable and supportable weapons systems.

• Advance the principles of interoperability, integration, modularity, software engineering, application programming interfaces (API) and open systems to improve requirements, architecture, design, development and overall development and sustainment of weapon systems.

• Develop and improve career development for the technical workforce by improving the education and training materials for instructing, maintaining, and enhancing the defense acquisition technical workforce. Activities include: (1) developing and establishing guidance to enhance Engineering and Technical Management (ETM) and Test and Evaluation (T&E) acquisition career planning and progression; (2) monitoring and facilitating Defense Acquisition University (DAU) updates to the engineering, software development, manufacturing, quality, and specialty engineering courses, to ensure the curriculum represents the education and training requirements necessary to be a viable team member in delivering timely and affordable capabilities to the Warfighter; and (3) co-chairing the Digital Talent Management Forum (established in response to National Defense Authorization Act for 2020, Section 230) with OUSD A&S to integrate Department-wide activities for improved approaches to recruiting and retaining key digital talent as well as leading the expansion of the DoD Cyber Workforce Framework (DCWF) to include Software Engineering work roles.

• Improve the DoD's capabilities in specialty engineering (Reliability and Maintainability, Manufacturing and Quality, System Safety, Human Systems Integration, and Value Engineering) and software engineering through policy, program oversight, fostering practice and technology improvements, initiating long-term strategic improvements, and collaborating with industry and academia.

• Develop improved and enhanced software Science and Technology strategies consistent with National Defense Authorization Act for 2020, Section 255 to accelerate modernization of software development tools, techniques and capabilities.

• Advance and modernize the DoD research, analytics, and engineering practices through knowledge sharing and the development and use of methods, processes, and tools, such as digital engineering, modeling and simulation, modern Software DevSecOps pipelines and model-based systems engineering, for engineering on systems.

• Serve as the Defense Standardization Executive and oversee the Defense Standardization Program. Serve as functional experts and approval authority for systems engineering, digital engineering, modeling & simulation, and Modular Open Systems Architecture standardization actions that are related to development of new specifications, standards, and other types of DoD standardization documents.

• Support the Defense Acquisition University (DAU) deployment of artificial intelligence on-line courses to ensure AI enabled systems are reliable and safe.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Systems Engineering (Project Code 142)	15.413	16.752	22.179
FY 2023 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0605142D8Z / *Systems Engineering*	**Project (Number/Name)** 142 / *Systems Engineering*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Execution of the Strategic Thrusts identified within the FY 2023 Plans above. ***FY 2024 Plans:*** Strategies/plans - Continue implementation of Software Science & Technology (S&T) Strategy. - Development and update the Digital Engineering (DE) Modeling and Simulation (M&S) Strategy, Policy, Guidance, and Standards. - Continue to develop new and update existing Engineering and T&E policy, guidance, and standards that propagate best practices for the acquisition workforce to improve the engineering of defense systems Workforce Development. - Continue to improve the Career Development for the ETM and T&E Functional Areas by improving the training curriculum and ensuring content and objectives of the DAU courses are current, address technology and practice advancements while remaining technically accurate, and consistent with DoD acquisition policy. Continue the development and deployment of ETM and T&E functional area credentials to provide job-focused, point-of-need training for DoD government employees. Communities of Practice - Continue to lead and develop collaborative environments for OSD, Services, and Agencies, as well as mission partners, to refine/mature the DoD Bodies of Knowledge (BoK) for DE, M&S, SE, HSI , M&Q, and R&M. - Advance software engineering modernization through collaboration with OSD, services and Agencies; revise policy guidance and the Software Engineering Guidebook to support modernization effort. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The FY 2024 increase will help strengthen and champion engineering and innovation efforts across the DoD in collaborative and teaming relationships. In May 2022, the Under Secretary of Defense for Research and Engineering implemented organizational improvements to assist the DoD in working rapidly and collaboratively. The improvements established the Office of Systems Engineering and Architecture and stressed that engineering is fundamental and a cross cutting discipline for the Department.			
Title: Positioning, Navigation, and Timing (PNT) Open Architecture	0.912	0.000	0.000
Description: Build and validate the common DoD open reference architecture standard for PNT systems: • Common messaging/interface standards increases PNT system and element interoperability across the services and reduces future PNT system development/integration costs. • Common reference architecture guides development of service and platform specific PNT solutions. • Streamlines integration of new complementary sensor technology into existing and future DoD systems. ***FY 2023 Plans:*** Completion/close-out of the remaining efforts under this task. ***FY 2024 Plans:***			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0605142D8Z / *Systems Engineering*	**Project (Number/Name)** 142 / *Systems Engineering*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
N/A. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** N/A.			
Accomplishments/Planned Programs Subtotals	16.325	16.752	22.179

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605142D8Z / *Systems Engineering*	Project (Number/Name) 842 / *Mission Engineering*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
842: *Mission Engineering*	8.371	12.388	12.630	13.073	-	13.073	12.780	12.531	12.904	13.184	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Project Code 842 activities include the following functions:

• Carry out responsibilities described in the National Defense Authorization Act for FY 2017, Section 855 titled Mission Integration Management (MIM) and supports the National Defense Strategy goals of developing new joint warfighting concepts and modernization of emerging capabilities to achieve a more lethal force.

• Achieve full operational capability of the mission engineering framework that is being built in FY 2021 to instantiate the technical element of MIM and identify and promulgate best practices for mission-focused analyses and studies.

• Ensure the DoD applies engineering rigor to both operational and technical analysis of future capabilities to enable the DoD leaders to make informed investment decisions and deliver technologies and capabilities to close mission gaps in response to new threats.

• Execute multiple mission engineering studies in support of the National Defense Strategy modernization areas to identify technology solutions, advise on development of requirements, and develop Government Reference Architectures (GRA) for new joint warfighting capabilities, which are a key enterprise document that will be used to guide development of capabilities that are required for warfighters to carry out operational and tactical missions against our adversaries.

• In coordination with the Joint Staff, OSD(CAPE), USD(A&S), Combatant Commands, Services, and other stakeholders, provide engineering analysis and studies at the campaign, mission, and engagement levels to support the prioritization and development of the Department's technology modernization and prototyping roadmaps.

• Continue the development of the technical infrastructure and analysis tools for engineering studies and data mining as well as modeling and simulation analytic tools to support this effort.

• Support the analysis of as is operational and technical architectures of current joint capabilities and further support the development of to be GRAs of future required capabilities to align investment opportunities with emerging technological developments.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Mission Integration	12.388	12.630	13.073
FY 2023 Plans: Execution of the Strategic Thrusts identified within the FY 2023 Plans above.			
FY 2024 Plans: Continued execution of the Strategic Thrusts identified within the FY 2023 Plans above with continued expansion of scope of Mission Integration Management activities that both implement the National Defense Authorization Act for FY 2017 Section 855 and support the National Defense goals of developing new joint warfighting concepts and modernizing capabilities to achieve a more lethal force.			
FY 2023 to FY 2024 Increase/Decrease Statement:			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0605142D8Z / *Systems Engineering*	**Project (Number/Name)** 842 / *Mission Engineering*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
There is no significant change between FY 2023 and FY 2024.			
Accomplishments/Planned Programs Subtotals	12.388	12.630	13.073

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605142D8Z / *Systems Engineering*	Project (Number/Name) 144 / *Program Engagement and Independent Assessments*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
144: *Program Engagement and Independent Assessments*	0.000	9.916	9.203	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY 2024, funding will be realigned from Project Code 144 and Project Code 842 to fund Project Code 152 (Engineering Architectures). In FY 2024, funds remaining after realignment within Program Engagement and Independent Assessments, Project Code 144 will then be re-aligned to Development Test & Evaluation, Program Element 0605804D8Z, Project Code 149. The reason for the latter re-alignment is to consolidate funding for Engineering and Development Test and Evaluation, respectively.

A. Mission Description and Budget Item Justification

Project Code 144 activities include the following functions:
• Conducts and approves Independent Technical Risk Assessments (ITRAs) on Acquisition Category (ACAT)-1D Major Defense Acquisition Programs (MDAPs). Reviews and approves ITRAs on select high priority ACAT 1B/1C MDAPs.
• Conceive plans and conducts Preliminary and Critical Design Review Assessments of MDAPs under the Office of the Secretary of Defense (OSD) purview.
• Pursuant to U.S.C. 10 Sec 2366 requirements, provides basis for critical technology and manufacturing process determinations and certifications of MDAPs under OSD purview.
• Satisfies U.S.C. 10 Sec 2448a requirements by providing risk assessments to support the development of cost, schedule, and performance targets.
• Support acceleration of USD(R&E)'s critical technology initiatives in accordance with the National Defense Strategy.
• Conduct other technical reviews as requested, such as Nunn-McCurdy certification reviews, Non-Advocate Reviews, focused technical assessments, and software readiness reviews to identify and mitigate program risk.
• Oversee Service and other Component organizations' implementation of engineering initiatives and approve or conduct independent assessments.
• Guide Service and other component organizations in the development planning process to ensure proposed MDAP programs are executable within acceptable levels of risk.
• Provide Systems Engineering support to MDAPs. Review the systems engineering plans (SEPs) and activities for MDAPs.
• Monitor and advise USD(R&E) and USD(A&S) on technical and engineering aspects of MDAPs and select alternate acquisition pathway programs to ensure they are adequate to support fielding and the achievement of cost, schedule and performance goals to include readiness, i.e. producibility, reliability, maintainability, sustainment, and other considerations.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Development Test Evaluation and Assessments	9.916	9.203	-
FY 2023 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0605142D8Z / *Systems Engineering*	**Project (Number/Name)** 144 / *Program Engagement and Independent Assessments*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Execution of the Strategic Thrusts identified within the FY 2023 Plans above. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The decrease from FY 2023 to FY 2024 is the result of a funding realignment to PE0605804D8Z.			
Accomplishments/Planned Programs Subtotals	9.916	9.203	-

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605142D8Z / *Systems Engineering*	Project (Number/Name) 152 / *Engineering Architectures*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
152: *Engineering Architectures*	-	-	-	4.697	-	4.697	4.165	3.375	3.068	3.130	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY 2024, funding will be realigned from Project Code 144 and Project Code 842 to fund a new Project Code, P152 (Engineering Architectures). In FY 2024, funds remaining after realignment within Program Engagement and Independent Assessments, Project Code 144 will then be re-aligned to Development Test & Evaluation, Program Element 0605804D8Z, Project Code 149. The reason for the latter re-alignment is to consolidate funding for Engineering and Development Test and Evaluation, respectively.

These changes reflect the new organization of the Office of Systems Engineering and Architecture (SE&A); a direct report to the Office of the Under Secretary of Defense for Research and Engineering (USD(R&E)). The USD(R&E) plans to strengthen the Systems Engineering activities and expand those activities to include providing assistance with systems of systems architectures. In FY 2024, new Project Code 152 (Engineering Architectures) is being created and funding is being re-aligned to support emerging needs to provide technical assistance to Joint Capabilities that are developing system of systems architectures.

A. Mission Description and Budget Item Justification

This program element establishes dedicated funding to carry out the duties as described in Title 10 U.S.C, Section 133a and the Department of Defense (DoD) Directive 5137.02 dated July 15, 2020. The program supports the Department's initiatives to Build a Sustainable and Long-Term Advantage, and Build a Resilient Joint Force and Defense Ecosystem.

This program funds advancement of the engineering practice across the Department of Defense (DoD), conduct of mission engineering/mission integration activities to support the joint warfighting concepts, and program engagements/independent assessments for major defense acquisition programs in accordance with the National Defense Strategy and in support of the critical technology areas advanced by the Under Secretary of Defense for Research and Engineering. Specific activities include:
1. Systems Engineering (P142): Advance engineering practice by modernizing the discipline and develop the DoD-wide policy, guidance, and standards for engineering and test & evaluation; cultivating workforce talent and providing advocacy and oversight for the Department’s engineering and test & evaluation workforce; and establishing and maintaining active engineering communities of practice to solve cross-cutting engineering challenges and share best practices.
2. Mission Engineering (P842): Analysis of approaches to realizing mission capabilities vs. anticipated adversary capabilities in relevant operational contexts. This analysis leads to the development of government reference architectures for achieving mission capability, identification of opportunities to align technology investments to accelerate capability delivery or modify existing systems, and recommendations for adjustments to joint warfighting concepts.
3. Program Engagement and Independent Assessments (P144): Conduct of independent technical risk assessments (ITRAs) and other program assessments to advise the DoD leadership (including Milestone Decision Authorities) on progress towards achieving key performance parameters, technology maturation, interoperability, and cyber security posture.
4. Engineering Architectures (P152): Starting in FY 2024, a new Project Code P152 will be funded with re-aligned funds from P144 and P842. P152 activities will include the following functions: i) provide technical assistance to support on-going and future DoD System of System Architecture efforts for Joint capabilities; and ii) develop and provide DoD-level guidance to ensure systems engineering rigor is being applied to the development of systems of systems architectures.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0605142D8Z / *Systems Engineering*	**Project (Number/Name)** 152 / *Engineering Architectures*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Engineering Architectures	0.000	-	4.697
Description: In May 2022, the Under Secretary of Defense for Research and Engineering (USD(R&E)) implemented organizational improvements to assist the DoD in working rapidly and collaboratively. The improvements established the Office of Systems Engineering and Architecture and stressed that engineering is fundamental and a cross cutting discipline for the Department. The Office is a direct report to the USD(R&E). A growing number of military capabilities are achieved through a system of systems (SoS) approach which brings together a set or arrangement of systems integrated into a larger system. Project Code 152 activities include the following functions: • Provide technical assistance to support on-going and future DoD System of System Architecture efforts for Joint capabilities. • Develop and provide DoD-level guidance to ensure systems engineering rigor is being applied to the development of systems of systems architectures. ***FY 2024 Plans:*** Execution of the Strategic Thrusts identified above. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The FY 2024 increase funds the Systems Engineering activities and expand those activities to include providing assistance with systems of systems architectures to support technical assistance to on-going and future DoD System of System Architecture efforts for Joint capabilities, as well as, the development of DoD-level guidance to ensure systems engineering rigor is being applied to the development of systems of systems architectures.			
Accomplishments/Planned Programs Subtotals	0.000	-	4.697

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 6: *RDT&E Management Support*	**R-1 Program Element (Number/Name)** PE 0605151D8Z / *Studies and Analysis Support – OSD*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	39.506	4.127	5.219	6.292	-	6.292	6.339	6.482	6.616	6.755	-	-
151: *Studies and Analysis Support – OSD*	39.506	4.127	5.219	6.292	-	6.292	6.339	6.482	6.616	6.755	-	-

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

This program supports the Secretary of Defense's top 3 priority, Defend Our Nation, Suceed Through Teamwork, and Take Care of People, as well as the 2022 National Defense Strategy imperatives. Additionally, this program advances P&R's statutory and Principal Staff Assistant responsibilities with respect to promoting a diverse, resilient, and ready force positioned to execute the Department's mission.

The OUSD(P&R)'s Studies and Analysis Support program serves to leverage specialized expertise and critical capabilities designed to help meet varied research, study, and analytical support needs in the manpower, personnel, talent management, force readiness, training, education, resiliency, and health services portfolio. This funding supports intellectually rigorous, relevant, and timely assessment of policies, programs, and procedures across the personnel and readiness enterprise. Funded research, studies, program evaluations, surveys, and analysis support P&R roles in executing the National Defense Strategy in a proactive and forward leaning posture, focusing on a strategic programmatic and policy framework for the future.

Funding is leveraged to address key strategic and long-term challenges facing the Department, and includes targeted assessments to support program evaluation and efficacy. It also encompasses comprehensive research and complex exploration to support data-driven and insights-based decision-making and critical analysis to develop needed evidentiary bases for policy development or modification.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 6: *RDT&E Management Support*	**R-1 Program Element (Number/Name)** PE 0605151D8Z / *Studies and Analysis Support – OSD*

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	4.612	5.716	6.257	-	6.257
Current President's Budget	4.127	5.219	6.292	-	6.292
Total Adjustments	-0.485	-0.497	0.035	-	0.035
• Congressional General Reductions	-	-0.497			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.485	-			
• Program Adjustments	-	-	0.035	-	0.035

Change Summary Explanation

FY 2024 minimal increase for program adjustments to leverage specialized expertise and critical capabilities designed to help meet varied research, study, and analytical support needs in the manpower, personnel, talent management, force readiness, training, education, resiliency, and health services portfolio.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605151D8Z / *Studies and Analysis Support – OSD*	Project (Number/Name) 151 / *Studies and Analysis Support – OSD*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
151: *Studies and Analysis Support – OSD*	39.506	4.127	5.219	6.292	-	6.292	6.339	6.482	6.616	6.755	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The OUSD(P&R) Studies and Analysis Support program serves to leverage specialized expertise and critical capabilities designed to help meet varied research, study, and analytical support needs in the manpower, personnel, human capital, force readiness, training, education, resiliency, and health services portfolio. This funding line supports independent, intellectually rigorous, relevant, impartial, objective, and timely assessment of policies, programs, and procedures across the Personnel and Readiness enterprise. Funded research, studies, program evaluations, surveys, and analysis support P&R in executing the National Defense Strategy and DoD leadership priorities in a proactive and forward leaning posture, focusing on a strategic programmatic and policy framework for the future of the Department's force development, resiliency, and readiness. Funding is leveraged to address critical and complex, inter-disciplinary strategic long-term challenges facing the Department, and includes targeted assessments to support program evaluation and efficacy. It also encompasses comprehensive research and complex exploration to support data-driven and insights-based decision-making and critical analysis to develop needed evidentiary bases for policy development or modification in support of the Administration's priorities, congressional direction, and Secretary of Defense direction.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Studies and Analysis Support – OSD	4.127	5.219	6.292
Description: P&R's Studies and Analysis program is focused on efforts that align with the National Defense Strategy, particularly to Build Enduring Advantages and a joint warfighting ecosystem that is supported by a ready, resilient, and capable Total Force. Resources fund Federally Funded Research and Development Centers (FFRDCs), University Affiliated Research Centers (UARCs), and other contracts for studies, analysis, research, and surveys that address the strategic challenges facing P&R and the Department of Defense, reflect enterprise-wide equities, focus on strategic programmatic and policy frameworks, and fund efforts that we cannot accomplish internally.			
FY 2023 Plans: Specific endeavors are anticipated to focus on: • Promote military readiness by decreasing the prevalence of readiness-detracting behavior through integrated prevention efforts • Promote a culture that represents our core military values and advances military readiness, through comprehensive actions that support diversity, equity, inclusion, and accessibility. • Advance our strategic readiness by refining personnel readiness modeling to better understand the impacts of cost and risk, and by analyzing optimal training solutions.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0605151D8Z / *Studies and Analysis Support – OSD*	**Project (Number/Name)** 151 / *Studies and Analysis Support – OSD*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
• Optimize recruitment and retention efforts by better understanding the associated budgetary requirements and maximizing our return on investment. • Enhance the health and wellbeing of our Service members and their families, and determine ***FY 2024 Plans:*** Build on the efforts from FY 2023 to: • Promote military readiness by decreasing the prevalence of readiness-detracting behavior through integrated prevention efforts and holding offenders appropriately accountable. • Promote a culture that represents our core military values and advances military readiness. • Advance our strategic readiness by refining personnel readiness modeling to better understand the impacts of cost and risk, and by analyzing optimal training solutions. • Optimize recruitment and retention efforts by better understanding the associated budgetary requirements and maximizing our return on investment. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The FY 2024 increase to accomplish SECDEF related priorities to study diversity, equity and inclusion, and implement prevention efforts. OUSD(P&R) has taken significant steps to improve governance of our studies program, increasing senior leader accountability and ensure more robust return on investment.			
Accomplishments/Planned Programs Subtotals	4.127	5.219	6.292

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 6: *RDT&E Management Support*	**R-1 Program Element (Number/Name)** PE 0605161D8Z / *Nuclear Matters*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	61.111	16.159	15.039	21.043	-	21.043	20.956	20.648	20.809	21.280	Continuing	Continuing
161: *Nuclear Matters*	61.111	16.159	15.039	21.043	-	21.043	20.956	20.648	20.809	21.280	Continuing	Continuing

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

This program supports the Department's initiatives to Defend the Homeland, Provide Nuclear Deterrence, and Build Sustainable and Long-Term Advantage.

The mission of Nuclear Matters is to ensure the continued credibility, safety, security, resiliency, and effectiveness of the U.S. nuclear deterrent to deter adversaries, assure allies and partners, and achieve U.S. objectives if deterrence fails—today and in the future. Nuclear Matters serves as the Department of Defense (DoD) focal point for the modernization and sustainment of the U.S. nuclear weapons stockpile, as well as for a wide range of nuclear counter-terrorism and counter-proliferation issues.

The funds for this program are used to support research, development, test and evaluation efforts as well as studies and analyses for nuclear weapons modernization, sustainment, security, use control, nuclear weapons stockpile safety, and survivability requirements. Funds are also used to develop and implement plans for the future of the stockpile and broader nuclear deterrent; infrastructure analyses and assessments; DoD-National Nuclear Security Administration (NNSA) Nuclear Weapons Council (NWC) activities, as mandated by Title 10 U.S. Code, section 179; radiological and nuclear emergency response efforts; and management of international programs of nuclear cooperation, particularly with respect to enhancing international nuclear safety and security. Nuclear Matters is also responsible for policy development and implementation for personnel reliability; nuclear weapons, nuclear command and control, and special nuclear materials security; use control; nuclear weapons transportation; physical security equipment; countering nuclear threats; and nuclear and radiological incident response. Additionally, Nuclear Matters serves as a focal point for DoD activities and initiatives related to countering the threat from nuclear terrorism and nuclear proliferation.

Nuclear Matters is leading a series of efforts to provide data-driven support to integrated portfolio management for 21st century nuclear deterrent sustainment and modernization. The United States is modernizing all three legs of its nuclear triad and is also reconstituting its nuclear weapons production capability at roughly the same time, while simultaneously sustaining weapons and systems that have aged well beyond their original design lives. The NWC and similar bodies seek to manage the transition from legacy Cold War delivery systems and weapons to replacement systems and warheads and make decisions that will affect U.S. national security through the end of the 21st century. To field a modern, threat-informed, nuclear deterrent that will keep pace with evolving adversary capabilities, it is necessary to conduct a variety of assessment and study efforts to enable data-driven decisions concerning the future of the U.S. nuclear deterrent.

As part of the implementation of the 2022 Nuclear Posture Review, Nuclear Matters will lead a nuclear integration and analysis effort to enable risk and opportunity analysis to inform Secretary of Defense and Deputy Secretary of Defense decision-making. This effort will leverage advanced data analytics, enterprise risk management, and modeling and simulation tools across the nuclear deterrent portfolio to support data-driven decisions by the Nuclear Weapons Council and the newly

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 6: *RDT&E Management Support*	**R-1 Program Element (Number/Name)** PE 0605161D8Z / *Nuclear Matters*

formed Nuclear Deputy's Management Action Group which, "provide[s] senior leaders a comprehensive and strategic view of the state of the enterprise and prioritize[s] actions for executive decision."

This Program Element can fund travel to support the requirements of this program.

This appropriation will finance work, including manpower, performed by a government agency or by private individuals or organizations under a contractual or grant arrangement with the government who conduct research (systematic study directed toward fuller scientific knowledge or understanding of the subject studied), development (systematic use of the knowledge and understanding gained from research, for the production of useful materials, devices, systems, or methods, including the design and development of prototypes and processes) and test and evaluation efforts.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	14.348	15.379	15.813	-	15.813
Current President's Budget	16.159	15.039	21.043	-	21.043
Total Adjustments	1.811	-0.340	5.230	-	5.230
• Congressional General Reductions	-	-0.340			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	1.811	-	5.230	-	5.230

Change Summary Explanation

FY 2024 funding increase is to fund Nuclear Integration and Risk Management functions.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605161D8Z / *Nuclear Matters*	Project (Number/Name) 161 / *Nuclear Matters*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
161: *Nuclear Matters*	61.111	16.159	15.039	21.043	-	21.043	20.956	20.648	20.809	21.280	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The mission of Nuclear Matters is to ensure the continued credibility, safety, security, resiliency, and effectiveness of the U.S. nuclear deterrent to deter adversaries, assure allies and partners, and achieve U.S. objectives if deterrence fails—today and in the future. Nuclear Matters serves as the Department of Defense (DoD) focal point for the modernization and sustainment of the U.S. nuclear weapons stockpile, as well as for a wide range of nuclear counter-terrorism and counter-proliferation issues.

The funds for this program are used to support research, development, test and evaluation efforts as well as studies and analyses for nuclear weapons modernization, sustainment, security, use control, nuclear weapons stockpile safety, and survivability requirements. Funds are also used to develop and implement plans for the future of the stockpile and broader nuclear deterrent; infrastructure analyses and assessments; DoD-National Nuclear Security Administration (NNSA) Nuclear Weapons Council (NWC) activities, as mandated by Title 10 U.S. Code, section 179; radiological and nuclear emergency response efforts; and management of international programs of nuclear cooperation, particularly with respect to enhancing international nuclear safety and security. Nuclear Matters is also responsible for policy development and implementation for personnel reliability; nuclear weapons, nuclear command and control, and special nuclear materials security; use control; nuclear weapons transportation; physical security equipment; countering nuclear threats; and nuclear and radiological incident response. Additionally, Nuclear Matters serves as a focal point for DoD activities and initiatives related to countering the threat from nuclear terrorism and nuclear proliferation.

Nuclear Matters is leading a series of efforts to provide data-driven support to integrated portfolio management for 21st century nuclear deterrent sustainment and modernization. The United States is modernizing all three legs of its nuclear triad and is also reconstituting its nuclear weapons production capability at roughly the same time, while simultaneously sustaining weapons and systems that have aged well beyond their original design lives. The NWC and similar bodies seek to manage the transition from legacy Cold War delivery systems and weapons to replacement systems and warheads and make decisions that will affect U.S. national security through the end of the 21st century. To field a modern, threat-informed, nuclear deterrent that will keep pace with evolving adversary capabilities, it is necessary to conduct a variety of assessment and study efforts to enable data-driven decisions concerning the future of the U.S. nuclear deterrent.

As part of the implementation of the 2022 Nuclear Posture Review, Nuclear Matters will lead a nuclear integration and analysis effort to enable risk and opportunity analysis to inform Secretary of Defense and Deputy Secretary of Defense decision-making. This effort will leverage advanced data analytics, enterprise risk management, and modeling and simulation tools across the nuclear deterrent portfolio to support data-driven decisions by the Nuclear Weapons Council and the newly formed Nuclear Deputy's Management Action Group which, "provide[s] senior leaders a comprehensive and strategic view of the state of the enterprise and prioritize[s] actions for executive decision."

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Nuclear Integration and Analysis	2.538	2.111	6.814

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0605161D8Z / *Nuclear Matters*	**Project (Number/Name)** 161 / *Nuclear Matters*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Description: This effort will leverage advanced data analytics, enterprise risk management, and modeling and simulation tools across the nuclear deterrent portfolio to support data-driven decisions by the Nuclear Weapons Council and the newly formed Nuclear Deputy's Management Action Group which, "provide[s] senior leaders a comprehensive and strategic view of the state of the enterprise, and prioritize[s] actions for executive decision." ***FY 2023 Plans:*** Use a data-driven and threat-informed approach consistent with DoD and Presidential guidance to identify and communicate nuclear deterrent and modernization risks and exploit opportunities for efficiency and cost savings. ***FY 2024 Plans:*** This effort will result in achieving key Office of the Secretary of Defense-level metrics, including: - Improve understanding of the health and wellness of the Nuclear Enterprise; - Identify and exploit schedule and fiscal opportunities in nuclear modernization efforts; - Improve understanding of strategic advantage relative to the increasing threats posed by Russia and China; and - Identify and correct gaps and seams across the five major components of the nuclear enterprise. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2023 to FY 2024 increase for investment in data analytic requirements, including risk management, are needed for the DoD and DOE to enhance how the departments manage risk and prioritize efforts that affect the U.S. nuclear enterprise.			
Title: Nuclear Weapons Council (NWC) ***Description:*** The NWC is a joint DoD and Department of Energy (DOE)/National Nuclear Security Administration (NNSA) organization established by Congress to facilitate cooperation and coordination between the two Departments as they fulfill their dual agency responsibilities for U.S. nuclear weapons stockpile management. ***FY 2023 Plans:*** - Drive the activities on the statutorily-required Joint DoD-DOE NWC and its support committees to include the Nuclear Weapons Council Standing and Safety Committee, the Compartmented Advisory Committee, and the Action Officer group. ***FY 2024 Plans:*** - Drive the activities on the statutorily-required Joint DoD-DOE NWC and its support committees to include the Nuclear Weapons Council Standing and Safety Committee, the Compartmented Advisory Committee, the Action Officer group, as well as newly formed working groups related to advanced capabilities, budget certification, and aeroshells. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2023 to FY 2024 increase is associated with normal inflation increases.	0.912	0.825	0.845
Title: Nuclear Forensics, Resiliency, and Survivability	0.675	0.515	0.868

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0605161D8Z / *Nuclear Matters*	**Project (Number/Name)** 161 / *Nuclear Matters*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Description: Per National Security Presidential Memorandum 35, the DoD provides the United States Government (USG) National Technical Nuclear Forensics (NTNF) post-detonation collection and analysis capability. Per DoD Directive S-2060.04, the Office of the Undersecretary of Defense for Acquisition & Sustainment (OUSD(A&S)) is the office responsible for developing and leading DoD's NTNF capabilities. Collecting and analyzing post-detonation debris is critical to ensure the USG can identify the source of nuclear material and hold those responsible for an attack accountable is critical to our national defense and security. Internal and independent assessments indicate new capabilities are needed to sustain an effective deterrent against nuclear attack and meet the challenges of future threats. ***FY 2023 Plans:*** - Invest in nuclear forensics, survivability, and resiliency requirements to address DoD and nuclear enterprise needs ***FY 2024 Plans:*** - Invest in nuclear forensics, survivability, and resiliency requirements to address DoD and nuclear enterprise needs. - Exercise DoD collection and analysis including exercises with the full USG NTNF capability to demonstrate USG resolve adding to our strategic deterrence. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The FY 2023 to FY 2024 increase is the result of additional focus on resiliency and survivability requirements.			
Title: Nuclear Surety ***Description:*** Because of their political and military importance, destructive power, and the potential consequences of an accident or unauthorized act, nuclear weapons and nuclear weapon systems require special consideration--nuclear surety-- and must be protected against risks and threats inherent in their peacetime and wartime environments. Oversight of the DoD nuclear surety program is provided by the Deputy Assistant Secretary of Defense for Nuclear Matters. ***FY 2023 Plans:*** - Conduct OSD oversight and provide direction for actions taken under DoDI 4540.05,Transportation of U.S. Nuclear Weapons; DoDD S-5210.81, United States Nuclear Weapons Command and Control, Safety, and Security; DoDI S-3150.07, Controlling the Use of Nuclear Weapons and DoDI S-5210.82, Protection Nuclear Weapons Coding Equipment; DoDI 5210.42, Nuclear Weapons Personnel Reliability Assurance and DoDM 5210.42, Nuclear Weapons Personnel Reliability Program; and DoDD 5210.41, Security Policy for Protecting Nuclear Weapons, DoDI O-5210.63, DoD Procedures for Security of Nuclear Reactors and Special Nuclear Materials, and DoD S-5210.92M, Physical Security for Nuclear Command and Control (NC2) Facilities. ***FY 2024 Plans:*** - Conduct OSD oversight and provide direction for actions taken under DoDI 4540.05,Transportation of U.S. Nuclear Weapons; DoDD S-5210.81, United States Nuclear Weapons Command and Control, Safety, and Security; DoDI S-3150.07, Controlling the	0.963	0.752	1.056

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0605161D8Z / *Nuclear Matters*	**Project (Number/Name)** 161 / *Nuclear Matters*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Use of Nuclear Weapons and DoDI S-5210.82, Protection Nuclear Weapons Coding Equipment; DoDI 5210.42, Nuclear Weapons Personnel Reliability Assurance and DoDM 5210.42, Nuclear Weapons Personnel Reliability Program; and DoDD 5210.41, Security Policy for Protecting Nuclear Weapons, DoDI O-5210.63, DoD Procedures for Security of Nuclear Reactors and Special Nuclear Materials, and DoD S-5210.92M, Physical Security for Nuclear Command and Control (NC2) Facilities. - Address cybersecurity, supply chain, and emerging threats from degrading the execution of mission critical functions as it pertains to the safety, security and control of nuclear weapons and nuclear weapon systems. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2023 to FY 2024 increase in investment to address cybersecurity, supply chain, and emerging threats from degrading the execution of mission critical functions as it pertains to the safety, security and control of nuclear weapons and nuclear weapon systems.			
Title: Nuclear Incident Response and North Atlantic Treaty Organization (NATO) and International Nuclear Programs	0.350	0.350	0.375
Description: In accordance with Presidential Policy Directive 35, US Nuclear Weapons Command and Control, Safety and Security and the DoD implementer, DoDD S-5210.81, the DoD will establish policy on nuclear weapons procedures for responding to U.S. nuclear weapons accidents and incidents and serve as the technical advisor to the Secretary of Defense in the event of a nuclear accident or incident. Coordinates with other U.S. Government Agencies and allies to ensure their standards complement DoD efforts for responding to accidents and incidents. Regularly consult with NATO allies through the High Level Group, which is the senior advisory body to the NATO Nuclear Planning Group, consisting of subject matter experts and supporting the Assistant Secretary of Defense for nuclear, Chemical and Biological Defense in their role as Vice-Chair of the HLG. The HLG is comprised of national policy makers and experts from Allied partners. The United States participates in several international programs of cooperation regarding nuclear weapons with foreign governments and regional defense organizations that involve unclassified and classified information exchanges. In general, these agreements are designed to promote safety and security, advance stockpile stewardship, and collaborate in counter-proliferation efforts. ***FY 2023 Plans:*** - Serve as Chair of the Nuclear Weapons Accident and Incident Subcommittee tasked in Federal response plans and national directives with the responsibility to coordinate and execute U.S. nuclear weapons incident and accident response policy. - Coordinate overseas nuclear weapon storage and deployment issues with the Department of State, Combatant Commands, Services, and other DoD organizations. - Conduct Nuclear Weapon Incident Exercises for the DoD, in coordination and cooperation with other U.S. Government Agencies (to include state/local/tribal) and NATO Partners.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0605161D8Z / *Nuclear Matters*	**Project (Number/Name)** 161 / *Nuclear Matters*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
- Confidence building programs of cooperation with international partners through tri and bi-lateral annual, bi-annual, semi-annual, and monthly engagements under Mutual Defense Agreements. - Sponsor international partners at national-level nuclear weapons accident/incident exercises, workshops, render safe exercises through tri-lateral engagements under Mutual Defense Agreements. ***FY 2024 Plans:*** - Serve as Chair of the Nuclear Weapons Accident and Incident Subcommittee tasked in Federal response plans and national directives with the responsibility to coordinate and execute U.S. nuclear weapons incident and accident response policy. - Coordinate overseas nuclear weapon storage and deployment issues with the Department of State, Combatant Commands, Services, and other DoD organizations. - Conduct Nuclear Weapon Incident Exercises for the DoD, in coordination and cooperation with other U.S. Government Agencies (to include state/local/tribal) and NATO Partners. - Confidence building programs of cooperation with international partners through tri and bi-lateral annual, bi-annual, semi-annual, and monthly engagements under Mutual Defense Agreements. - Sponsor international partners at national-level nuclear weapons accident/incident exercises, workshops, render safe exercises through tri-lateral engagements under Mutual Defense Agreements. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2023 to FY 2024 increase is associated with normal inflation increases.			
Title: Stockpile Planning and Decision Making ***Description:*** To meets its security needs and those of its allies, the U.S. will need a safe, secure, and reliable nuclear deterrent for the foreseeable future. There's increased risk, absent nuclear testing, in assuring long-term safety and reliability of today's aging stockpile—the legacy warheads left over from the Cold War. Today's nuclear weapons enterprise is not sufficiently responsive to technical problems in the stockpile, or to potential emerging threats. The task is to ensure the U.S. nuclear weapons stockpile and supporting infrastructure, meets long-term national security needs. ***FY 2023 Plans:*** - Conduct life cycle activities in support of the nuclear weapons stockpile under DoDD 3150.01, Joint DoD-DOE/NNSA Nuclear Weapon Life-Cycle Activities and DoDM 5030.55, DoD Procedures for Joint DoD-DOE Nuclear Weapons Life Cycle Activities. - Manage DoD RDT&E activities for nuclear warheads to include B61, W76, W78, W80, B83, W87, W88 Weapons. - Support studies for warhead replacement. ***FY 2024 Plans:*** - Conduct life cycle activities in support of the nuclear weapons stockpile under DoDD 3150.01, Joint DoD-DOE/NNSA Nuclear Weapon Life-Cycle Activities and DoDM 5030.55, DoD Procedures for Joint DoD-DOE Nuclear Weapons Life Cycle Activities. - Manage DoD RDT&E activities for nuclear warheads to include B61, W76, W78, W80, B83, W87, W88 Weapons.	2.366	2.155	2.450

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0605161D8Z / *Nuclear Matters*	**Project (Number/Name)** 161 / *Nuclear Matters*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
- Support studies for warhead replacement. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2023 to FY 2024 increase is associated with normal inflation increases.			
Title: Nuclear Matters Technical Support	4.623	4.588	4.670
Description: Support to Nuclear Matters includes the following: - Managing the operational, technical, and administrative support for the NWC and its subordinate bodies for a safe, secure, effective, and credible nuclear deterrent. - Developing and coordinating all reports to the President and Congress as mandated by public law including the Report on Stockpile Assessments, Nuclear Weapons Stockpile Memorandum, NWC Certification of the NNSA Budget, Nuclear Weapons Stockpile Report, Joint Surety Report. Stockpile Stewardship and Management Plan, and Report on Platform Assessment. - Developing technical content for briefings, reports, and decision letters; guides documents through coordination; and resolves issues within and between the agencies. - Maintaining official records of NWC and subordinate body proceedings and other official documents. - Address Original Classification Authority requirements for Formally Restricted Data. - Reviewing and documenting Freedom of Information Act and Mandatory Declassification Requests (Annual average of over 500 nuclear-related requests). ***FY 2023 Plans:*** - Manage the operational, technical, and administrative support for the NWC and its subordinate bodies for a safe, secure, effective, and credible nuclear deterrent. - Submit annual reports to the President and the Congress. - Oversee DoD/DOE relationship regarding the survivability and surety of the national nuclear stockpile. - Serve as DoD Sigma 15 Approval Authority (Interface with DOE/NNSA). - Address Original Classification Authority requirements for Formally Restricted Data. - Address Freedom of Information Act and Mandatory Declassification Requests. ***FY 2024 Plans:*** - Manage the operational, technical, and administrative support for the NWC and its subordinate bodies for a safe, secure, effective, and credible nuclear deterrent. - Submit annual reports to the President and the Congress. - Oversee DoD/DOE relationship regarding the survivability and surety of the national nuclear stockpile. - Serve as DoD Sigma 15 Approval Authority (Interface with DOE/NNSA). - Address Original Classification Authority requirements for Formally Restricted Data.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0605161D8Z / *Nuclear Matters*	**Project (Number/Name)** 161 / *Nuclear Matters*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
- Address Freedom of Information Act and Mandatory Declassification Requests. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2023 to FY 2024 increase is associated with normal inflation increases.			
Title: Research and Development Oversight, Risk Management, and PPBE Support	3.732	3.743	3.965
Description: This support addresses program management, evaluation, and resourcing functions associated with the Physical Security Enterprise & Analysis Group (PSEAG), the Security Policy Verification Committee, and Nuclear Forensics, Resilience and Survivability programs. This support also includes Planning, Programming, Budgeting and Execution (PPBE) for the Office of the Assistant Secretary of Defense for Nuclear, Chemical, and Biological Defense Programs and the Office of the Deputy Assistant Secretary of Defense for Nuclear Matters. ***FY 2023 Plans:*** - Assist Nuclear Matters identify, capture, and track integrated risks, as well as aggregate or cumulative technical, geopolitical, operational, and programmatic risks associated with the nuclear enterprise, to include sustainment, modernization, and future planning. - Assist with coordinating, planning and executing nuclear and conventional physical security development, test, evaluation and deployment of projects executed by the Military Departments by ensuring joint capability gaps are identified and to avoid duplication of effort across the DoD to maximize use of limited funds. - Assist Nuclear Matters and the PSEAG pursue a joint-layered defense approach to Counter-Unmanned Systems (C-UxS) by integrating sensors and systems into physical security architectures and command and control systems to address this threat. - Coordinate efforts across the DoD, interagency and international partners to develop C-UxS solutions to detect, track, identify, and defeat that support valid requirements while eliminating duplication of effort, pursuing the use of government and commercial off-the-shelf (GOTS/COTS) products, ensuring systems integration, and promoting interoperability and sustainability. - Support all phases of the PPBE process and meet all mandated timelines for submission of related documents; contribute to the development of PPBE policy guidance for OASD(NCB); providing programmatic, business, financial, and policy assessments to the OASD(NCB); Maintaining and updating OASD(NCB) related funding profiles in official DoD financial databases and systems. ***FY 2024 Plans:*** - Assist Nuclear Matters identify, capture, and track integrated risks, as well as aggregate or cumulative technical, geopolitical, operational, and programmatic risks associated with the nuclear enterprise, to include sustainment, modernization, and future planning. - Assist with coordinating, planning and executing nuclear and conventional physical security development, test, evaluation and deployment of projects executed by the Military Departments by ensuring joint capability gaps are identified and to avoid duplication of effort across the DoD to maximize use of limited funds.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0605161D8Z / *Nuclear Matters*	**Project (Number/Name)** 161 / *Nuclear Matters*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
- Assist Nuclear Matters and the PSEAG pursue a joint-layered defense approach to Counter-Unmanned Systems (C-UxS) by integrating sensors and systems into physical security architectures and command and control systems to address this threat. - Coordinate efforts across the DoD, interagency and international partners to develop C-UxS solutions to detect, track, identify, and defeat that support valid requirements while eliminating duplication of effort, pursuing the use of government and commercial off-the-shelf (GOTS/COTS) products, ensuring systems integration, and promoting interoperability and sustainability. - Support all phases of the PPBE process and meet all mandated timelines for submission of related documents; contribute to the development of PPBE policy guidance for OASD(NCB); providing programmatic, business, financial, and policy assessments to the OASD(NCB); Maintaining and updating OASD(NCB) related funding profiles in official DoD financial databases and systems. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2023 to FY 2024 increase supports requirements to address Nuclear Enterprise risk management and the nexus of cyber security with Nuclear Surety.			
Accomplishments/Planned Programs Subtotals	16.159	15.039	21.043

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 6: *RDT&E Management Support*	**R-1 Program Element (Number/Name)** PE 0605170D8Z / *Support to Networks and Information Integration (NII)*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	98.584	4.585	9.449	10.504	-	10.504	8.650	8.113	8.072	8.243	Continuing	Continuing
170: *Support to NII*	98.584	4.585	9.449	10.504	-	10.504	8.650	8.113	8.072	8.243	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

This program supports the Department's initiatives to Deter Aggression, Defend the Homeland, and Build Sustainable and Long-Term Advantage.

Support to Networks and Information Integration (NII) program supports Global Positioning System (GPS) User Equipment Synchronization with GPS space and operational control segments to conduct DoD CIO oversight of GPS management and planning activities required for meeting Joint Capabilities Integration and Development System (JCIDs) requirements. The NII program also supports policy and guidance for incorporation of alternative means of Positioning, Navigation, and Timing (PNT) delivery to augment GPS. Additionally, the program supports the DoD's PNT Oversight Council and inputs into interagency activities under the National Space-Based Positioning, Navigation, and Timing Executive Committee, and related Electromagnetic Spectrum (EMS) Enterprise activities.

In support of the National Defense Strategy, GPS continues to provide a force multiplier for the Joint Force and key U.S. allies. Similarly, superior PNT provides enhanced Joint Force lethality through precision targeting, exacting ISR, efficient logistics, blue force tracking, and a myriad of other force enhancements which are utilized by the Joint Force and key U.S. allies. As such, they ensure efficient and effective force employment.

The Integrated Planning and Management Project encompasses the National Leadership Command Capabilities Management Office's (NMO) responsibilities for establishing overall DoD policy and oversight with respect to the capability development, interoperability, standards, and architecture for National Command Capabilities for our Nation's Senior Leadership. The NMO serves as the single point of contact within the Department for policy, long-range plans, programs and budget, integrated mission advocacy, and management of decision-maker capabilities. NMO's objective is to ensure capabilities are in place to provide complete and timely situational awareness and decision tools for senior decision-makers. Additionally, the NMO assists the DoD CIO as the Executive Agent and primary OSD advocate for the White House Military Office with oversight of a wide range of DoD command, control, and communications (C3) assets and oversees the efforts of the Services and Agencies in the design, integration, and deployment of critical and sensitive C3 capabilities. Two overall areas of focus include: 1) National Senior Leader C3 Systems, National Security/Emergency Preparedness (NS/EP), DoD support to Civil Authorities; Continuity of Government (COG); 2) Cyber Mission Indications and Warnings.

NMO provides guidance, oversight and policy direction support for Senior Leadership communications and Continuity communications which supports the Secretary's stated priority to "Defend the Nation" by "Addressing Advanced and Persistent Threats". By coordinating and integrating with the National Security Agency in the development of a security policy that provides guidance to the NMO community on cyber secure connection interfaces and security patterns on a continuous basis to addresses hardware, firmware and software vulnerabilities. Working with Defense Information Systems Agency (DISA), the Services, and other federal

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 6: *RDT&E Management Support*	**R-1 Program Element (Number/Name)** PE 0605170D8Z / *Support to Networks and Information Integration (NII)*

government agencies to ensure the safety of our Nation's critical undersea cable infrastructure. Provide guidance and oversight to all NMO cryptographic modernization programs, ensure NSA and the appropriate Service delivers their cryptographic capability on time and work with the combatant commanders' staff to ensure they have operationalized any potential risks with potential cryptographic program delays.

Coordinate the DoD's critical time dissemination resiliency plans and initiatives with senior representatives from the precision, navigation and timing (PNT) community. Work with the Joint Staff, Army, Air Force, Navy, and Marine Corps to ensure their PNT plans include primary and alternate capabilities. Continue analysis of White House, DoD Services, DoD Agencies and Combatant Command initiatives to ensure the effectiveness of our airborne command, control and communications, commercial and military satellite communications, and their supporting ground infrastructure. Analysis will ensure our Senior Leadership C3 is operationally effective during all phases of a conflict.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	4.759	9.449	10.441	-	10.441
Current President's Budget	4.585	9.449	10.504	-	10.504
Total Adjustments	-0.174	0.000	0.063	-	0.063
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	-0.174	-	0.063	-	0.063

Change Summary Explanation

FY 2024 program adjustments due to re-phasing based on prior year execution balances. Funding supports Global Positioning System (GPS) User Equipment Synchronization with GPS space and operational control segments to conduct DoD CIO oversight of GPS management and planning activities required for meeting JCIDs requirements.

C. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Support to Networks and Information Integration (NII)	4.585	9.449	10.504
FY 2023 Plans: Conduct DoD CIO oversight of GPS/PNT) management and planning activities required for meeting warfighter requirements. Manage activities of the DoD PNT Oversight Council and supporting structure and support the National Space-Based Positioning, Navigation and Timing Executive Committee. Support activities include: - Manage the GPS Security Policy (DoDM-O4650.11).			

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 6: *RDT&E Management Support*	**R-1 Program Element (Number/Name)** PE 0605170D8Z / *Support to Networks and Information Integration (NII)*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
- Manage the Information Assurance/COMSEC elements of DoDM-O4650.11. - Continue implementation of the GPS Protection Profile matrix from Navigation Warfare Concept of Operations in conjunction with Warfighting OPLANS and CONPLANS in coordination with US SPACECOM. - Manage PNT Navigation Warfare Instruction and Annexes to all the OPLANS and CONPLANS in coordination with US STRATCOM. - Manage National Airspace System activities affecting PNT with the Air Force and Federal Aviation Administration. Continue implementation of Red Key Sundown Policy. - Provide staff support, perform research and conduct studies as directed by DEPSECDEF in his role as co-chair of the National Executive Committee for Space-Based PNT and for DoD CIO in his role as co-chair of the Executive Steering Group, including EMS access activities. - Apply Navigation Warfare Concepts of Operations via the JNWC and US SPACECOM to develop Doctrine, Tactics, Techniques and Procedures, Training, Equipment Validation and Material Solutions to Navigation Warfare challenges to the Military Services and Combatant Commanders in the scenarios defined in the CONPLANS and OPLANS. - Provide oversight and guidance on the DoD PNT investment strategy to insure PNT material solutions are developed in a synchronized fashion in JCIDs, DAS, and PPBE. - Implement PNT DoDIs for PNT and Navigation Warfare policy and PNT system compliance with Navigation Warfare requirements, and the DoDM for security policy. - Analyze and promote alternative PNT delivery means for inclusion in the force structure for force protection. Assist development of Modular Open Systems Architecture Standards for fielding of alternative PNT and development of M&S tool for alternative PNT analysis. - Biennially task IC to assess threat vectors to GPS and other means of PNT delivery; biennial operational assessments to reveal gaps in PNT delivery against OPLANS and CONPLANS of COCOMS; maintenance of PNT equipment inventories, refreshed biennially. - Develop Directives, Instructions, and Manuals for implementation of the PNT Strategy within the Department. - Continue special tasks directed by DCIO to address acceleration of development and fielding of advanced GPS receivers in the Joint Force. - Maintain and update inventory of existing GPS receiver equipage; expand to include antennae and antennae electronics; expand to include delivery of PNT via other-than-GPS equipment. - Address prioritized platforms in fielding plans and guidance to Services. - Develop MGUE “Roadmap” illustrating necessary fielding milestones for Joint Force MGUE equipage. - Administer the PNT Oversight Council and PNT Executive Management Board within DoD via supporting DoDDs and DoDIs, agendas and minutes for meetings, task disposition and the PNT Oversight Council Annual Report to Congress. Chair and manage subordinate WGs for PNT Policy and NAVWAR.			

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 6: *RDT&E Management Support*	**R-1 Program Element (Number/Name)** PE 0605170D8Z / *Support to Networks and Information Integration (NII)*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
- Address NATO PNT interoperability via STANAGs, Allied Navigation Plans, and associated documentation in NATO CaP-2 under C3 Board direction. Insure complementarity of allied equipage and planning based on USAF GPS development, open systems architecture development, and foreign PNT systems and capabilities. - Ensure cyber security of all elements of the Department PNT enterprise. Assist civil Departments and Agencies, as required Provide oversight and guidance on MIS and SFOC and associated infrastructure. These activities will encompass overseeing analysis of requirements, identifying communications capability shortfalls and interoperability issues, assessing equipment performance issues and exploring future communications improvements. This includes technical expertise and systems engineering expertise in support of acquisition, planning, procurement, installation, operations and sustainment of MIS and SFOC capabilities. Provide technical expertise and oversight of Senior Leader C3 Systems and platforms including fixed and mobile communications capabilities of the White House, Secretary of Defense, Chairman of the Joint Chiefs of Staff, and other identified Senior Leaders. These activities will encompass consolidating Senior Leader operational mission requirements, identifying communications capability shortfalls and interoperability issues, assessing equipment performance issues and exploring future communications improvements.			
FY 2024 Plans: Conduct DoD CIO oversight of GPS/PNT) management and planning activities required for meeting warfighter requirements. Manage activities of the DoD PNT Oversight Council and supporting structure and support the National Space-Based Positioning, Navigation and Timing Executive Committee. Support activities include: - Manage the GPS Security Policy (DoDM-O4650.11). - Manage the Information Assurance/COMSEC elements of DoDM-O4650.11. - Continue implementation of the GPS Protection Profile matrix from Navigation Warfare Concept of Operations in conjunction with Warfighting OPLANS and CONPLANS in coordination with US SPACECOM. - Manage PNT Navigation Warfare Instruction and Annexes to all the OPLANS and CONPLANS in coordination with US STRATCOM. - Manage National Airspace System activities affecting PNT with the Air Force and Federal Aviation Administration. Continue implementation of Red Key Sundown Policy. - Provide staff support, perform research and conduct studies as directed by DEPSECDEF in his role as co-chair of the National Executive Committee for Space-Based PNT and for DoD CIO in his role as co-chair of the Executive Steering Group, including EMS access activities.			

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 6: *RDT&E Management Support*	**R-1 Program Element (Number/Name)** PE 0605170D8Z / *Support to Networks and Information Integration (NII)*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
- Apply Navigation Warfare Concepts of Operations via the JNWC and US SPACECOM to develop Doctrine, Tactics, Techniques and Procedures, Training, Equipment Validation and Material Solutions to Navigation Warfare challenges to the Military Services and Combatant Commanders in the scenarios defined in the CONPLANS and OPLANS. - Provide oversight and guidance on the DoD PNT investment strategy to insure PNT material solutions are developed in a synchronized fashion in JCIDs, DAS, and PPBE. - Implement PNT DoDIs for PNT and Navigation Warfare policy and PNT system compliance with Navigation Warfare requirements, and the DoDM for security policy. - Analyze and promote alternative PNT delivery means for inclusion in the force structure for force protection. Assist development of Modular Open Systems Architecture Standards for fielding of alternative PNT and development of M&S tool for alternative PNT analysis. - Biennially task IC to assess threat vectors to GPS and other means of PNT delivery; biennial operational assessments to reveal gaps in PNT delivery against OPLANS and CONPLANS of COCOMS; maintenance of PNT equipment inventories, refreshed biennially. - Develop Directives, Instructions, and Manuals for implementation of the PNT Strategy within the Department. - Continue special tasks directed by DCIO to address acceleration of development and fielding of advanced GPS receivers in the Joint Force. - Maintain and update inventory of existing GPS receiver equipage; expand to include antennae and antennae electronics; expand to include delivery of PNT via other-than-GPS equipment. - Address prioritized platforms in fielding plans and guidance to Services. - Develop MGUE “Roadmap” illustrating necessary fielding milestones for Joint Force MGUE equipage. - Administer the PNT Oversight Council and PNT Executive Management Board within DoD via supporting DoDDs and DoDIs, agendas and minutes for meetings, task disposition and the PNT Oversight Council Annual Report to Congress. Chair and manage subordinate WGs for PNT Policy and NAVWAR. - Address NATO PNT interoperability via STANAGs, Allied Navigation Plans, and associated documentation in NATO CaP-2 under C3 Board direction. Insure complementarity of allied equipage and planning based on USAF GPS development, open systems architecture development, and foreign PNT systems and capabilities. - Ensure cyber security of all elements of the Department PNT enterprise. Assist civil Departments and Agencies, as required Provide oversight and guidance on MIS and SFOC and associated infrastructure. These activities will encompass overseeing analysis of requirements, identifying communications capability shortfalls and interoperability issues, assessing equipment performance issues and exploring future communications improvements. This includes technical expertise and systems engineering expertise in support of acquisition, planning, procurement, installation, operations and sustainment of MIS and SFOC capabilities.			

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 6: *RDT&E Management Support*	**R-1 Program Element (Number/Name)** PE 0605170D8Z *I Support to Networks and Information Integration (NII)*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Provide technical expertise and oversight of Senior Leader C3 Systems and platforms including fixed and mobile communications capabilities of the White House, Secretary of Defense, Chairman of the Joint Chiefs of Staff, and other identified Senior Leaders. These activities will encompass consolidating Senior Leader operational mission requirements, identifying communications capability shortfalls and interoperability issues, assessing equipment performance issues and exploring future communications improvements. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The FY 2024 increase is due to re-phasing based on prior year execution balances.			
Accomplishments/Planned Programs Subtotals	4.585	9.449	10.504

D. Other Program Funding Summary ($ in Millions)

N/A

Remarks

E. Acquisition Strategy

N/A

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 6: *RDT&E Management Support*	**R-1 Program Element (Number/Name)** PE 0605200D8Z / *General Support to OUSD(I)*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	7.904	10.451	11.112	2.980	0.000	2.980	3.180	3.506	3.575	3.846	Continuing	Continuing
200: *General Support to USDI*	7.904	10.451	11.112	2.980	0.000	2.980	3.180	3.506	3.575	3.846	Continuing	Continuing

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

This program supports the Department's initiatives to Defend the Homeland, Build Sustainable and Long-Term Advantage, and Taking Care of People.

Security Activities focus on technology development, automation, and modernization of capabilities across the Defense Security Enterprise to include Personnel Vetting, Physical Security, Industrial Security, and Critical Technology Protection. Activities also include proof of concept and application development related to enabling process improvement, efficiencies, and innovation.

Intelligence, Surveillance, Reconnaissance (ISR) Operations requires expert engineering and technical assessments on a wide range of classified ISR operational capabilities that directly support NDS priorities. In addition, senior level education is provided for better understanding to make informed decisions on ISR operations related initiatives, platforms, sensors and force structure. Establishes and assesses oversight of the DoD ISR enterprise. Evaluates ISR enterprise performance and effectiveness in terms of strategic sufficiency and alignment to the National Defense Strategy and monitors allied and partner ISR contributions. Provides expertise on matters of technical collection and operational employment. Provides ISR guidance, counsel, and options to national leaders on improving the near-term efficiency and effectiveness of ISR capabilities by spearheading the expedited delivery of ISR systems, technologies, policies, and processes in support of warfighter operations around the globe.

Intelligence & Security Programs & Resources (ISP&R) Digital Foundation Webpage

Digital Presence is cornerstone component of the OUSD(I&S) Defense Intelligence Enterprise digital modernization strategy known as Project Herald. The Digital Presence initiative provides an easy access to Defense Intelligence Enterprise tools and services. By providing easy access to DIE tools and services, the Digital Presence initiative addresses how difficult it is for users and programs to discover and find Defense Intelligence Enterprise tools and services. The goal of the Project Herald Digital Presence is to encourage reuse and eliminate duplication of effort and speed innovation by socializing innovation efforts and best practices. The ultimate goal is a fully functioning Digital Presence that enables data driven decision making and governance across the DIE via relevant tools and metrics. Specifically, FY 2022 includes continued development of tools and efforts that:

-Provide a centralized list of tools and services with direct links to working services
-Define and promote software development best practices to enable common development approaches
-Identify and start to create blueprints and reference implementations that can be leveraged by the technical user community

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 6: *RDT&E Management Support*	**R-1 Program Element (Number/Name)** PE 0605200D8Z / *General Support to OUSD(I)*

-Holistically communicate the macro goals and micro services of the digital transformation in a coherent and transparent fashion
- Socialize Project Herald efforts and encourage community participation in Digital Transformation

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	10.452	6.112	6.461	0.000	6.461
Current President's Budget	10.451	11.112	2.980	0.000	2.980
Total Adjustments	-0.001	5.000	-3.481	0.000	-3.481
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	5.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Programmatic Adjustment	-0.001	-	-3.481	-	-3.481

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2022	FY 2023
Project: 200: *General Support to USDI*		
Congressional Add: *Program Increase*	8.500	5.000
Congressional Add Subtotals for Project: 200	8.500	5.000
Congressional Add Totals for all Projects	8.500	5.000

Change Summary Explanation

FY 2024 $3M decrease due to programmatic adjustments that will enable the shift in focus from research and development to maintenance and sustainment of efforts. Previously, RDT&E funds were used to conduct studies and analysis across the OUSD(I&S) portfolios.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605200D8Z / *General Support to OUS D(I)*	Project (Number/Name) 200 / *General Support to USDI*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
200: *General Support to USDI*	7.904	10.451	11.112	2.980	0.000	2.980	3.180	3.506	3.575	3.846	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Security Activities focus on technology development, automation, and modernization of capabilities across the Defense Security Enterprise to include Personnel Vetting, Physical Security, Industrial Security, and Critical Technology Protection. Activities also include proof of concept and application development related to enabling process improvement, efficiencies, and innovation.

Intelligence, Surveillance, Reconnaissance (ISR) Operations requires expert engineering and technical assessments on a wide range of classified ISR operational capabilities that directly support NDS priorities. In addition, senior level education is provided for better understanding to make informed decisions on ISR operations related initiatives, platforms, sensors and force structure. Establishes and assesses oversight of the DoD ISR enterprise. Evaluates ISR enterprise performance and effectiveness in terms of strategic sufficiency and alignment to the National Defense Strategy and monitors allied and partner ISR contributions. Provides expertise on matters of technical collection and operational employment. Provides ISR guidance, counsel, and options to national leaders on improving the near-term efficiency and effectiveness of ISR capabilities by spearheading the expedited delivery of ISR systems, technologies, policies, and processes in support of warfighter operations around the globe.

Intelligence & Security Programs & Resources (ISP&R) Digital Foundation Webpage:
-Provide a centralized list of tools and services with direct links to working services
-Define and promote software development best practices to enable common development approaches.
-Identify and start to create blueprints and reference implementations that can be leveraged by the technical user community. and
-Holistically communicate the macro goals and micro services of the digital transformation in a coherent and transparent fashion.

Intelligence & Security Programs & Resources (ISP&R) Digital Foundation Webpage:
-Provide a centralized list of tools and services with direct links to working services
-Define and promote software development best practices to enable common development approaches.
-Identify and start to create blueprints and reference implementations that can be leveraged by the technical user community. and
-Holistically communicate the macro goals and micro services of the digital transformation in a coherent and transparent fashion.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: General Spt to USDI	1.951	6.112	2.980
Description: Security Activities focus on technology development, automation, and modernization of capabilities across the Defense Security Enterprise to include Personnel Vetting, Physical Security, Industrial Security, and Critical Technology			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0605200D8Z / *General Support to OUSD(I)*	**Project (Number/Name)** 200 / *General Support to USDI*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Protection. Activities also include proof of concept and application development related to enabling process improvement, efficiencies, and innovation. Intelligence, Surveillance, Reconnaissance (ISR) Operations requires expert engineering and technical assessments on a wide range of classified ISR operational capabilities that directly support NDS priorities. In addition, senior level education is provided for better understanding to make informed decisions on ISR operations related initiatives, platforms, sensors and force structure. IIntelligence & Security Programs & Resources (ISP&R) Digital Foundation Webpage Digital Presence is cornerstone component of the OUSDI&S Defense Intelligence Enterprise digital modernization strategy known as Project Herald. The Digital Presence initiative provides an easy access to Defense Intelligence Enterprise tools and services. By providing easy access to DIE tools and services, the Digital Presence initiative addresses how difficult it is for users and programs to discover and find DIE tools and services. The goal of the Project Herald Digital Presence is to encourage reuse and eliminate duplication of effort and speed innovation by socializing innovation efforts and best practices. The ultimate goal is a fully functioning Digital Presence that enables data driven decision making and governance across the DIE via relevant tools and metrics. Specific FY22 include continued development of tools and efforts that: -Provide a centralized list of tools and services with direct links to working services -Define and promote software development best practices to enable common development approaches. -Identify and start to create blueprints and reference implementations that can be leveraged by the technical user community. and -Holistically communicate the macro goals and micro services of the digital transformation in a coherent and transparent fashion. - Socialize Project Herald efforts and encourage community participation in Digital Transformation ***FY 2023 Plans:*** Security Activities will provide technology development and concept evaluation for applications in support of OUSD(I&S). ISR Ops will provide expert engineering and technical assessments on a wide range of classified ISR operational capabilities that directly support NDS priorities. Funds will support senior level education and understanding to inform decisions on ISR operations related initiatives, platforms, sensors and force structure. ISPR Digital Foundation Website.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0605200D8Z / *General Support to OUSD(I)*	**Project (Number/Name)** 200 / *General Support to USDI*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Digital Presence is being developed on NIPR and will be replicated up to SIPR and JWICS where it will be customized for each environment. ***FY 2024 Plans:*** Security Activities will continue to provide technology development and concept evaluation for applications in support of OUSD(I&S). ISR Ops will continue to provide expert engineering and technical assessments on a wide range of classified ISR operational capabilities that directly support NDS priorities. Funds will support senior level education and understanding to inform decisions on ISR operations related initiatives, platforms, sensors and force structure. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2024 decrease of $3.000 million due to programmatic adjustments that enables the shift in focus from research and development to maintenance and sustainment of efforts. Funding was transferred to O&M in order to fund efforts to enable identified process improvement and automation capabilities as well as innovative solutions. The remaining $0.132 million decrease reflects a reduction and delay in investments in technology development, automation, and capability modernization across the Defense Security and Intelligence Enterprises.			
Accomplishments/Planned Programs Subtotals	1.951	6.112	2.980

	FY 2022	FY 2023
Congressional Add: Program Increase	8.500	5.000
FY 2022 Accomplishments: FY 2022 funding supported the growth of the Research for Intelligence and Security Challenges internship program including direct sponsorship of and clearances for more than 50 graduate and undergraduate interns into the intelligence and security career pipeline. In FY 2022, we also expanded the declassification modernization research program to include a demonstration of a technology-assisted declassification program. New research projects are being initiated to support research into the security and intelligence implications and applications of classified cloud computing and cloud-based technologies and the use of DoD grant data to support research protection efforts. ***FY 2023 Plans:*** Classified.		
Congressional Adds Subtotals	8.500	5.000

C. Other Program Funding Summary ($ in Millions)

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0605200D8Z / *General Support to OUSD(I)*	**Project (Number/Name)** 200 / *General Support to USDI*

C. Other Program Funding Summary ($ in Millions)

Remarks

D. Acquisition Strategy

The contracting strategy follows guidance outlined in the DoD 5000 series directives, Federal Acquisition Regulations (FAR), and Defense Federal Acquisition Regulations (DFAR).

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 6: *RDT&E Management Support*	**R-1 Program Element (Number/Name)** PE 0605502D8Z / *Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR)*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	-	158.670	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	-	-
500: *SBIR*	-	39.562	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	-	-
502: *STTR*	-	73.544	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	-	-
503: *SBIR CRP*	-	40.000	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	-	-
504: *SBIR CRP Administration*	-	1.391	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	-	-
505: *SBIR Administration*	-	4.173	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	-	-

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

DoD Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs are designed to provide small, high-tech businesses opportunities to propose innovative ideas and solutions in response to technological challenges posed by the DoD Components that will address existing and emerging national security threats and to develop new military capabilities. The SBIR and STTR programs are critical pathways for the Department to tap the innovation of America's small business community and research institutions to support development of cutting-edge technologies that will increase the readiness, modernization and lethality of the Joint Force.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	0.000	0.000	0.000	-	0.000
Current President's Budget	158.670	0.000	0.000	-	0.000
Total Adjustments	158.670	0.000	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	158.670	-			

Change Summary Explanation

Funds are allocated from other Office of the Secretary of Defense (OSD) Research, Development, Test, and Evaluation (RDT&E) programs and select Defense Agencies to support the SBIR and STTR programs as defined in 15 U.S.C. 638 (f) and (n).

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605502D8Z / *Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR)*	Project (Number/Name) 500 / *SBIR*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
500: *SBIR*	-	39.562	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The goals of the Office of the Secretary of Defense (OSD) Small Business Innovation Research (SBIR) program is to stimulate technological innovation, increase private sector commercialization of federal research and development (R&D), increase small business participation in federally funded R&D, and foster participation by minority and disadvantaged firms in technological innovation. Leveraging the innovation of small business concerns is an important contributor to the development of the cutting-edge technologies that will generate decisive and sustained U.S. military advantages by increasing the readiness, modernization and lethality of the Joint Force. This program supports high priority projects within the DoD Components, their missions, and the Warfighter.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: SBIR	39.562	-	-
Description: The set-aside program for small business supports mission-oriented R&D with the goal of providing advanced capabilities to the Warfighter and commercializing those technologies, resulting in a vibrant small business innovation base supporting economic growth and technology innovation. The SBIR program contributed to the readiness and modernization of the Joint Force and improved operational capabilities through the innovative research topics initiated in FY 2022 in the following areas: OSD-NGA: - Scene Geometry Aided Automatic Target Recognition (ATR) for Radar, develop and demonstrate synthetic aperture radar (SAR) ATR that reduces false alarm rates by incorporating modern artificial intelligence and geometry of the imaged area. TECHNOLOGY AREA(S): Artificial Intelligence/Machine Learning (AI/ML); Autonomy; Information Systems; Sensors; Electronics - Automatic Labeling of Multiple Target Synthetic Aperture Radar (SAR) Imagery for Automatic Target Recognition (ATR), develop novel algorithms for labeling multiple target classes in Synthetic Aperture Radar (SAR) imagery to expedite training of SAR Automatic Target Recognition (ATR) algorithms. TECHNOLOGY AREA(S): Artificial Intelligence/Machine Learning (AI/ML); Autonomy; Information Systems; Sensors; Electronics - Rapid Object Detector Development from Limited Labelled Data, develop methods and science to rapidly produce object detectors for overhead imagery starting from a limited pool of hand-labeled data. TECHNOLOGY AREA(S): Artificial Intelligence / Machine Learning; Information Systems Technology .- Modeling and Simulation Technology; Computing and Software Technology			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0605502D8Z / *Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR)*	**Project (Number/Name)** 500 / *SBIR*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
- High Resolution Near Real Time Land Use and Land Use Change, develop a high-resolution fully automated land use and land use change (LULUC) map of the globe, updated daily, using commercial or publicly available satellite imagery. Identify mission-specific types of change in near real-time across broad areas. TECHNOLOGY AREA(S): Artificial Intelligence/Machine Learning Information Systems; Modeling and Simulation Technology OSD-C5ISREW: - Stand-alone multi-axis compact portable quantum accelerometer, build a compact portable 3-axis quantum-based accelerometer and demonstrate on a moving platform. TECHNOLOGY AREA(S): Quantum Science; Sensors; Electronics and Electronic Warfare - High yield atomic vapor cell manufacturing and packaging for atomic clocks and magnetometers, develop a manufacturing process which allows greater yield (>80%) per wafer batch on vapor cell wafer runs to support quantum clocks and magnetometers. TECHNOLOGY AREA(S): Quantum Science; Sensors; Electronics and Electronic Warfare; Materials / Processes - Networked quantum sensor for geolocation of anomalous underground ferrous sources, detect and geo-locate subterranean tunneling activities by using a quantum networked magnetometer. TECHNOLOGY AREA(S): Quantum Science; Sensors; Electronics and Electronic Warfare - Open environment nuclear quadrupole magnetic resonance detection, develop a quantum magnetometer that is widely tunable between 100 Hz and 10 MHz to detect and distinguish RF signals with sensitivity near 1 fT/Hz1/2. TECHNOLOGY AREA(S): Quantum Science; Sensors; Electronics and Electronic Warfare Emerging results from these SBIR topics will be reported in FY 2023.			
Accomplishments/Planned Programs Subtotals	39.562	-	-

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605502D8Z / *Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR)*	Project (Number/Name) 502 / *STTR*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
502: *STTR*	-	73.544	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The goals of the OSD Small Business Technology Transfer (STTR) program is to stimulate a partnership of ideas between small business concerns (SBCs) and research institutions through DoD funded research or research and development (R/R&D). By providing awards to SBCs or cooperative R/R&D efforts with research institutions, DoD supports innovation and economic growth to generate decisive and sustained U.S. military advantages. This program supports high priority projects within the DoD Components, their missions, and the Warfighter.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: STTR	73.544	-	-
Description: The set-aside program that funds cooperative R/R&D projects for small businesses in partnership with research institutions. The STTR program contributed to the readiness and modernization of the Joint Force and improved operational capabilities through the innovative research topics initiated in FY 2022 in the following areas: OSD-NGA: - Multi-Scale Representation Learning, develop a single neural network that learns representations at multiple spatial and semantic scales and that may be applied to different geospatial tasks, such as land cover segmentation, object detection, key-point matching, and few-shot/fine-grained/long-tailed classification. TECHNOLOGY AREA(S): Artificial Intelligence/Machine Learning; Information Systems; Modeling and Simulation Technology - Environmental Security Risk Forecasting, develop computer models to forecast risk to U.S. critical infrastructure from a range of potential climate futures. During Phase I, research will be restricted to modeling past and forecasting future wildfire potential in a chosen area containing critical infrastructure. TECHNOLOGY AREA(S): Artificial Intelligence/Machine Learning; Statistical Forecasting; Information Systems; Modeling and Simulation Technology Emerging results from these STTR topics will be reported in FY 2023.			
Accomplishments/Planned Programs Subtotals	73.544	-	-

C. Other Program Funding Summary ($ in Millions)

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0605502D8Z / *Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR)*	**Project (Number/Name)** 502 / *STTR*

C. Other Program Funding Summary ($ in Millions)

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0605502D8Z / *Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR)*	**Project (Number/Name)** 503 / *SBIR CRP*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
503: *SBIR CRP*	-	40.000	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Under the authority defined in 15 U.S.C. 638 (y), Commercialization Readiness (CR) Program (CRP), OSD established the “OSD Transitions SBIR/STTR Technology (OTST) Program”. The CR Program is a dynamic, results-oriented response to the Congressional challenge to the DoD in 2006 to deliver more advanced SBIR/STTR technologies faster to our warfighters. The OTST program is an interim technology maturity phase (Phase II) inserted into the SBIR/STTR development process and is structured to be a technology pull to meet requirements that address potential and emerging requirements.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Commercialization Readiness Program (CRP)	40.000	-	-
Description: The SBIR CR Program contributed to the readiness and modernization of the Joint Force and improved operational capabilities through innovative research projects in the following areas: • Artificial Intelligence • Biotechnology • COVID-19 • Cybersecurity • General Warfighting Capability • Hypersonics • Sustainment Emerging Results from CRP Investments in FY 2021 include: • Air Force- Precision Automated Instrumented Landing Survey; "Active Collaborative Automatic ATR (ACA); Automatic Target Recognition (ATR)", Joint Collaborative Augmentation for Sensemaking Environment (JCAUSE); Advanced Energy Deposition Systems for High Speed Flight; Turbojet-Ramjet Integration for a Turbine-based Combined Cycle Engine; Active Control of a Scramjet Engine; Free Flight Hypersonic Erosion and Ablation Measurement System / 3D Hypersonic Surface Profilometry Measurement System ; Portable Kinetic Metallization Process and Device for Minor Structural and Protective Coating Repair of Aluminum and High-Strength Steels; NDI Tool for Corrosion Detection in Sub-Structure • ARMY- "Human Activity Recognition (HAR) and Threat Assessment Via Passive Sensor Systems for Small Arms” • DEVCOM- "An Accurate Unsteady Hybrid Flowfield Approach for High Altitude Maneuverability"			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0605502D8Z / *Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR)*	**Project (Number/Name)** 503 / *SBIR CRP*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
• DIU- Sustainment and Fleet Readiness at Scale; Hypoxia - Pilot Health and Physiological Monitoring in Next-Generation Helmet Architectures; Wearable Warfighter Health Monitoring System; Passenger Mixed Reality Deep Immersion Headset; • DLA- Decoder Wheel Phase 2 Development; Reverse Engineering of CCA's for DSM-157 Maverick Missile Test Set (AGM-65); Auxiliary Power Supply for Aerospace Hydraulic Systems; MMP APA Replacement and Refurbishment and Supply Chain Development • DMEA- "Prognostics and Decision Making – AI Anti-Tamper Technology for Missile Defense - Micro" • JSSAP- Propellant Material Additives for Electrical Ignition Application • MDA- Special Tooling and Processes for Repeatable Adhesive Application • NAVY- Enhanced Summarizations of Streaming Text - (Microservices for Semantics, Text Analytics and Reporting (MSTAR)) In FY 2023, CRP intends on funding 35-40 additional projects.			
Accomplishments/Planned Programs Subtotals	40.000	-	-

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605502D8Z / *Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR)*	Project (Number/Name) 504 / *SBIR CRP Administration*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
504: *SBIR CRP Administration*	-	1.391	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The goals of the Office of the Secretary of Defense (OSD) Small Business Innovation Research (SBIR) program is to stimulate technological innovation, increase private sector commercialization of federal research and development (R&D), increase small business participation in federally funded R&D, and foster participation by minority and disadvantaged firms in technological innovation. Leveraging the innovation of small business concerns is an important contributor to the development of the cutting-edge technologies that will generate decisive and sustained U.S. military advantages by increasing the readiness, modernization and lethality of the Joint Force. This program supports high priority projects within the DoD Components, their missions, and the Warfighter. The SBIR Administration project was created to fund, coordinate, and execute the administrative portions of the DoD SBIR Programs.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: SBIR CRP Administration	1.391	-	-
Description: The CRP Administration program code was created to reserve and manage 1% of the OSD Small Business Innovation Research (SBIR) budget that will be used to fund, coordinate, and execute the administrative portions of the DoD Commercialization Readiness Program (CRP) Program. The CRP Program is a dynamic, results-oriented response to the Congressional challenge to the DoD in 2006 to deliver more advanced SBIR/STTR technologies faster to our Warfighters. The CRP program is structured to be a technology maturation/transition pull that supports high priority projects within the DoD Services and Defense Agencies to address potential and emerging requirements.			
Accomplishments/Planned Programs Subtotals	1.391	-	-

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605502D8Z / *Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR)*	Project (Number/Name) 505 / *SBIR Administration*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
505: *SBIR Administration*	-	4.173	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The goals of the Office of the Secretary of Defense (OSD) Small Business Innovation Research (SBIR) program is to stimulate technological innovation, increase private sector commercialization of federal research and development (R&D), increase small business participation in federally funded R&D, and foster participation by minority and disadvantaged firms in technological innovation. Leveraging the innovation of small business concerns is an important contributor to the development of the cutting-edge technologies that will generate decisive and sustained U.S. military advantages by increasing the readiness, modernization and lethality of the Joint Force. This program supports high priority projects within the DoD Components, their missions, and the Warfighter. The SBIR Administration project was created to fund, coordinate, and execute the administrative portions of the DoD SBIR Programs.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: SBIR Administration	4.173	-	-
Description: The SBIR Administration program code was created to reserve and manage 3% of the OSD Small Business Innovation Research (SBIR) budget that will be used to fund, coordinate, and execute the administrative portions of the DoD Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs. The DoD SBIR/ STTR Programs are designed to provide small, high-tech businesses opportunities to propose innovative ideas and solutions in response to technological challenges posed by the DoD Components that will address existing and emerging national security threats and to develop new military capabilities.			
Accomplishments/Planned Programs Subtotals	4.173	-	-

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 6: *RDT&E Management Support*	**R-1 Program Element (Number/Name)** PE 0605790D8Z *I Small Business Innovation Research (SBIR) Small Business Technology Transfer (STTR)*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	-	3.628	3.820	3.831	-	3.831	3.889	3.972	4.056	4.144	Continuing	Continuing
518: *SBIR Challenge Admin*	-	3.628	3.820	3.831	-	3.831	3.889	3.972	4.056	4.144	Continuing	Continuing

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

This program supports the Department's initiatives to Build Sustainable and Long-Term Advantage, and Taking Care of People.

This program element (PE) provides funding for the administration of the Department of Defense (DoD) Small Business Innovation Research (SBIR) program and the Small Business Technology Transfer (STTR) program. The authority to establish SBIR and STTR programs is codified in 15 U.S.C. 638. The statutory goals of the programs are to stimulate technological innovation, meet federal research and development (R&D) needs, foster and encourage participation in innovation and entrepreneurship by women and socially or economically disadvantaged persons, and increase private sector commercialization of innovations from federal R&D funding. In addition, the STTR program aims to foster technology transfer through cooperative R&D between small businesses and research institutions.

The DoD SBIR/STTR programs set-aside almost two billion dollars annually defense-wide to competitively fund scientific and technical innovation to specifically address the National Defense Strategy (NDS) modernization priorities and the mission needs of participating DoD components. The DoD components participating in the SBIR/STTR programs include: Army, Navy, Air Force, Defense Advanced Research Projects Agency (DARPA), Missile Defense Agency (MDA), Defense Threat Reduction Agency (DTRA), U.S. Special Operations Command (SOCOM), Joint Science & Technology Office for Chemical & Biological Defense (CBD), National Geospatial-Intelligence Agency (NGA), Defense Logistics Agency (DLA), Defense Microelectronics Activity (DMEA), Defense Health Agency (DHA), Strategic Capabilities Office (SCO), Defense Human Resources Activity (DHRA), Space Development Agency (SDA), and the Office of Secretary of Defense (OSD).

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 6: *RDT&E Management Support*	**R-1 Program Element (Number/Name)** PE 0605790D8Z *I Small Business Innovation Research (SBIR) Small Business Technology Transfer (STTR)*

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	3.628	3.820	3.899	-	3.899
Current President's Budget	3.628	3.820	3.831	-	3.831
Total Adjustments	0.000	0.000	-0.068	-	-0.068
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	-	-	-0.068	-	-0.068

Change Summary Explanation

FY 2024 reduction of $0.068 million is comprised of a realignment of $0.085 million to support the Historically Black Colleges and Universities/Minority Serving Institutions program, which is a priority of the Under Secretary of Defense for Research and Engineering (USD(R&E)), $0.004 million to support departmental priorities and an economic assumption increase of $0.021 million.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605790D8Z / *Small Business Innovation Research (SBIR) Small Business Technology Transfer (STTR)*	Project (Number/Name) 518 / *SBIR Challenge Admin*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
518: *SBIR Challenge Admin*	-	3.628	3.820	3.831	-	3.831	3.889	3.972	4.056	4.144	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Small Business Innovation Research (SBIR) program and the Small Business Technology Transfer (STTR) programs are highly competitive programs that encourage domestic small businesses to engage in federal research, development, test and evaluation (RDT&E) with the potential for commercialization. Through a competitive awards-based program, SBIR/STTR enables small businesses to explore their technological potential and provide the incentive to profit from its commercialization. By including qualified small businesses in the nation's research and development (R&D) arena, high-tech innovation is stimulated, and the United States gains entrepreneurial spirit as it meets specific research and development needs.

The SBIR/STTR programs are executed in three phases. The purpose of Phase I is to determine the scientific technical and commercial merit, and feasibility of ideas submitted under the SBIR/STTR programs. Phase II is the principal research or research and development effort and is expected to produce a well-defined deliverable prototype. Phase III SBIR/STTR efforts derive from, extend or conclude Phase I or Phase II efforts, and are not funded with SBIR/STTR funds. Under Phase III, companies participating in the SBIR/STTR programs are expected to obtain funding from the private sector and/or non-SBIR/non-STTR government sources to develop the prototype into a viable product or non-R&D service for sale in military and/or private sector markets.

This PE funds the administrative support to the SBIR/STTR programs including: policy development, oversight of program execution for participating DoD agencies, outreach to small businesses, Impact Level IV (IL4) environment hosting/operation and maintenance for the Defense SBIR/STTR Innovation Portal (DSIP), and conduct of a virtual symposium to better communicate the DoD mission and technology needs to small businesses.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: SBIR Challenge Admin	3.628	3.820	3.831
Description: This program element is the only source of funds for the coordination, administration, and execution of the Department's SBIR/STTR programs in accordance with statute, Small Business Administration (SBA) SBIR/STTR Policy Directive, and the DoD policies and regulations. The Director, Small Business and Technology Partnerships (SBTP) within the Office of the Under Secretary of Defense for Research and Engineering (OUSD(R&E)) is tasked with oversight and execution of essential SBIR/STTR Program activities that are required by law.			
FY 2023 Plans: - Continue coordination and execution of the administrative responsibilities of the DoD SBIR/STTR programs; - Refine and improve established, automated processes across the entire SBIR/STTR lifecycle;			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0605790D8Z / *Small Business Innovation Research (SBIR) Small Business Technology Transfer (STTR)*	**Project (Number/Name)** 518 / *SBIR Challenge Admin*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
- Evaluate and expand existing outreach programs; - Continue oversight, collection of results, track execution, and report Phase II technology transition results from the DoD SBIR Commercialization Readiness Program (CRP); and - Prepare and respond to required reports mandated by law and policy. ***FY 2024 Plans:*** - Continue coordination and execution of the expanding administrative responsibilities of the DoD SBIR/STTR programs; - Refine and improve established automated processes across the entire SBIR/STTR lifecycle; - Evaluate and expand existing outreach programs through a tiered approach to conduct due diligence of small businesses seeking SBIR/STTR awards; - Continue oversight and collection of results, track execution, and report Phase II technology transition results from the DoD SBIR/STTR Program; and - Prepare and respond to required reports mandated by law and policy. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** There are no significant changes between FY 2023 and FY 2024.			
Accomplishments/Planned Programs Subtotals	3.628	3.820	3.831

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 6: *RDT&E Management Support*	**R-1 Program Element (Number/Name)** PE 0605797D8Z / *Maintaining Technology Advantage*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	-	25.884	32.812	38.923	-	38.923	38.100	36.353	37.527	38.259	Continuing	Continuing
043: *Technology Innovation Base*	-	6.749	15.944	6.685	-	6.685	6.215	6.332	6.521	6.666	Continuing	Continuing
138: *S&T Protection*	-	6.968	4.454	12.671	-	12.671	13.464	11.952	12.699	12.942	Continuing	Continuing
139: *Joint Acquisition Protection Exploitation Cell (JAPEC)*	-	6.161	6.953	14.306	-	14.306	13.241	13.082	13.217	13.451	Continuing	Continuing
158: *Program and Technology Protection*	-	6.006	5.461	5.261	-	5.261	5.180	4.987	5.090	5.200	Continuing	Continuing

Note

New Start (Y/N): N

A. Mission Description and Budget Item Justification

This program supports the Department's initiatives to Build Sustainable and Long-Term Advantage, and Build a Resilient Joint Force and Defense Ecosystem.

This Program Element provides funding to support efforts to maintain the Department of Defense's (DoD)'s technology advantage. Maturing and implementing the Office of the Under Secretary of Defense (Research and Engineering)'s (OUSD(R&E)) technology priorities requires a healthy and capable National Security Innovation Base (NSIB). Additionally, the targeting of U.S. capabilities by our strategic competitors creates the potential to degrade core U.S. military technological advantages through unwanted technology transfer from the industrial innovation base. The technology transfer, including unclassified technology, threatens DoD's ability to maintain the technology advantage required to support the lethality and survivability of the Joint Force.

The DoD is executing a plan to maintain DoD's technology advantage:

(1) The DoD is promoting strategic technology investments to promote and protect DoD access to new and innovative technology. These investments provide OUSD(R&E)’s ability to determine strategies for future investments to establish and maintain a robust academic and industrial base capable of creating breakthroughs in key areas of basic research, fostering transition and decreasing time to market, and harvesting technologies within the U.S. innovation ecosystem or with likeminded allies.

(2) Ensure the Department's strategic technology investments are protected against unwanted technology transfer by developing and maintaining the tools and techniques that enable the U.S. engage in technology transfer at the time, place, and parties of our choosing.

(3) The DoD must combat adversaries' attempts to thwart the U.S. NSIB and associated technology security mechanisms to control technology transfer.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 6: *RDT&E Management Support*	**R-1 Program Element (Number/Name)** PE 0605797D8Z *I Maintaining Technology Advantage*

The Department will support these three efforts by developing the appropriate suite of analytic tools, a data acquisition strategy, and protection activities across the science and technology (S&T) enterprise and programs to address the threat over the long term. S&T protection focuses on ensuring the integrity of the research enterprise through development of policy and conducting adequate due diligence on researchers. Program Protection Planning includes protection of critical program information, critical components and mission functions, and integrates high level security policies and practical expertise to specific RDA practices, systems engineering activities, secure cyber resilient engineering activities, software assurance activities and risk reduction activities. Through this initiative the Department is maturing system security engineering methodologies to protect controlled unclassified information, to include controlled technical information on contractor networks; improve mitigation of supply chain risk management risks; enhance the use of software assurance capability; improve integration of cybersecurity into the engineering processes through secure cyber resilient engineering; mature processes to identify Critical Program Information integration of defense exportability features; expand software assurance capabilities provided by the Joint Federated Assurance Center (JFAC), established in Sec 937 of the National Defense Authorization Act (NDAA) for 2014; and improve program protection planning. This project develops near- and long-term strategies and employs mechanisms to retain the U.S. advantage in current and emerging Critical Technology Areas by addressing the capabilities of the industrial innovation base to develop, test, manufacture, and sustain them. This project also provides support to technology priority leaders in identifying industrial innovation base needs; characterizing and assessing priority technology investments, identifying and mitigating issues and risks impacting the industrial innovation base, and exploiting opportunities to advance technology development, testing, and manufacturing.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	26.807	35.414	36.211	-	36.211
Current President's Budget	25.884	32.812	38.923	-	38.923
Total Adjustments	-0.923	-2.602	2.712	-	2.712
• Congressional General Reductions	-	-0.270			
• Congressional Directed Reductions	-	-2.332			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.919	-			
• Program Adjustments	-0.004	-	2.712	-	2.712

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2022	FY 2023
Project: 043: *Technology Innovation Base*		
Congressional Add: *Securing American Science and Technology Program*	1.000	-
Congressional Add Subtotals for Project: 043	1.000	-
Congressional Add Totals for all Projects	1.000	-

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 6: *RDT&E Management Support*	**R-1 Program Element (Number/Name)** PE 0605797D8Z *I Maintaining Technology Advantage*

Change Summary Explanation

FY 2024 increase of $2.712 million is comprised of a realignment of $0.788 million to support the Historically Black Colleges and Universities/Minority Serving Institutions program, which is a priority of the Under Secretary of Defense for Research and Engineering (USD(R&E)), $0.038 million to support departmental priorities, a technical adjustment of $3.317 million to address the Department's need to develop consistent technology protection guidance and actions across the DoD enterprise by integrating, synchronizing, and deconflicting current and future technology protection guidance and actions applied to technologies supporting DoD military capability and an economic assumption of $0.221 million.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605797D8Z / *Maintaining Technology Advantage*	Project (Number/Name) 043 / *Technology Innovation Base*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
043: *Technology Innovation Base*	-	6.749	15.944	6.685	-	6.685	6.215	6.332	6.521	6.666	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Technology Industrial Innovation Base (TIIB) effort develops near- and long-term strategies and employs mechanisms to retain the U.S. advantage in current and emerging modernization technology priorities by addressing the capabilities of the industrial innovation base to develop, test, manufacture, and sustain them. This project provides support to technology priority leaders in identifying industrial innovation base needs; characterizing and assessing priority technology investments, identifying and mitigating issues and risks impacting the industrial innovation base, and exploiting opportunities to advance technology development, testing, and manufacturing. One of TIIB's main objectives is to create balance between promotion of the industrial innovation base while protecting the technology from interference or exploitation by competitors. This balance will aid the Department's advancing critical and emergent technologies ahead of competitor nations and actors while sustaining a healthy, resilient, and globally competitive industrial innovation base. This portfolio of activity extends efforts initiated in response to FY 2019 National Defense Authorization Act (NDAA) Section 1793.

This project uses a three-step approach: (1) Assess, (2) Protect/Promote; and (3) Monitor. In the first step, TIIB uses emerging technology assessments to translate technology needs to manufacturing and industrial innovation base requirements in order to identify industrial innovation base issues, risks, and opportunities. TIIB created an assessment methodology that incorporates four types of studies to provide a full overview of the technology from a manufacturing and industrial innovation base point of view. The results of the assessments are used to generate industrial-innovation-base inputs to technology roadmaps, develop an investment plan addressing the needs of the industrial innovation base, and create technology and industrial innovation base protection and promotion strategies (second step of the approach). TIIB leverages DoD and Federal Government tools and initiatives to implement the strategies. In the third step, TIIB uses data analytics to measure the success of mitigation and exploitation strategies, establish trends in the markets, and identify the need for additional assessments or changes in investments and strategies.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Technology Industrial Innovation Base	5.749	15.944	6.685
Description: This project uses a three-step approach: (1) Assess, (2) Protect/Promote; and (3) Monitor. In the first step, TIIB uses emerging technology assessments to translate technology needs to manufacturing and industrial innovation base requirements in order to identify industrial innovation base issues, risks, and opportunities. TIIB created an assessment methodology that incorporates four types of studies to provide a full overview of the technology from a manufacturing and industrial innovation base point of view. The results of the assessments are used to generate industrial-innovation-base inputs to technology roadmaps, develop an investment plan addressing the needs of the industrial innovation base, and create technology and industrial innovation base protection and promotion strategies (second step of the approach). TIB leverages DoD and Federal			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0605797D8Z / *Maintaining Technology Advantage*	**Project (Number/Name)** 043 / *Technology Innovation Base*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Government tools and initiatives to implement the strategies. In the third step, TIIB uses data analytics to measure the success of mitigation and exploitation strategies, establish trends in the markets, and identify the need for additional assessments or changes in investments and strategies. ***FY 2023 Plans:*** - Create and implement short-term and long-term strategies to protect and maintain U.S. technology advantage by growing and retaining critical technologies and the innovation base supporting their development, test, manufacturing, and sustainment. - Conduct Industry outreach – including industry days and workshops to define requirements to advance emergent technologies through open-market models and industry-government collaboration. - Sponsor Manufacturing challenges to find solutions to facilitate tech transfer from the labs to the production lines, improve manufacturing process, take advantage of new capabilities related to additive manufacturing and/or the integration of new materials. - Assess market trends and execute financial analysis to determine opportunities for US industry – competition, collaboration with allies, reduction of foreign dependencies. - Assess, promote, protect, and monitor critical technologies and their supply chain. - Manage technology innovation base assessments performed by other DoD and USG Agencies, Federally Funded Research and Development Centers (FFRDCs), University Affiliated Research Center (UARCs), or industry. - Conduct deep dive assessments to identify and address national security innovation base risks, issues, and opportunities related to DoD to include but not limited to: - Tools, technologies or techniques associated with development, testing, or manufacturing - Financial health of key industrial partners and suppliers - Workforce need for scientists, engineers, technicians - Single source materials, critical pockets of expertise, impacts to environmental events, exploitation by foreign actors to secure or deter critical elements of the innovation base - Create Technology/Innovation Base strategies for each technology priority area to focus on industrial base affordability, sustainability, and other areas in collaboration with OUSD(R&E) Principal Directors and other stakeholders, as required. - Identify and address new, emerging manufacturing capabilities and technology base gaps that are critical to fielding modernization priorities and other U.S. technological advantage areas, including workforce, engineering and prototyping infrastructure and facilities. - Assessment and strategy development for the hypersonics industrial base in conjunction with projects in PEs 0605518N (Conventional Prompt Strike (Navy)), 0603680D8Z (Defense Manufacturing Science and Technology Program), 0607210D8Z (Industrial Base Analysis and Sustainment Support), 0603680F (Manufacturing Technology Program (Air Force)), and 0902199D8Z (Title III/Defense Production Act Purchases) to reduce the cost of hypersonics weapons materials and production in ongoing development programs.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0605797D8Z / *Maintaining Technology Advantage*	**Project (Number/Name)** 043 / *Technology Innovation Base*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
- Conduct foundational assessments of the Defense Advanced Battery Supply Chain along with funding for DoD battery projects in PEs 0603342D8Z (Defense Innovation Unit (DIU)), 0605798D8Z (Defense Technology Analysis), 0603680D8Z (Defense Wide Manufacturing Science and Technology), 0607210D8Z (Industrial Base Analysis and Sustainment Support), 0603724N (Navy Energy Program), 0603462A (Next Generation Combat Vehicle Advanced Technology, and 0901212N (Service-Wide Support (Not Otherwise Accounted For)). NOTE: Biotechnology protection efforts supporting the Modular Bioindustrial and Resuable (MEMBR) initiative will be executed in P138 and technology protection efforts involving CFIUS, exports controls, and mergers and acquisitions will be executed in P139.			
FY 2024 Plans: - Identify and address new, emerging manufacturing capabilities and technology base gaps that are critical to fielding modernization priorities and other U.S. technological advantage areas, including workforce, engineering and prototyping infrastructure and facilities. - Advance the emergent technologies and develop a healthy industrial innovation base. - Continue to manage technology innovation base assessments performed by other DoD and USG Agencies, Federally Funded Research and Development Centers (FFRDCs), University Affiliated Research Center (UARCs), or industry. - Continue to conduct deep dive assessments to identify and address national security innovation base risks, issues, and opportunities related to DoD to include but not limited to: - Tools, technologies or techniques associated with development, testing, or manufacturing - Financial health of key industrial partners and suppliers - Workforce need for scientists, engineers, technicians - Single source materials, critical pockets of expertise, impacts to environmental events, exploitation by foreign actors to secure or deter critical elements of the innovation base - Continue to create Technology/Innovation Base strategies for each technology priority area to focus on industrial base affordability, sustainability, and other areas in collaboration with OUSD(R&E) Principal Directors and other stakeholders, as required. - Continue to identify and address new, emerging manufacturing capabilities and technology base gaps that are critical to fielding modernization priorities and other U.S. technological advantage areas, including workforce, engineering and prototyping infrastructure and facilities. - Continue to assess and strategize development for the hypersonics industrial base.			
FY 2023 to FY 2024 Increase/Decrease Statement:			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0605797D8Z / *Maintaining Technology Advantage*	**Project (Number/Name)** 043 / *Technology Innovation Base*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
The decrease of $9.259 million between FY 2023 and FY 2024 is due to a one-time increase in FY 2023 for Hypersonics Industrial Base and Defense Advanced Battery Supply Chain.			
Accomplishments/Planned Programs Subtotals	5.749	15.944	6.685

	FY 2022	FY 2023
Congressional Add: Securing American Science and Technology Program	1.000	-
FY 2022 Accomplishments: This Congressional add will enable expansion of engagements and data-driven analysis to mitigate unwanted technology transfer and foreign influence. NOTE: Congressional add will be executed in P138 in FY 2022.		
Congressional Adds Subtotals	1.000	-

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605797D8Z / *Maintaining Technology Advantage*	Project (Number/Name) 138 / *S&T Protection*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
138: *S&T Protection*	-	6.968	4.454	12.671	-	12.671	13.464	11.952	12.699	12.942	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

As the Department develops advanced technologies, it must use a rigorous, repeatable methodology to protect technology advantage beyond current Program Protection Planning policy. The production of Technology Area Protection Plans (TAPPs) will generate consistent and balanced protection of critical technology, provide foundational guidance for communicating about the technology to particular audiences, and inform protection and controls integrated with technology promotion activities. This will encompass the lifecycle of basic and applied research, advanced technology development, prototyping, and technology transition to programs. The Department will establish policy to protect critical technology in science and technology (S&T) investments through program protection. The implementation of these policies and TAPPs will have broad impacts across DoD and interagency-wide activities associated with critical technologies, including export controls, foreign investment risk mitigation through the Committee on Foreign Investment in the United States (CFIUS), international agreements, counterintelligence and law enforcement priorities, and development of protection practices with DoD research performers (e.g., the DoD and national laboratories, academia, small businesses, and the broader industrial innovation base).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Science and Technology (S&T) Protection	6.968	4.454	12.671
Description: This project supports efforts to maintain DoD's technology advantage by establishing activities to promote and ensure accountability for mitigating adversary exploitation of technologies critical to national security objectives. This project will develop and oversee S&T policy and practices for informed horizontal protection of emerging and critical technology areas.			
FY 2023 Plans: - Oversee TAPPs for each modernization initiative/critical technology area. - Develop risk review guidelines to mitigate foreign influence in department S&T efforts. - Develop data-driven models and analytical assessment capabilities to proactively identify and prioritize protection and exploitation opportunities to maintain the DoD's technology advantage. - Develop and implement proactive analytic tools supporting the biomanufacturing NSIB to identify strategic competitor programs and entities posing an increased risk of unwanted technology transfer in support of the Modular Bioindustrial and Reusable (MEMBR) efforts.			
FY 2024 Plans: - Update current TAPPs and develop new TAPPS for newly identified Critical Technology Areas. - Develop and institutionalize risk review and due diligence guidelines and efforts that are consistent across the DoD and mitigate foreign influence in S&T efforts.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0605797D8Z / *Maintaining Technology Advantage*	**Project (Number/Name)** 138 / *S&T Protection*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
- Assess, improve, and continue the development of new data-driven models and capabilities that enable data-informed identification and implementation of courses of action that balance the promotion and protection of DoD technology advantage. - Continue to develop and implement proactive analytic tools supporting the biomanufacturing NSIB to identify strategic competitor programs and entities posing an increased risk of unwanted technology transfer, and mitigate those risks in support of the Modular Bioindustrial and Reusable (MEMBR) efforts. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The increase of $8.217 between FY 2023 and FY 2024 reflects the Department's need to develop and implement proactive analytic tools supporting the protection of military capabilities that are being developed using emerging technologies, including biotechnology, quantum science, and advanced materials. In previous R-2s, The biotechnology technology protection funds for MEMBR were listed in P043, but are transferred to P138 in this R-2.			
Accomplishments/Planned Programs Subtotals	6.968	4.454	12.671

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605797D8Z / *Maintaining Technology Advantage*	Project (Number/Name) 139 / *Joint Acquisition Protection Exploitation Cell (JAPEC)*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
139: *Joint Acquisition Protection Exploitation Cell (JAPEC)*	-	6.161	6.953	14.306	-	14.306	13.241	13.082	13.217	13.451	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The DoD established a joint analysis capability (Joint Acquisition Program and Exploitation Cell (JAPEC)) to conduct comprehensive assessments of controlled unclassified technical information losses, and engage acquisition, intelligence, counterintelligence, and law enforcement sources, to determine consequences and appropriate preventative/mitigation actions against unwanted technology transfer. The JAPEC requires the ability to detect and characterize past technology losses, conduct damage assessments of lost information, and provide various insights with predictive value to support and promote activities. Together with supporting organizations, the JAPEC enables comprehensive, detailed assessments of U.S. military technological vulnerability, as well as inform the development and application of effective policies, countermeasures, and enforcement actions to preserve U.S. technical superiority in all warfighting domains. JAPEC must also reach out to select Allies and Partners in order to develop protection efforts across the extended supply chains resulting from the partnerships created by the global S&T community.

JAPEC, and supporting organizations, require an analytic capability to synchronize, integrate, coordinate and inform the DoD efforts in order to protect the acquisition and investment in sensitive U.S. technologies from adversaries and better exploit opportunities to combat adversary activities. JAPEC will conduct trend analysis of protection efforts for the Department's critical acquisition programs and technologies, incorporate findings into protection processes and activities, and analyze losses, to determine consequences and appropriate requirements, acquisition, programmatic, and strategic courses of action to include deterring our strategic competitors and identifying opportunities to promote the NSIB.

This project also manages the Office of the Under Secretary of Defense for Research and Engineering (OUSD(R&E)) responsibilities for CFIUS, including the assessments, reviews, and investigations of transactions on the CFIUS docket, as well as the identification of “non-notified” transactions that are not yet formally before CFIUS. This effort involves the initial screening of all CFIUS transactions (approx. 500 per year) to determine OUSD(R&E) equities, coordination with subject matter experts who provide vulnerability and consequence information to support the assessment of risks to national security presented by each transaction affecting OUSD(R&E) mission space. This effort is also supporting the Department of the Treasury, which chairs CFIUS, in its outreach to partners and allies who are standing up similar capabilities, providing advice and technical assistance in those foreign-to-foreign investments which may indirectly affect U.S. national security. This effort is also the focal point for OUSD(R&E) export control activities, managing the activities necessary to provide technical advice to the Defense Technology Security Administration regarding export control regulations and license review policy. This includes prioritization of critical technologies for inclusion in the Commerce Control List and the U.S. Munitions List and the processing of export license applications involving emergent technologies.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Joint Acquisition Protection Exploitation Cell (JAPEC)	6.161	6.953	14.306

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0605797D8Z / *Maintaining Technology Advantage*	**Project (Number/Name)** 139 / *Joint Acquisition Protection Exploitation Cell (JAPEC)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024

Description: Integrate controlled unclassified information, to include Controlled Technical Information (CTI), protection efforts across the DoD to proactively mitigate losses resulting from unwanted technology transfer and exploit opportunities to combat adversaries that may threaten U.S. military advantage.

FY 2023 Plans:
- Continue development and measurement of protection performance measures.
- Continue development of data informed exploitation opportunities to combat adversaries that may threaten U.S. military advantage.
- Expand partnering and development of international (bilateral/multilateral) protection practices with select allies into multiple DoD modernization areas.
- Continued development and operationalization of critical program and technology enhanced protection.
- Continue to integrate with national CI and LE efforts to combat unwanted strategic competitor activities.

FY 2024 Plans:
- Continue development of protection measures and conduct performance measurements of their effectiveness.
- Assess implemented exploitation opportunities to combat adversaries that threatened U.S. military advantage and continue the development of new exploitation opportunities.
- Expand partnering and development of international (bilateral/multilateral) protection practices with select allies into multiple DoD Critical Technology Areas.
- Assess the operationalization of critical program and technology enhanced protections to inform the implementation of further enhanced protections.
- Continue integration with national CI and LE efforts to combat unwanted strategic competitor activities.
- Develop consistent technology protection guidance and actions across the DoD enterprise by integrating, synchronizing, and deconflicting current and future technology protection guidance and actions applied to technologies supporting DoD military capability.
- Assess and improve the implementation of protection strategies involving CFIUS, export controls, intellectual property, and mergers and acquisitions reviews related to Critical Technology Areas.
- Monitor the NSIB and the performance of promote and protect activities.

FY 2023 to FY 2024 Increase/Decrease Statement:
The increase of $7.353 million between FY 2023 and FY 2024 reflects the Department's need to develop consistent technology protection guidance and actions across the DoD enterprise by integrating, synchronizing, and deconflicting current and future technology protection guidance and actions applied to technologies supporting DoD military capability. Additionally, the

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0605797D8Z / *Maintaining Technology Advantage*	**Project (Number/Name)** 139 / *Joint Acquisition Protection Exploitation Cell (JAPEC)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
implementation of protection strategies involving CFIUS, export controls, intellectual property, and mergers and acquisitions reviews related to Critical Technology Areas were previously funded from P043, but will now be funded from P139.			
Accomplishments/Planned Programs Subtotals	6.161	6.953	14.306

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605797D8Z / *Maintaining Technology Advantage*	Project (Number/Name) 158 / *Program and Technology Protection*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
158: *Program and Technology Protection*	-	6.006	5.461	5.261	-	5.261	5.180	4.987	5.090	5.200	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Department of Defense (DoD) must address cybersecurity and supply chain risks to DoD networks, weapons systems, and information stored and processed on both the DoD and the Defense Industrial Base (DIB) unclassified contractor information networks that support DoD programs. Increased reliance on the internet as a vehicle for sharing information, globalization of the supply chain, and advanced persistent threats (APTs) that can evade commercially available security tools and defeat generic security best practices, drives the need for diligent program protection planning and execution. Activities carried out include supporting implementation of DoDI 5000.83, Technology and Program Protection to Maintain Technological Advantage. Program Protection Planning includes protection of classified and unclassified controlled technical information, critical program information, critical components and critical mission functions, and integrates high level security policies and practical expertise to specific acquisition and S&T practices, secure cyber resilient engineering activities, and risk reduction activities. Through this initiative the Department is maturing system security engineering methodologies to protect controlled unclassified information, to include controlled technical information on contractor information networks; improve mitigation and management of information communication technology supply chain risk management risks, improve integration of cybersecurity into the engineering processes through secure cyber resilient engineering methods, improve software assurance practices, mature processes to identify and protect Critical Program Information, mature processes to integrate defense exportability features, and improve program protection planning. Activities carried out, support implementation of DoD Instruction 5200.44 Trusted Systems and Networks with the use of proven mitigation techniques and tools, the ongoing refinement of risk management processes, and creation of needed technology; implementation of DoD Instruction 5200.39 Critical Program Information (CPI) Identification and Protection Within Research, Development, Test, and Evaluation (RDT&E) and DoD Directive 5200.47 Anti Tamper to identify and protect Critical Program Information; and implementation of DoD Instruction 8582.01 Security of Unclassified DoD Information on Non-DoD Information Systems for Safeguarding Controlled Unclassified Information on contractor owned networks.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Program and Technology Protection	6.006	5.461	5.261
Description: This project provides system security engineering and secure cyber resilient engineering policy, guidance and technical implementation assessments to inform and reduce risks in sharing and storing Controlled Technical Information and data, improve mitigation of supply chain risk management risks, improve integration of cybersecurity into the engineering processes, integrate defense exportability and anti-tamper practices, mature processes to identify Critical Program Information and improve program protection planning. Activities carried out support engineering implementation of DoD instruction 5000.83, Technology and Program Protection to Maintain Technological Advantage; DoD Instruction 5200.44 Trusted Systems and Networks with the use of proven mitigation techniques and tools, the ongoing refinement of risk management processes; implementation of DoD Instruction 5200.39 Critical Program Information (CPI) Identification and Protection Within RDT&E and			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0605797D8Z / *Maintaining Technology Advantage*	**Project (Number/Name)** 158 / *Program and Technology Protection*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
DoD Directive 5200.47E Anti Tamper to identify and protect Critical Program Information; and implementation of DoD Instruction 8582.01 Security of Unclassified DoD Information on Non-DoD Information Systems for Safeguarding Controlled Unclassified Information on contractor owned networks. ***FY 2023 Plans:*** Continue to provide support to Independent Technical Review Assessment and Cyber Vulnerability Review Assessment teams in conduct of broad program protection planning activities to assess: - Conduct of criticality analyses to determine supply chain risk management protections. - Conduct of Critical Program Information analysis to determine anti-tamper protections. - Conduct of secure cyber resilient engineering activities to determine technical cyber risks. Advance the state of the practice of systems security engineering and secure cyber resilient engineering: - Continue activities to support EO 14028, Improving the Nation's Cybersecurity. - Continue development of methodologies to identify and mitigate system security risk, to include cybersecurity and supply chain risk. - Continue to develop courseware, refine guidance, provide training, and outreach with government and industry. - Continue to refine guidance, tools and mitigation approaches to mitigate capability, system and technology risks. Safeguard Controlled Unclassified Information, including Controlled Technical Information: - Continue to refine implementation and guidance of marking and dissemination of distribution of technical information. - Continue to refine safeguarding information protection methods for contractor unclassified information networks. Safeguard Critical Program Information: - Continue to refine implementation, guidance and tools to identify Critical Program Information. - Continue to refine Anti-Tamper protections methods to safeguard Critical Program Information. Defense exportability features integration: - Continue to mature processes, methods and guidance for defense exportability features integration. - Continue to develop and refine defense exportability protection methods to improve planning for the exportability of U.S. Defense systems. ***FY 2024 Plans:*** Continue to:			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0605797D8Z / *Maintaining Technology Advantage*	**Project (Number/Name)** 158 / *Program and Technology Protection*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Provide support to Independent Technical Review Assessment and Cyber Vulnerability Review Assessment teams in conduct of broad program protection planning activities to assess: - Conduct of criticality analyses to determine supply chain risk management protections. - Conduct of Critical Program Information analysis to determine anti-tamper protections. - Conduct of secure cyber resilient engineering activities to determine technical cyber risks. Advance the state of the practice of systems security engineering and secure cyber resilient engineering: - Continue activities to support EO 14028, Improving the Nation's Cybersecurity. - Continue development of methodologies to identify and mitigate system security risk, to include cybersecurity and supply chain risk. - Continue to develop courseware, refine guidance, provide training, and outreach with government and industry. - Continue to refine guidance, tools and mitigation approaches to mitigate capability, system and technology risks. Safeguard Controlled Unclassified Information, including Controlled Technical Information: - Continue to refine implementation and guidance of marking and dissemination of distribution of technical information. - continue to refine safeguarding information protection methods for contractor unclassified information networks. Safeguard Critical Program Information: - Continue to refine implementation, guidance and tools to identify Critical Program Information. - Continue to refine Anti-Tamper protections methods to safeguard Critical Program Information. Defense exportability features integration: - Continue to mature processes, methods and guidance for defense exportability features integration. - Continue to develop and refine defense exportability protection methods to improve planning for the exportability of U.S. Defense systems.			
FY 2023 to FY 2024 Increase/Decrease Statement:			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0605797D8Z / *Maintaining Technology Advantage*	**Project (Number/Name)** 158 / *Program and Technology Protection*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
The decrease of $0.200 million between FY 2023 and FY 2024 reflects fluctuation in assessment numbers and scope of duties, and maintenance of FY 2024 execution of assessment tasks and support of new emerging technology assignments.			
Accomplishments/Planned Programs Subtotals	6.006	5.461	5.261

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 6: *RDT&E Management Support*	**R-1 Program Element (Number/Name)** PE 0605798D8Z / *Defense Technology Analysis*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	-	33.989	55.565	60.404	-	60.404	60.492	61.792	63.193	65.070	Continuing	Continuing
728: *Homeland Defense Capability Development*	-	2.601	4.274	3.187	-	3.187	2.845	2.906	2.966	3.030	Continuing	Continuing
796: *Laboratory Resource Management*	-	17.895	31.024	33.773	-	33.773	33.760	34.280	35.007	35.770	Continuing	Continuing
797: *Defense Technology Analysis*	-	8.129	11.533	14.530	-	14.530	14.755	15.278	15.697	16.541	Continuing	Continuing
798: *Defense Support Teams*	-	5.364	8.734	8.914	-	8.914	9.132	9.328	9.523	9.729	Continuing	Continuing

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

This program supports the Department's initiatives to Build a Sustainable and Long-Term Advantage, and Build a Resilient Joint Force and Defense Ecosystem.

The Under Secretary of Defense for Research and Engineering (USD(R&E)) is the principal staff advisor to the Secretary and Deputy Secretary of Defense, responsible for the research, development, and prototyping activities across the Department of Defense (DoD) enterprise. In this capacity, the USD(R&E) conducts analyses and studies; develops policies; provides technical leadership, oversight, and advice; and issues guidance for the DoD Research, Development, Test and Evaluation (RDT&E) programs. This program element (PE) provides mission support to the USD(R&E) covering a wide range of studies and analysis in support of the R&E program and its impacts on the Department's decision to fund RDT&E efforts. Such activities include: (1) identification and development of new technological opportunities; (2) insertion of new technologies into warfighting systems and operations; and (3) management and evaluation of the effectiveness of technology programs.

The Homeland Defense Capability Development project funds initiatives to address technology application in support of homeland defense of our military installations and the surrounding areas.

The Laboratory Resource Management project provides funding for the Defense Laboratory Office within the USD(R&E). The Defense Laboratory Office mission is to craft policy and provide the oversight necessary to both preserve current, and develop future, DoD in-house laboratory capabilities such that they continue to generate mission-critical innovations that increase the U.S. military advantage and enhance U.S. national security. The Defense Laboratory Office advocates and supports the DoD laboratory system in three areas: (1) facilities and infrastructure; (2) personnel and quality of workforce; and (3) technology transfer. FY 2022 added the Central Lab Investment Program (CLIP). This effort seeks to address infrastructure gaps within the Department's Laboratory community by establishing a dedicated funding stream for the DoD's laboratories to address infrastructure issues, including facility planning, design, construction, sustainment repair, and/or modernization.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 6: *RDT&E Management Support*	**R-1 Program Element (Number/Name)** PE 0605798D8Z / *Defense Technology Analysis*

The Defense Technology Analysis project funds research and technical analysis and management, under the direction of the Deputy Chief Technology Officer for Critical Technologies (DCTO(CT)). These investments will promote further prioritization and targeting of the Department's key investments across the modernization efforts.

The Defense Support Teams project provides funding for engineering, scientific, and analytical support to the USD(R&E) in its responsibility for direction, overall quality, and content of the science and technology (S&T) program and to ensure that the technology being developed is affordable and helps minimize system development risk.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	35.149	56.114	58.396	-	58.396
Current President's Budget	33.989	55.565	60.404	-	60.404
Total Adjustments	-1.160	-0.549	2.008	-	2.008
• Congressional General Reductions	-	-0.549			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.155	-			
• Program Adjustments	-0.005	-	2.008	-	2.008

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2022	FY 2023
Project: 796: *Laboratory Resource Management*		
Congressional Add: *Program Increase - Defense Technology Transfer*	3.000	-
Congressional Add Subtotals for Project: 796	3.000	-
Congressional Add Totals for all Projects	3.000	-

Change Summary Explanation

FY 2024 increase of $2.008 million is comprised of a realignment of $1.271 million to support the Historically Black Colleges and Universities/Minority Serving Institutions program, which is a priority of the Under Secretary of Defense for Research and Engineering (USD(R&E)), $0.061 million to support departmental priorities, an economic assumption increase of $0.340 million, and a technical adjustment for project 797 of $3.000 million to support international engagement and other operational requirements increasing investment in engineering, scientific, analytical, and managerial support for R&E modernization efforts.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605798D8Z / *Defense Technology Analysis*	Project (Number/Name) 728 / *Homeland Defense Capability Development*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
728: *Homeland Defense Capability Development*	-	2.601	4.274	3.187	-	3.187	2.845	2.906	2.966	3.030	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In order to better align and support the Joint Warfighting Concept, the Homeland Defense Capability Development initiative is focused on small unmanned and counter small unmanned systems science and technology (S&T) innovation.

A. Mission Description and Budget Item Justification

The Homeland Defense Capability Development Initiatives project uniquely engages with the Services, Combatant Commands, and our federal partners on critical S&T initiatives to both develop emerging unmanned systems technology and countering small unmanned system threats to our military forces and installations across all domains. Work in this project explores and identifies critical technology needs across the domains of Air, Land, Sea and Space, and enables development of synergistic platforms and weapons systems S&T strategies to include unmanned and counter small unmanned systems technologies, directed energy, munitions, power and energy, and their applications to future force projection and protection capabilities as identified in the National Defense Strategy.

Key technology applications complement the Office of the Under Secretary of Defense for Research and Engineering's (OUSD(R&E)) modernization priorities: Fully Networked Command, Control, and Communications; Directed Energy; Cyber; Autonomy; and Machine Learning/Artificial Intelligence.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Homeland Defense Capability Development Initiatives	2.601	3.418	3.187
Description: The Homeland Defense Capability Development Initiatives project uniquely engages with the Services, Combatant Commands, and our federal partners on critical S&T initiatives to both develop emerging unmanned systems technology and countering small unmanned system threats to our military forces and installations across all domains. Work in this project explores and identifies critical technology needs across the all domains, and supports development of synergistic enabling platforms and weapons systems S&T strategies to include unmanned and counter small unmanned systems technologies, munitions, power and energy, advanced materials, position, navigation and timing and quantum science, biotechnology, future generation wireless technology, and their applications to future force projection and protection capabilities as identified in the National Defense Strategy. Key technology applications complement the Office of the Under Secretary of Defense for Research and Engineering's critical technology areas: Integrated Network System-of-Systems; Directed Energy; Integrated Sensing and Cyber; Trusted Artificial			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0605798D8Z / *Defense Technology Analysis*	**Project (Number/Name)** 728 / *Homeland Defense Capability Development*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Intelligence and Autonomy; Human Machine Interfaces; Advanced Materials; Biotechnology; Quantum Science; and Future Generation Wireless Technology. ***FY 2023 Plans:*** Complete analyses of 5G-enabled autonomous threats, exploring ways in which the 5G communication and control links associated with a small Unmanned Aircraft System (sUAS) platform can be used for detection and discrimination from non-sUAS 5G users. Evaluate Group 3 Unmanned Aircraft System impacts on integrated air defense capabilities in the North American Aerospace Defense Command (NORAD) and United States Northern Command (USNORTHCOM) or United States Indo-Pacific Command (INDOPACOM) areas of regard, describe limitations of current technology, as well as identify opportunities for new technologies to improve integrated air defense capabilities against emerging Group 3 UAS threats. Further strategic studies, analyses and modeling to identify critical technologies required to enable advanced force projection and protection capabilities and mitigate adversarial large-scale collaborative engagement and swarming of munitions and unmanned systems. Assess and identify critical unmanned systems technologies and novel use of cross domain unmanned systems across force protection applications. ***FY 2024 Plans:*** Complete the development and understanding of the characterization of sUAS 5G transmitters/receivers. Complete analysis and assessments to understand if there is any 5G information (protocols, header information, and message content) that can be used to detect/track/identify 5G sUAS. Complete characterization of how a sUAS behaves under different jamming/electronic warfare conditions. Conduct an overview of counter unmanned systems swarm science and technology (S&T) developmental efforts and field testing of technologies that offer scalable/modular options, and can lead to rapid development of deployable systems. Identify new technologies to improve air defense capabilities and force protections against radio frequency jamming / global navigation satellite system resilient threat UAS. Continue assessment of S&T efforts of unmanned systems in the area of countering autonomous systems/swarms and intelligence, surveillance, and reconnaissance (ISR) sUAS. Complete modeling and simulation analysis of large scale counter unmanned systems capabilities in the homeland based on current/future technical capabilities of both friendly and adversarial unmanned systems. Complete joint allied counter-swarm analysis and S&T counter-swarm efforts as part of the United States/United Kingdom Stocktake agreement and The Technical Cooperation Program (TTCP); implement a plan to transition capabilities to operational prototype and fielding to the Warfighter. Further strategic studies, analyses and modeling to identify critical technologies required to enable advanced force projection and protection capabilities and mitigate future adversarial threats. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The decrease of $0.231 million between FY 2023 and FY 2024 reflect minor deviations in budget priorities.			
Title: Defense Advanced Battery Supply Chain	-	0.856	-

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0605798D8Z / *Defense Technology Analysis*	**Project (Number/Name)** 728 / *Homeland Defense Capability Development*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
FY 2023 Plans: In coordination with Army, Navy, and USD(A&S), generate analytics that characterize the Department's current and projected energy/advanced battery needs. Develop and implement the methodology to effectively measure and track vulnerabilities in the battery supply chain across the Services. Funding provided in PEs 0603342D8Z, 0605798D8Z, 0603680D8Z, 0607210D8Z, 0605805Z, 0603724N, 0603462A, and 0901212N. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The decrease of $0.856 million between FY 2023 and FY 2024 is due to a one-year funding effort in FY 2023 for Defense Advanced Battery Supply Chain.			
Accomplishments/Planned Programs Subtotals	2.601	4.274	3.187

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605798D8Z / *Defense Technology Analysis*	Project (Number/Name) 796 / *Laboratory Resource Management*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
796: *Laboratory Resource Management*	-	17.895	31.024	33.773	-	33.773	33.760	34.280	35.007	35.770	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Laboratories & Personnel Office (L&PO) provides advocacy, strategic planning, and policy for the DoD's laboratories.

The DoD Laboratory Enterprise consists of more than 60 laboratories with approximately 67,000 employees (approximately 50,000 of whom are scientists and engineers).

L&PO develops proposals and investment strategies for laboratory infrastructure, technology transfer programs, and personnel development.

Section 211 of the National Defense Authorization Act (NDAA) for FY 2017 also transferred the management of the laboratory demonstration program at Science and Technology Reinvention Laboratories (STRLs) from the Under Secretary of Defense for Personnel and Readiness (USD(P&R)) to the Under Secretary of Defense for Research and Engineering (USD(R&E)).

Section 218 of the NDAA for FY 2018 amended the authority by re-designating management to the USD(R&E).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Laboratories and Personnel Office	5.195	6.024	5.773
Description: Provides advocacy, strategic planning, and policy for the DoD's laboratories. Develops proposals and investment strategies for laboratory infrastructure, technology transfer programs, and personnel development.			
FY 2023 Plans: Propose and evaluate best practices for planning, programming, and executing infrastructure construction projects at DoD Science and Technology Reinvention Laboratories (STRLs) and support methodologies for assessing their readiness to achieve their missions.			
FY 2024 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0605798D8Z / *Defense Technology Analysis*	**Project (Number/Name)** 796 / *Laboratory Resource Management*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Propose and evaluate best practices for planning, programming, and executing infrastructure construction projects at DoD Science and Technology Reinvention Laboratories (STRLs) and support methodologies for assessing their readiness to achieve their missions. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The decrease of $0.251 between FY 2023 and FY 2024 supports the international engagement and other operational requirement within project P797.			
Title: Central Lab Investment Program (CLIP) ***Description:*** This effort seeks to address infrastructure gaps within the Department's Laboratory community by establishing a dedicated funding stream for the DoD's laboratories to address infrastructure issues, including facility planning, design, construction, sustainment repair, and/or modernization. In addition, CLIP could be used to acquire advanced equipment and tools, enabling the laboratories to devote their RDT&E funding to critical research and development and offset their sustainment, repair, and modernization (SRM) funding gap. ***FY 2023 Plans:*** Select and award laboratory infrastructure and equipment projects received under a FY 2022 call for proposals. Continue strategic plans and projects that meet the program's objectives to comprehensively address infrastructure issues. ***FY 2024 Plans:*** Select and award laboratory infrastructure and equipment projects received under a FY 2023 call for proposals. Continue strategic plans and projects that meet the program's objectives to comprehensively address infrastructure issues. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The DoD Laboratories have annually presented an unfunded military construction request to Congress; this fund will address the challenges that the Service laboratories face in their attempts to fund laboratory and equipment capability improvements through a comprehensive strategic plan. The increase of $3.000 million between FY 2023 and FY 2024 will support additional laboratory and infrastructure projects selected through a call for proposals. This fund will address challenges the Service laboratories face in their attempts to fund laboratory and equipment capability improvements through a comprehensive strategic plan.	9.700	25.000	28.000
Accomplishments/Planned Programs Subtotals	14.895	31.024	33.773

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0605798D8Z / *Defense Technology Analysis*	**Project (Number/Name)** 796 / *Laboratory Resource Management*

	FY 2022	FY 2023
Congressional Add: Program Increase - Defense Technology Transfer	3.000	-
FY 2022 Accomplishments: Continue to build on FY 2021 progress through a Partnership Intermediary Agreement (PIA) with MilTech.		
Congressional Adds Subtotals	3.000	-

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605798D8Z / *Defense Technology Analysis*	Project (Number/Name) 797 / *Defense Technology Analysis*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
797: *Defense Technology Analysis*	-	8.129	11.533	14.530	-	14.530	14.755	15.278	15.697	16.541	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Defense Technology Analysis (DTA) project funds engineering, scientific, and analytical support for the Office of the Under Secretary of Defense for Research and Engineering (OUSD(R&E)) and specifically the Officer of Deputy Chief Technology Office for Critical Technologies DCTO(CT). The DCTO(CT) supports the USD(R&E) by prioritizing the National Defense Strategy modernization lines of effort in order to maintain competitive advantage against adversaries. The efforts funded in this project directly support and are critical to developing and continuously updating research and technology development roadmaps as required by Section 217 of the National Defense Authorization Act for FY 2021.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Defense Technology Analysis	8.129	11.533	14.530
Description: The DCTO(CT) is responsible for developing the Department's roadmap efforts in the fourteen modernization priority areas: Directed Energy, Hypersonics, Integrated Sensing and Cyber, Trusted AI & Autonomy, Integrated Sensing & Cyber, Microelectronics, Space Technology, Renewable Energy Generation & Storage, Advanced Computing & Software, Human-Machine Interfaces, Advanced Materials, Biotechnology, Quantum, and Future G. Identification of leading edge technology is critical in delivering capability to the warfighter and maintaining the competitive advantage. Funding for research, technical analysis and management, and other advanced research methods will allow for success in identifying game changing technology investments for the Department's modernization efforts.			
FY 2023 Plans: Adversary and competitor actions seek to disrupt and diminish the United States' advantages. Advancement of research and development in the eleven modernization priorities will enhance the United States' competitive advantage. The Department will continue to conduct analysis and research studies to support updates to and advancements of modernization roadmaps synchronized with related priorities. Focus areas include the emerging technology industrial base and the workforce, including universities. The studies and analyses conducted will focus not only on closing gaps and identifying overlap, but providing leap-ahead capabilities.			
FY 2024 Plans: Adversary and competitor actions seek to disrupt and diminish the United States' advantages. Advancement of research and development in the modernization priorities will enhance the United States' competitive advantage. The Department will continue to conduct analysis and research studies to support updates to and advancements of modernization roadmaps synchronized with			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0605798D8Z / *Defense Technology Analysis*	**Project (Number/Name)** 797 / *Defense Technology Analysis*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
related priorities. Focus areas include the emerging technology industrial base and the workforce, including universities. The studies and analyses conducted will focus not only on closing gaps and identifying overlap, but providing leap-ahead capabilities. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The increase of $2.997 million between FY 2023 and FY 2024 allows for increased emphasis and promoting of the Department's key priorities across the modernization efforts with increased investment in engineering, scientific, analytical, and managerial support to and studies for the OUSD(R&E). This increase is also to support international engagement and other operational requirements.			
Accomplishments/Planned Programs Subtotals	8.129	11.533	14.530

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605798D8Z / *Defense Technology Analysis*	Project (Number/Name) 798 / *Defense Support Teams*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
798: *Defense Support Teams*	-	5.364	8.734	8.914	-	8.914	9.132	9.328	9.523	9.729	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Department's key expertise for reviewing and guiding research and engineering (R&E) programs resides in the (OUSD(R&E). The OUSD(R&E) staff augment their responsibilities through connections to technology experts in various fields throughout academia, industry, and government.

This project provides engineering, scientific, and analytical support to the OUSD(R&E) in its responsibility for direction, overall quality, and content of the science and technology (S&T) program. This activity conducts assessments and analyses to ensure maximum utilization of research and development funds to accomplish the overall objectives of the S&T program. It ensures the technology being developed is affordable and minimizes system development risk. Funds are required for technical, analytical, management support, travel, and publications.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Defense Support Teams	5.364	8.734	8.914
Description: This project provides engineering, scientific, and analytical support to the OUSD(R&E) in its responsibility for direction, overall quality, and content of the S&T program. Furthermore, it ensures that the technology being developed is affordable and minimizes system development risk. ***FY 2023 Plans:*** Continue to provide engineering, scientific, analytical, and managerial support to the OUSD(R&E) in developing strategies, plans, and policies to develop and exploit technology; conduct technology analyses, make recommendations, and develop guidance for S&T plans and programs; review acquisition programs and make recommendations to optimize effectiveness of the DoD investments; and oversight of S&T issues and initiatives and respond to Congressional special interests. ***FY 2024 Plans:*** Continue to provide engineering, scientific, analytical, and managerial support to the OUSD(R&E) in developing strategies, plans, and policies to develop and exploit technology; conduct technology analyses, make recommendations, and develop guidance for S&T plans and programs; review acquisition programs and make recommendations to optimize effectiveness of the DoD investments; and oversight of S&T issues and initiatives and respond to Congressional special interests. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** There is no significant change between FY 2023 and FY 2024.			
Accomplishments/Planned Programs Subtotals	5.364	8.734	8.914

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0605798D8Z / *Defense Technology Analysis*	**Project (Number/Name)** 798 / *Defense Support Teams*

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 6: *RDT&E Management Support*	**R-1 Program Element (Number/Name)** PE 0605804D8Z / *Development Test & Evaluation*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	165.991	26.320	26.049	37.353	0.000	37.353	37.533	37.926	38.809	39.654	Continuing	Continuing
804: *Development Test & Evaluation*	159.236	19.672	18.991	19.683	0.000	19.683	20.105	20.542	20.972	21.428	Continuing	Continuing
048: *Cybersecurity DT&E for Weapon Systems*	6.755	6.648	7.058	7.111	0.000	7.111	7.108	7.263	7.415	7.578	Continuing	Continuing
149: *Independent Engineering Assessments*	-	-	-	10.559	0.000	10.559	10.320	10.121	10.422	10.648	Continuing	Continuing

Note

New Start (Y/N): No

Project 149 is not a new start project. In FY 2024, the Under Secretary of Defense for Research and Engineering (USD(R&E)) realigned funding from Program Element 0605142D8Z/Project 144, Program Engagement and Independent Assessments, to Project 149, Independent Engineering Assessments. This realignment consolidates Developmental Test and Evaluation (DT&E), Cybersecurity DT&E, and Independent Engineering Assessments within this Program Element.

A. Mission Description and Budget Item Justification

This program establishes the dedicated funding line to carry out the duties in accordance with Title 10 U.S.C. Section 133a, FY2018 National Defense Authorization Act (NDAA) (Public Law 115-91) section 838, and the Department of Defense (DoD) Directive 5137.02 dated July 15, 2020. In FY 2020, the Under Secretary of Defense for Research and Engineering (USD(R&E)) established the Developmental Test, Evaluation, and Assessments (DTE&A) organization to provide consolidated Developmental Test and Evaluation (DT&E) and Independent Engineering Assessment functions in a single office. The Executive Director, DTE&A, is the principal advisor to the Secretary of Defense; USD(R&E); and the Under Secretary of Defense, Acquisition and Sustainment (USD(A&S)) on DT&E, Independent Engineering Assessments, and Technical Risk Assessments in the Department of Defense (DoD). This program supports the Department's initiatives to Build a Sustainable and Long-Term Advantage and Build a Resilient Joint Force and Defense Ecosystem.

The OUSD(R&E) engages with acquisition and rapid prototype programs to provide engineering and DT&E planning expertise, including cybersecurity DT&E, and decision-quality data at major program reviews to help them succeed in modernizing key capabilities to Build a More Lethal Force. OUSD(R&E) engages with programs to help meet interoperability requirements to deepen interoperability and Strengthen Alliances. Finally, OUSD(R&E) works with Director, Operational Test and Evaluation to streamline T&E policy and guidance to improve test efficiency and reduce acquisition cost and schedule to Reform the Department for Greater Performance and Affordability.

This program supports and improves the engineering and DT&E efforts of Major Defense Acquisition Program (MDAP), Rapid Prototyping/Fielding efforts, and other Special Interest (SI) acquisition programs designated by USD(R&E) or USD(A&S) as they progress through the acquisition/development lifecycle; supports development

of the defense acquisition workforce Test and Evaluation (T&E) career field; and supports development of policy and guidance for the conduct of DT&E within the DoD. This PE also provides dedicated resources to support MDAP and Rapid Prototyping/Fielding Program Managers, Chief Developmental Testers, and Lead DT&E Organizations in the development of comprehensive, efficient, and innovative Cybersecurity DT&E strategies/plans to support key acquisition milestones and engineering/programmatic decisions.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	27.280	26.652	27.264	0.000	27.264
Current President's Budget	26.320	26.049	37.353	0.000	37.353
Total Adjustments	-0.960	-0.603	10.089	0.000	10.089
• Congressional General Reductions	-	-0.603			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.960	-			
• Program Adjustment	-	-	10.089	0.000	10.089

Change Summary Explanation

The FY 2024, $10.089 million increase is the net result of a funding realignment from PE 0605142D8Z in the amount of $10.500 million; a funding increase of $0.210 million for Economic Assumptions; and funding reductions of $0.593 million to support the Historically Black Colleges and Universities/Minority Serving Institutions program, which is a priority of the USD(R&E), and $0.028 million to support departmental priorities.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605804D8Z / *Development Test & Evaluation*	Project (Number/Name) 804 / *Development Test & Evaluation*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
804: *Development Test & Evaluation*	159.236	19.672	18.991	19.683	0.000	19.683	20.105	20.542	20.972	21.428	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Project 804 provides resources to support MDAP and Rapid Prototyping/Fielding Program Managers, Chief Developmental Testers, and Lead DT&E Organizations in the development of comprehensive, efficient, and innovative DT&E strategies/plans to support key acquisition milestones and engineering decisions. This project also supports the OUSD(R&E) to manage the Test & Evaluation (T&E) career field and curriculum for the DoD acquisition workforce and develop policy and guidance for the conduct of DT&E within DoD. On behalf of the OUSD(R&E) this project executes the following activities:

- Support acquisition programs in the development of comprehensive, efficient, and innovative test strategies. Ensure that developmental test strategies are documented in Test and Evaluation Master Plans (TEMPs). For ACAT ID programs, review and approve/disapprove the DT&E strategy/plans within the TEMP. For ACAT IB/IC programs, review the DT&E strategy/plans within the TEMP and provide a recommendation to the Service Milestone Decision Authority as to whether or not the strategy is adequate.
- Support rapid prototyping, rapid fielding, and technology demonstrations efforts in the development of tailored comprehensive, efficient, and innovative DT&E strategies/plans.
- For ACAT ID programs, provide independent DT&E Sufficiency Assessments to the Defense Acquisition Executive at the Milestone B and C decisions with the goal of reducing discovery of performance issues later in the acquisition cycle.
- For ACAT IB/IC programs, provide an independent DT&E program assessment to the Service Milestone Decision Authority prior to the development RFP release decision point and at the Milestone B and C decisions with the goal of reducing discovery of performance issues later in the acquisition cycle.
- When requested by the Secretary or Deputy Secretary of Defense, provide independent developmental test assessments in support of USD(A&S) and Service Major Defense Acquisition Programs.
- Support the development of independent technical risk assessments and advise the Secretary on the progress toward meeting Key Performance Parameters, technology maturation, reliability growth projections, interoperability, and cybersecurity posture before any decision to grant Milestone A or B approval, or enter into low-rate initial production or full-rate production for ACAT ID programs or when requested by the Secretary.
- Manage the Scientific Test and Analysis Techniques Center of Excellence (STAT COE).
- Identify the DoD test infrastructure gaps and support development of the OUSD(R&E) test resources strategic plan.
- Evolve the DT&E 'state of practice' to keep pace with emerging technologies and improve test efficiency to field systems faster.
- Coordinate with Director, Operational Test and Evaluation to improve T&E efficiency and make best use of integrated testing.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Development Test and Evaluation	19.672	18.991	19.683

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0605804D8Z / *Development Test & Evaluation*	**Project (Number/Name)** 804 / *Development Test & Evaluation*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Description: Project 804 supports and improves the DT&E efforts of MDAP, Rapid Prototyping/Fielding efforts, and other Special Interest (SI) acquisition programs as they progress through the acquisition/development lifecycle; lead the defense acquisition workforce T&E career field; and support development of policy and guidance for the conduct of DT&E within the DoD. ***FY 2023 Plans:*** - Work with Acquisition Program Managers, Chief Developmental Testers, and Lead DT&E organizations to improve DT&E planning and develop comprehensive and efficient DT&E strategies/plans through the use of disciplined Developmental Evaluation Framework Matrices and Scientific Test and Analysis Techniques (STAT). - Support rapid prototyping, rapid fielding, and technology demonstrations efforts in the development of tailored comprehensive, efficient, and innovative DT&E strategies/plans. - Implement the OUSD(R&E) 'Shift Left' initiative that focuses on ensuring DT&E strategies are developed in advance of releasing Technology Maturation and Risk Reduction (TMRR) and Engineering and Manufacturing Development (EMD) RFPs, and increasing the amount and quality of data available to support production decisions with specific focus on cybersecurity, interoperability, and reliability. - For ACAT ID programs, review/approve all TEMPs submitted to support milestone reviews. For ACAT IB/IC programs, review the DT&E strategy/plans within the TEMP and provide a recommendation to the Service Milestone Decision Authority as to whether or not the strategy is adequate. - For ACAT ID programs, publish independent DT&E Sufficiency Assessments prior to Milestone B and C decisions with the goal of reducing discovery of performance issues later in the acquisition cycle. - For ACAT IB/IC programs, publish independent DT&E program assessments at the development RFP release decision point and Milestone B and C decisions with the goal of reducing discovery of performance issues later in the acquisition cycle. - When requested by the Secretary or Deputy Secretary of Defense, provide independent developmental test assessments in support of USD(A&S) and Service Milestone Decision Authorities. - Refine DT&E policies and methodologies addressing DT&E across all Acquisition programs. - Promote the application of sound DT&E and related technical disciplines across the Department's acquisition community and programs. - Implement initiatives that evolve the DT&E 'state of practice' to keep pace with emerging technologies and improve test efficiency to field systems faster. ***FY 2024 Plans:*** - Continue to work with Acquisition Program Managers, Chief Developmental Testers, and Lead DT&E organizations to improve DT&E planning and develop comprehensive and efficient DT&E strategies/plans through the use of disciplined Developmental Evaluation Framework Matrices and Scientific Test and Analysis Techniques (STAT).			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0605804D8Z / *Development Test & Evaluation*	**Project (Number/Name)** 804 / *Development Test & Evaluation*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
- Continue to support rapid prototyping, rapid fielding, and technology demonstrations efforts in the development of tailored comprehensive, efficient, and innovative DT&E strategies/plans. - Continue to implement the OUSD(R&E) 'Shift Left' initiative that focuses on ensuring DT&E strategies are developed in advance of releasing Technology Maturation and Risk Reduction (TMRR) and Engineering and Manufacturing Development (EMD) RFPs, and increasing the amount and quality of data available to support production decisions with specific focus on cybersecurity, interoperability, and reliability. - For ACAT ID programs, review/approve all TEMPs submitted to support milestone reviews. For ACAT IB/IC programs, review the DT&E strategy/plans within the TEMP and provide a recommendation to the Service Milestone Decision Authority as to whether or not the strategy is adequate. - For ACAT ID programs, publish independent DT&E Sufficiency Assessments prior to Milestone B and C decisions with the goal of reducing discovery of performance issues later in the acquisition cycle. - For ACAT IB/IC programs, publish independent DT&E program assessments at the development RFP release decision point and Milestone B and C decisions with the goal of reducing discovery of performance issues later in the acquisition cycle. - When requested by the Secretary or Deputy Secretary of Defense, provide independent developmental test assessments in support of USD(A&S) and Service Milestone Decision Authorities. - Refine DT&E policies and methodologies addressing DT&E across all Acquisition programs. - Promote the application of sound DT&E and related technical disciplines across the Department's acquisition community and programs. - Implement initiatives that evolve the DT&E 'state of practice' to keep pace with emerging technologies and improve test efficiency to field systems faster. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** There is no significant change between FY 2023 and FY 2024.			
Accomplishments/Planned Programs Subtotals	19.672	18.991	19.683

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

N/A

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605804D8Z / *Development Test & Evaluation*	Project (Number/Name) 048 / *Cybersecurity DT&E for Weapon Systems*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
048: *Cybersecurity DT&E for Weapon Systems*	6.755	6.648	7.058	7.111	0.000	7.111	7.108	7.263	7.415	7.578	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project provides dedicated resources to support MDAP and Rapid Prototyping/Fielding Program Managers, Chief Developmental Testers, and Lead DT&E Organizations in the development of comprehensive, efficient, and innovative Cybersecurity DT&E strategies to support key acquisition milestones and engineering/ programmatic decisions. On behalf of the OUSD(R&E) this project executes the following activities:

- Support acquisition programs in the development of comprehensive, efficient, and innovative Cybersecurity DT&E strategies. Ensure that Cybersecurity DT&E strategies are documented in Test and Evaluation Master Plans (TEMPs). For ACAT ID programs, review and approve/disapprove the Cybersecurity DT&E strategy/ plans within the TEMP.
- Support rapid prototyping, rapid fielding, and technology demonstrations efforts in the development of tailored comprehensive, efficient, and innovative Cybersecurity DT&E strategies/plans.
- Support the development of independent technical risk assessments and advise the Secretary on the Cybersecurity, cyber survivability, and resilience posture before any decision to grant Milestone A or B
approval, or enter into low-rate initial production or full-rate production for ACAT ID programs or when requested by the Secretary.
- Identify DoD Cybersecurity test infrastructure gaps and support development of the OUSD(R&E) test resources strategic plan.
- Evolve the Cybersecurity DT&E 'state of practice' to keep pace with emerging technologies and improve test efficiency to field systems faster.
- Coordinate with Director, Operational Test and Evaluation to improve Cybersecurity T&E efficiency and make best use of integrated testing.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Cybersecurity DT&E for Weapon Systems	6.648	7.058	7.111
Description: Project 048 supports and improves the Cybersecurity DT&E efforts of MDAP, Rapid Prototyping/Fielding efforts, and other Special Interest (SI) acquisition programs as they progress through the acquisition/development lifecycle; and support development of policy and guidance for the conduct of Cybersecurity DT&E within the DoD.			
FY 2023 Plans: - Work with Acquisition Program Managers, Chief Developmental Testers, and Lead DT&E organizations to improve Cybersecurity DT&E planning and develop comprehensive and efficient DT&E strategies/plans through the use of disciplined Developmental Evaluation Framework Matrices and Scientific Test and Analysis Techniques (STAT). Help programs develop Cybersecurity T&E objectives that align cybersecurity requirements for security standards, cyber survivability, and operational resilience.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0605804D8Z / *Development Test & Evaluation*	**Project (Number/Name)** 048 / *Cybersecurity DT&E for Weapon Systems*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
- Support rapid prototyping, rapid fielding, and technology demonstrations efforts in the development of tailored comprehensive, efficient, and innovative Cybersecurity DT&E strategies/plans. - Implement the OUSD(R&E) 'Shift Left' initiative that focuses on ensuring Cybersecurity DT&E strategies are developed in advance of releasing Technology Maturation and Risk Reduction (TMRR) and Engineering and Manufacturing Development (EMD) RFPs, and increasing the amount and quality of data available to support production decisions. - Refine Cybersecurity DT&E policies and methodologies addressing Cybersecurity DT&E across all Acquisition programs. - Assess Cybersecurity performance/resiliency to support development of DT&E Sufficiency Assessments (ACAT ID programs) or DT&E program assessments (ACAT 1B/IC programs). - When requested by the Secretary or Deputy Secretary of Defense, provide independent Cybersecurity developmental test assessments in support of USD(A&S) and Service Milestone Decision Authorities. - Provide Cybersecurity DT&E subject matter experts to assist programs in building Developmental Evaluation Frameworks (DEFs), conducting Cybersecurity Table Top Exercises to identify potential threat vectors, and assist programs with exercising Phases 1 and 2 of the DoD Cybersecurity T&E Process. - Promote the application of sound Cybersecurity DT&E and related technical disciplines across the Department's acquisition community and programs. - Implement initiatives that evolve the Cybersecurity DT&E 'state of practice' to keep pace with emerging technologies and improve test efficiency to field systems faster. - Implement initiatives to guide acquisition programs for how to use Cybersecurity T&E planning and analysis and Cybersecurity tests to identify and mitigate cyber risk in supply chains, development environments, tools and processes. - Collaborate with the Intelligence communities to improve cyber intelligence support to Cybersecurity DT&E. - Work with Lead DT&E organizations to improve Cybersecurity DT&E workforce capability and retention as well as capacity to support earlier integrated contractor and government Cybersecurity DT&E. ***FY 2024 Plans:*** - Continue work with Acquisition Program Managers, Chief Developmental Testers, and Lead DT&E organizations to improve Cybersecurity DT&E planning and develop comprehensive and efficient DT&E strategies/plans through the use of disciplined Developmental Evaluation Framework Matrices and Scientific Test and Analysis Techniques (STAT). Help programs develop Cybersecurity T&E objectives that align cybersecurity requirements for security standards, cyber survivability, and operational resilience. - Continue to support rapid prototyping, rapid fielding, and technology demonstrations efforts in the development of tailored comprehensive, efficient, and innovative Cybersecurity DT&E strategies/plans. - Continue to implement the OUSD(R&E) 'Shift Left' initiative that focuses on ensuring Cybersecurity DT&E strategies are developed in advance of releasing Technology Maturation and Risk Reduction (TMRR) and Engineering and Manufacturing Development (EMD) RFPs, and increasing the amount and quality of data available to support production decisions.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0605804D8Z / *Development Test & Evaluation*	**Project (Number/Name)** 048 / *Cybersecurity DT&E for Weapon Systems*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
- Continue to refine Cybersecurity DT&E policies and methodologies addressing Cybersecurity DT&E across all Acquisition programs. - Assess Cybersecurity performance/resiliency to support development of DT&E Sufficiency Assessments (ACAT ID programs) or DT&E program assessments (ACAT 1B/IC programs). - When requested by the Secretary or Deputy Secretary of Defense, provide independent Cybersecurity developmental test assessments in support of USD(A&S) and Service Milestone Decision Authorities. - Continue to provide Cybersecurity DT&E subject matter experts to assist programs in building Developmental Evaluation Frameworks (DEFs), conducting Cybersecurity Table Top Exercises to identify potential threat vectors, and assist programs with exercising Phases 1 and 2 of the DoD Cybersecurity T&E Process. - Continue to promote the application of sound Cybersecurity DT&E and related technical disciplines across the Department's acquisition community and programs. - Implement initiatives that evolve the Cybersecurity DT&E 'state of practice' to keep pace with emerging technologies and improve test efficiency to field systems faster. - Implement initiatives to guide acquisition programs for how to use Cybersecurity T&E planning and analysis and Cybersecurity tests to identify and mitigate cyber risk in supply chains, development environments, tools and processes. - Continue to collaborate with the Intelligence communities to improve cyber intelligence support to Cybersecurity DT&E. - Continue to work with Lead DT&E organizations to improve Cybersecurity DT&E workforce capability and retention as well as capacity to support earlier integrated contractor and government Cybersecurity DT&E. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** There is no significant change between FY 2023 and FY 2024.			
Accomplishments/Planned Programs Subtotals	6.648	7.058	7.111

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605804D8Z / *Development Test & Evaluation*	Project (Number/Name) 149 / *Independent Engineering Assessments*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
149: *Independent Engineering Assessments*	-	-	-	10.559	0.000	10.559	10.320	10.121	10.422	10.648	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Project 149 is not a new start project. In FY 2024, USD(R&E) realigned funding from Program Element 0605142D8Z/Project 144, Program Engagement and Independent Assessments, to Project 149, Independent Engineering Assessments. This realignment consolidates DT&E, Cybersecurity DT&E, and Independent Engineering Assessments within this Program Element. In FY 2023 funding for Project 149 can be identified in PE0605142D8Z/Project 144.

A. Mission Description and Budget Item Justification

Project 149 provides resources to support MDAP Program Managers and Chief Engineers/Systems Engineers in the development of comprehensive, efficient, and innovative engineering strategies/plans to support key acquisition milestones and engineering decisions. For ACAT ID programs, this project also conducts independent engineering assessments, including Independent Technical Risk Assessments (ITRAs), and assessments at the Preliminary and Critical Design Reviews. On behalf of the OUSD(R&E) this project executes the activities:

- Support acquisition programs in the development of comprehensive, efficient, and innovative systems engineering strategies. Provide Systems Engineering support to ACAT ID programs. Review the System Engineering Plans (SEPs) and engineering activities to ensure strategies/plans are comprehensive and consistent with best practices.
- Monitor and advise USD(R&E) and USD(A&S) on technical and engineering aspects of MDAPs and select alternate acquisition pathway programs to ensure they are adequate to support fielding and the achievement of cost, schedule and performance goals to include readiness, i.e. producibility, reliability, maintainability, sustainment, and other considerations.
- For ACAT ID programs, provide ITRAs to the Defense Acquisition Executive (DAE) at the Milestone A, B, and C decisions with the goal of identifying technical risk and outlining potential mitigation measures that should be considered during program execution. For select high priority ACAT IB/IC programs, review and approve service conducted ITRAs prior to the applicable milestone decision point.
- For ACAT ID programs, conduct Preliminary and Critical Design Review assessments to inform the Defense Acquisition Executive of technical risks, maturity of the technical baseline, and the program's readiness to proceed in accordance with statute.
- For ACAT ID programs, the ITRA and PDR assessments support the DAE decision to approve MS B in accordance with statute. They also establish the basis for the DAE to provide a brief summary report at MS A and B that summarizes ITRA results including identification of any critical technologies or manufacturing processes that have not been successfully demonstrated in a relevant environment in accordance with statute.
- Support acceleration of USD(R&E) modernization initiatives in accordance with the National Defense Strategy.
- Conduct other technical reviews as requested, such as Nunn-McCurdy certification reviews, Non-Advocate Reviews, focused technical assessments, and software readiness reviews to identify and mitigate program risk.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0605804D8Z / *Development Test & Evaluation*	**Project (Number/Name)** 149 / *Independent Engineering Assessments*

- Coordinate with the Services to improve engineering practices for MDAPs and rapid prototyping/fielding programs. Identify, document, and share lessons learned to improve Systems Engineering across the DoD.
- Guide Service and other component organizations in the development planning process to ensure proposed MDAP programs are executable within acceptable levels of risk.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Independent Engineering Assessments	-	-	10.559
FY 2024 Plans: - Continue to work with ACAT ID Program Managers, Chief Engineers/Systems Engineers to improve / develop comprehensive and efficient engineering strategies/plans. - Monitor and advise USD(R&E) and USD(A&S) on technical and engineering aspects of MDAPS and select alternate acquisition pathway programs. - For ACAT ID programs, review/approve all SEPs submitted to support milestone reviews. - For ACAT ID programs, conduct Independent Risk Assessment to support the Defense Acquisition Executive with the goal of identifying technical risk and outlining potential mitigation measures that should be considered during program execution. Provide ITRA results to the DAE to support preparation of MS A and B Brief Summary reports. - For ACAT ID programs, conduct Preliminary and Critical Design Review assessments to inform the Defense Acquisition Executive of technical risks, maturity of the technical baseline, and the program's readiness to proceed. - Provide engineers and technical leaders to develop and integrate technologies and modernization priorities. - Conduct technical reviews of acquisition programs to confirm program execution in accordance with systems engineering plans. - Provides Specialty Engineering support in the critical disciplines of reliability, software, and manufacturing to ITRAs teams and other assessments.			
FY 2023 to FY 2024 Increase/Decrease Statement: Project 149 is not a new start project. In FY 2024, USD(R&E) realigned funding from Program Element 0605142D8Z/Project 144, Program Engagement and Independent Assessments, to Project 149, Independent Engineering Assessments. This realignment consolidates DT&E, Cybersecurity DT&E, and Independent Engineering Assessments within this Program Element. In FY 2023, funding for this Project 149 can be identified in PE0605142D8Z/Project 144.			
Accomplishments/Planned Programs Subtotals	-	-	10.559

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0605804D8Z / *Development Test & Evaluation*	**Project (Number/Name)** 149 / *Independent Engineering Assessments*

D. Acquisition Strategy

N/A

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 6: *RDT&E Management Support*	**R-1 Program Element (Number/Name)** PE 0606005D8Z / *Special Activities*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	0.000	0.000	0.000	18.088	-	18.088	18.410	18.802	19.479	20.180	Continuing	Continuing
399: *Special Activities*	-	0.000	0.000	18.088	-	18.088	18.410	18.802	19.479	20.180	Continuing	Continuing

Note

New Start (Y/N): No

This is an on-going effort. Funding was re-aligned from the Science and Technology Office to the Mission Capabilities Office within the Under Secretary of Defense for Research and Engineering (USD(R&E)). From Program Element 0603527D8Z, Project Code 527, Retract Larch to Program Element 0606005D8Z, Project Code 399, Special Activities.

A. Mission Description and Budget Item Justification

This program is reported in accordance with Title 10, United States Code, Section 119(a)(1) in the Special Access Program Annual Report to Congress. For further information, please contact the Deputy Chief Technology Officer for Mission Capabilities in the Office of the Under Secretary of Defense for Research and Engineering (OUSD(R&E)).

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	0.000	0.000	0.000	-	0.000
Current President's Budget	0.000	0.000	18.088	-	18.088
Total Adjustments	0.000	0.000	18.088	-	18.088
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	-	-	18.088	-	18.088

Change Summary Explanation

Funding is re-aligned from the Science and Technology Office to the Mission Capabilities OUSD(R&E). From Program Element 0603527D8Z, Project Code 527, Retract Larch to Program Element 0606005D8Z, Project Code 399, Special Activities.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0606005D8Z / *Special Activities*	Project (Number/Name) 399 / *Special Activities*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
399: *Special Activities*	-	0.000	0.000	18.088	-	18.088	18.410	18.802	19.479	20.180	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This is an on-going effort. Funding is re-aligned from the Science and Technology Office to the Mission Capabilities Office within the Under Secretary of Defense for Research and Engineering (USD(R&E)). From Program Element 0603527D8Z, Project Code 527, Retract Larch to Program Element 0606005D8Z, Project Code 399, Special Activities.

A. Mission Description and Budget Item Justification

This program is reported in accordance with Title 10, United States Code, Section 119(a)(1) in the Special Access Program Annual Report to Congress. For further information, please contact the Deputy Chief Technology Officer for Mission Capabilities in the Office of the Under Secretary of Defense for Research and Engineering (OUSD(R&E)).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Special Projects	0.000	0.000	18.088
Description: Information is classified. ***FY 2023 Plans:*** Information is classified. ***FY 2024 Plans:*** Information is classified. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding re-alignment is from the Science and Technology Office to the Mission Capabilities Office, Program Element 0603527D8Z, Project Code 527, Retract Larch to Program Element 0606005D8Z, Project Code 399, Special Activities.			
Accomplishments/Planned Programs Subtotals	0.000	0.000	18.088

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0606005D8Z / *Special Activities*	**Project (Number/Name)** 399 / *Special Activities*

D. Acquisition Strategy

N/A

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 6: *RDT&E Management Support*	**R-1 Program Element (Number/Name)** PE 0606100D8Z / *Budget and Program Assessments*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	59.277	13.481	15.098	14.427	-	14.427	14.388	15.668	13.754	14.039	-	-
101: *Budget and Program Assessments*	50.540	7.015	8.450	8.884	-	8.884	9.014	9.197	9.383	9.581	-	-
118: *Enterprise VAMOSC*	8.737	6.466	6.648	5.543	-	5.543	5.374	6.471	4.371	4.458	-	-

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

This program supports the Department's initiatives to Deter Aggression, Defend the Homeland, and Build Sustainable and Long-Term Advantage.

This program supports the Office of the Director, Cost Assessment & Program Evaluation (CAPE) by funding assessments that help to resolve budget and programmatic issues across the full range of the Department's activities. Projects that support this effort help to inform leadership on program alternatives, capability concept development, design and cost, as well as the appropriate balance of capabilities across the force. They also help to identify how well the Department is meeting its expenditure goals, and how well the force can implement the National Defense Strategy. These RDT&E resources support critical studies and analyses to assist senior DoD leaders in optimally balancing the lethality, partnership, and reform levels of effort to carry out the National Defense Strategy.

This program provides for analytical research across the entire spectrum of defense issues and concerns. The research agenda focuses on near to long-term problems identified by the Secretary of Defense, addressing difficult and complex questions linked to program alternatives for current and future capabilities and forces in order to enhance senior leadership's deliberations and decision-making.

This program provides the scientific and technical engineering services needed for research studies in the development of models and simulations and the evaluation of current analytical tools and scientific methods used to evaluate and assess weapons systems and warfighting capabilities for warfighting environments and scenarios, and related force structure. Deliverables from this program will include reports, briefings, and analyses designed to illuminate critical issues facing the Department. Outcomes include recommendations for new modeling techniques, programmatic alternatives, and scenario development.

The FY 2024 budget proposal continues resources to support the Enterprise Visibility and Maintainability of Operation and Support Costs (EVAMOSC). EVAMOSC supports CAPE's responsibility to develop and maintain a database of actual operating and support (O&S) costs for major weapons systems, as required in 10 USC Ch. 137, Sec. 2337a and further refined by Sec. 832 of the 2019 NDAA. Additionally, the EVAMOSC data capability will directly support development and reporting of readiness metrics associated with implementation of the National Defense Strategy. In FY 2024, CAPE will continue to design and develop an enterprise data platform to serve as the authoritative source of O&S cost data for major weapon systems.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 6: *RDT&E Management Support*	**R-1 Program Element (Number/Name)** PE 0606100D8Z / *Budget and Program Assessments*

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	13.994	15.244	13.251	-	13.251
Current President's Budget	13.481	15.098	14.427	-	14.427
Total Adjustments	-0.513	-0.146	1.176	-	1.176
• Congressional General Reductions	-	-0.146			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Enterprise Visibility And Management of Operating and Support Costs (EVAMOSC)	-0.513	-	1.176	-	1.176

Change Summary Explanation

FY 2024 increase supports both inflation adjustment and an acquisition change with the new issuance of a new Task Order.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0606100D8Z / *Budget and Program Assessments*	Project (Number/Name) 101 / *Budget and Program Assessments*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
101: *Budget and Program Assessments*	50.540	7.015	8.450	8.884	-	8.884	9.014	9.197	9.383	9.581	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This program supports the Office of the Director, Cost Assessment & Program Evaluation (CAPE). It funds assessments that help to resolve budget and programmatic issues across the full range of the Department's activities. Projects that support this effort help to inform the leadership on program alternatives, capability concept development, design and cost, the appropriate balance of capabilities across the force, and also to identify how well the Department's expenditures are meeting its goals, and how well the force can implement the Defense strategy.

This program provides for analytical research across the entire spectrum of defense issues and concerns. The research agenda focuses on near to long-term problems identified by the Secretary of Defense, and addresses difficult and complex questions linked to program alternatives for current and future capabilities and forces in order to enhance DoD senior leadership's deliberations and decision-making.

This program provides the scientific and technical engineering services needed for research studies in the development of models and simulations and the evaluation of current analytical tools and scientific methods used to evaluate and assess weapons systems and warfighting capabilities for warfighting environments and scenarios, and related force structure. Deliverables from this program will include reports, briefings, and analyses designed to illuminate critical issues facing the Department. Outcomes include recommendations for new modeling techniques, programmatic alternatives, and scenario development.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: OSD Support for Programming Budget	7.015	8.450	8.884
Description: This program provides for analytical research across the entire spectrum of defense issues and concerns. The research agenda focuses on near to long-term problems identified by the Secretary of Defense, and addresses difficult and complex questions linked to program alternatives for current and future capabilities and forces in order to enhance senior leadership deliberations and decision-making. ***FY 2023 Plans:*** Studies, analyses, and assessments will be focused on: - Improving cost analysis tools to inform program, budget, and Defense Acquisition Board reviews. - Supporting the Weapon System Acquisition Reform Act (WSARA) requirements by independently assessing, analyzing, and where appropriate, updating cost indices, inflation rates, and escalation rates used in preparing the President's Budget for major acquisition programs.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0606100D8Z / *Budget and Program Assessments*	**Project (Number/Name)** 101 / *Budget and Program Assessments*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
- Facilitate CAPEs new role in the annual Sustainment Review and Independent Cost Estimate (ICE) process. - Acquisition change with the new issuance of a new Task Order. ***FY 2024 Plans:*** Studies, analyses, and assessments will be focused on: - Improving cost analysis tools to inform program, budget, and Defense Acquisition Board reviews. - Supporting the Weapon System Acquisition Reform Act (WSARA) requirements by independently assessing, analyzing, and where appropriate, updating cost indices, inflation rates, and escalation rates used in preparing the President's Budget for major acquisition programs. - Facilitate CAPEs new role in the annual Sustainment Review and Independent Cost Estimate (ICE) process. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2024 slight funding decrease will support the development and maintenance of an enterprise database of actual operating and support costs, with internal adjustments to support priority requirements. Resources will fund a mix of research activities to carry out the plans stated above. FY 2024 decrease reflects inflation adjustments and acquisition change with the new issuance of a new Task Order.			
Accomplishments/Planned Programs Subtotals	7.015	8.450	8.884

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

A mix of competitive contracts with commercial firms and research provided by university-affiliated research centers (UARCs), and Federally Funded Research and Development Centers (FFRDCs).

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0606100D8Z / *Budget and Program Assessments*	Project (Number/Name) 118 / *Enterprise VAMOSC*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
118: *Enterprise VAMOSC*	8.737	6.466	6.648	5.543	-	5.543	5.374	6.471	4.371	4.458	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Enterprise Visibility and Management of Operating and Support Cost (EVAMOSC) addresses CAPE's responsibility to develop and maintain a database of actual operating and support (O&S) costs for major weapons systems, as required in 10 USC Ch. 137, Sec. 2337a and further refined by Sec. 832 of the 2019 National Defense Authorization Act (NDAA). Additionally, the EVAMOSC data capability will directly support development and reporting of readiness metrics associated with implementation of the National Defense Strategy.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Enterprise Visibility and Maintainability of Operating and Support Costs (EVAMOSC)	6.466	6.648	5.543
Description: EVAMOSC addresses CAPE's responsibility to develop and maintain a database of actual operating and support (O&S) costs for major weapons systems, as required in 10 USC Ch. 137, Sec. 2337a and further refined by Sec. 832 of the 2019 NDAA. Additionally, the EVAMOSC data capability will directly support development and reporting of readiness metrics associated with implementation of the National Defense Strategy.			
FY 2023 Plans: Design and develop an enterprise data platform to serve as the authoritative source of O&S cost data for major weapon systems: - Develop data ingestion pipelines, business rules, logic models, and data catalogues to support collection, reporting, and analysis of enterprise-level O&S cost data. - Develop system administration, security, and user management functionality for an enterprise data asset anticipated to provide services to over 3,000 users across the DoD. - Construct an advanced database in GovCloud, acquire data from more than 75 source data systems, and map this data to all DoD weapons systems using standardized O&S cost data definitions. - FY 2023 increase reflects inflation adjustments and acquisition change with the new issuance of a new Task Order.			
FY 2024 Plans: Design and develop an enterprise data platform to serve as the authoritative source of O&S cost data for major weapon systems: - Develop data ingestion pipelines, business rules, logic models, and data catalogues to support collection, reporting, and analysis of enterprise-level O&S cost data. - Develop system administration, security, and user management functionality for an enterprise data asset anticipated to provide services to over 3,000 users across the DoD.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0606100D8Z / *Budget and Program Assessments*	**Project (Number/Name)** 118 / *Enterprise VAMOSC*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
- Construct an advanced database in GovCloud, acquire data from more than 75 source data systems, and map this data to all DoD weapons systems using standardized O&S cost data definitions. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2024 decrease supports the development and maintenance of an enterprise database for actual operating and support costs. The associated funding will be prioritized to continue this important Congressional interest to improve O&S cost data collection. Resources will fund a mix of research activities to carry out the plans stated above.			
Accomplishments/Planned Programs Subtotals	6.466	6.648	5.543

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

N/A

D. Acquisition Strategy

A mix of competitive contracts with commercial firms and research provided by university-affiliated research centers (UARCs) and Federally Funded Research and Development Centers (FFRDCs).

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 6: *RDT&E Management Support*	**R-1 Program Element (Number/Name)** PE 0606114D8Z / *Support for Analysis Working Group*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	0.000	0.000	4.700	4.200	-	4.200	4.200	4.200	4.200	4.294	Continuing	Continuing
109: *Analysis Working Group Support*	0.000	0.000	4.700	4.200	-	4.200	4.200	4.200	4.200	4.294	Continuing	Continuing

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

This program supports the Department's initiative to Take Care of People, and Build Sustainable and Long-Term Advantage.

This program supports the Office of the Director, Cost Assessment & Program Evaluation (CAPE). It funds assessments that help the Analysis Working Group (AWG) to assist the Secretary and Deputy Secretary in guiding the analytic community and ensuring strategic analysis products are robust and of the highest quality. The end goal is an analytic enterprise that is agile, responsive, and provides sound decision support for the Secretary and Deputy Secretary. This program provides for analytic research across the Department to guide reform of the Departments analytic enterprise. Projects that support this effort help to develop a high performing and innovative analytic enterprise with the right policies, structures, people, and tools to support timely strategic decision that create an advantage for the U.S Military now and into the future.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	0.000	4.700	4.700	-	4.700
Current President's Budget	0.000	4.700	4.200	-	4.200
Total Adjustments	0.000	0.000	-0.500	-	-0.500
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustment	-	-	-0.500	-	-0.500

Change Summary Explanation

FY 2024 decrease to support higher-priority DoD requirements.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0606114D8Z / *Support for Analysis Working Group*	Project (Number/Name) 109 / *Analysis Working Group Support*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
109: *Analysis Working Group Support*	0.000	0.000	4.700	4.200	-	4.200	4.200	4.200	4.200	4.294	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This program supports the Office of the Director, Cost Assessment & Program Evaluation (CAPE). It funds assessments that help the Analysis Working Group (AWG) to assist the Secretary and Deputy Secretary in guiding the analytic community and ensuring strategic analysis products are robust and of the highest quality. The end goal is an analytic enterprise that is agile, responsive, and provides sound decision support for the Secretary and Deputy Secretary. This program provides for analytic research across the Department to guide reform of the Departments analytic enterprise. Projects that support this effort help to develop a high performing and innovative analytic enterprise with the right policies, structures, people, and tools to support timely strategic decisions that create an advantage for the U.S Military now and into the future.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Analysis Working Group Support	0.000	4.700	4.200
Description: The Analysis Working Group (AWG) was established to marshal and guide the Department's analytic capabilities. This group is advancing key strategic priorities by improving the analytic underpinning available for senior leader decisions and addressing necessary enterprise reforms (e.g., data sharing and knowledge management) across the analytic community. ***FY 2023 Plans:*** Studies, analysis and assessments will be focused on: -Establishing clear priorities and standards to focus analyst on decision support -Improving transparency across the analytic community -Improving the quality of and expanding access to data -Evolve the methods and tools used in strategic analysis ***FY 2024 Plans:*** Studies, analysis and assessments will be focused on: -Establishing clear priorities and standards to focus analyst on decision support -Improving transparency across the analytic community -Improving the quality of and expanding access to data -Evolve the methods and tools used in strategic analysis ***FY 2023 to FY 2024 Increase/Decrease Statement:***			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0606114D8Z / *Support for Analysis Working Group*	**Project (Number/Name)** 109 / *Analysis Working Group Support*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Decrease to support higher-priority DoD requirements. Resources will continue to fund a mix of research activities to carry out plans as stated above.			
Accomplishments/Planned Programs Subtotals	0.000	4.700	4.200

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

A mix of research provided by university-affiliated research centers (UARCs), Federally Funded Research and Development Centers (FFRDCs) and competitive contracts with commercials firms.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 6: *RDT&E Management Support*	**R-1 Program Element (Number/Name)** PE 0606135D8Z / *Chief Digital Artificial Intelligence Officer*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	0.000	0.000	13.132	17.247	-	17.247	9.243	5.464	5.672	5.785	Continuing	Continuing
069: *Artificial Intelligence & Machine Learning Technologies*	0.000	0.000	13.132	17.247	-	17.247	9.243	5.464	5.672	5.785	Continuing	Continuing

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

The Chief Digital and Artificial Intelligence Officer (CDAO) supports the Department's initiatives to build enduring advantage and build a resilient Joint Force and defense ecosystem. The CDAO is responsible for strengthening and integrating data, artificial intelligence, and digital solutions in the Department in support of the National Defense Strategy and Section 1513 of the National Defense Authorization Act (NDAA) for FY 2023.

The functions of the CDAO are as follows: lead and oversee the DoD's strategy development and policy formulation for data, analytics, and AI; break down barriers to data and AI adoption; create enabling digital infrastructure and services; selectively scale and provide digital and AI-enabled solutions focused on enterprise and joint use cases; and surge digital services. The CDAO will continue priority projects that align to the mission. This includes expanding the enterprise data repository; establishing a responsible AI ecosystem; developing the AI and Data Accelerator (ADA) initiative; and developing a Data, Analytics, and AI Adoption Strategy. These various lines of effort will support the overarching mission of accelerating the Department's adoption of data, analytics, and AI to preserve decision advantage across the Joint Force.

This exhibit encompasses two activities: AI Acquisition Training and Responsible AI (RAI) and AI Governance Tools.

The DoD must overhaul its acquisition processes and prioritize technical and acquisition training as highlighted in the 2018 National Defense Strategy, the 2018 DoD Artificial Intelligence Strategy, and the 2021 National Security Commission on Artificial Intelligence (NSCAI) Final Report. This funding will provide the basis of the training platform -Digital DNA Pilot Program- in partnership with OUSD(A&S).

It is also incumbent on the Department to ensure all its AI-enabled systems will be safe and adhere to ethical standards and that they are used in a manner that contributes to the efficiency, effectiveness, and legitimacy of the Department's AI capabilities. This requirement funds activities to develop, procure and maintain the necessary commercial and DoD-customized tools to put the DoD AI Ethical Principles into practice across the entire AI product lifecycle. RAI leaders across the Department are going to need access to and utilize tools that support the capability development process, including in areas of explainability of models, bias detection, and other areas necessary for RAI. This requirement provides for the integration of commercially available tools, to include an Explainable AI tool, Synthetic Data & Anonymization tool, Data Management and Traceability tool, Continuous Integration/ Continual Delivery tool, Auto-Machine Learning tool, Bias Mitigation tool, and the Interference Time tool, into the developer's workflow to operationalize the DoD AI Ethics Principles. By doing so, these tools will not only provide technical assessments

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 6: *RDT&E Management Support*	**R-1 Program Element (Number/Name)** PE 0606135D8Z *I Chief Digital Artificial Intelligence Officer*

through the project lifecycle, but also allow for traceability and reliability to ensure safe and ethical systems from design to development and deployment to use. This requirement also funds the development of DoD-customized assessments and tools that RAI leads will use across the AI product and acquisition lifecycles.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	0.000	13.132	17.247	-	17.247
Current President's Budget	0.000	13.132	17.247	-	17.247
Total Adjustments	0.000	0.000	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			

Change Summary Explanation

No change in FY 2024 funding.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0606135D8Z / *Chief Digital Artificial Intelligence Officer*	Project (Number/Name) 069 / *Artificial Intelligence & Machine Learning Technologies*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
069: *Artificial Intelligence & Machine Learning Technologies*	0.000	0.000	13.132	17.247	-	17.247	9.243	5.464	5.672	5.785	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project encompasses two activities: AI Acquisition Training and RAI and AI Governance Tools.

The DoD must overhaul its acquisition processes and prioritize technical and acquisition training as highlighted in the National Defense Strategy for 2018, the 2018 DoD Artificial Intelligence Strategy, and the 2021 NSCAI Final Report. This funding will provide the basis of the training platform -Digital DNA Pilot Program- in partnership with OUSD(A&S).

It is also incumbent on the Department to ensure all its AI-enabled systems will be safe and adhere to ethical standards and that they are used in a manner that contributes to the efficiency, effectiveness, and legitimacy of the Department's AI capabilities. This requirement funds activities to develop, procure and maintain the necessary commercial and DoD-customized tools to put the DoD AI Ethical Principles into practice across the entire AI product lifecycle. RAI leaders across the Department are going to need access to tools that support the capability development process, including in areas of explainability of models, bias detection, and other areas necessary for RAI. This requirement provides for the integration of commercially available tools to include an Explainable AI tool, Synthetic Data & Anonymization tool, Data Management and Traceability tool, Continuous Integration/ Continual Delivery tool, Auto-Machine Learning tool, Bias Mitigation tool, and the Interference Time tool into the developer's workflow to operationalize the DoD AI Ethics Principles. By doing so, these tools will not only provide technical assessments through the project lifecycle, but also allow for traceability and reliability to ensure safe and ethical systems from design to development and deployment to use. This requirement also funds the development of DoD-customized assessments and tools that RAI leads will use across the AI product and acquisition lifecycles.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Artificial Intelligence (AI) Acquisition Training	-	6.695	6.637
Description: The DoD must overhaul its acquisition processes and prioritize technical and acquisition training as highlighted in the National Defense Strategy for 2018, the DoD Artificial Intelligence Strategy for 2018, and the 2021 NSCAI Final Report. This funding is earmarked to provide the basis of the training platform - DoD AI Acquisition Training Platform - in partnership with OUSD(A&S).			
FY 2023 Plans: In FY 2023, CDAO plans to develop AI-specific acquisition content for existing Defense Acquisition University platforms and to build a DoD AI training portal for DoD components acquiring AI capabilities.			
FY 2024 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0606135D8Z / *Chief Digital Artificial Intelligence Officer*	**Project (Number/Name)** 069 / *Artificial Intelligence & Machine Learning Technologies*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
In FY 2024, CDAO plans to continue developing AI-specific acquisition content for existing Defense Acquisition University platforms and to build a DoD AI training portal for DoD components acquiring AI capabilities. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2024 decrease is due to expected savings in software licensing costs.			
Title: Responsible Artificial Intelligence (RAI) and Artificial Intelligence (AI) Governance Tools ***Description:*** It is incumbent on the Department to ensure all its AI-enabled systems will be safe and adhere to ethical standards and that they are used in a manner that contributes to the efficiency, effectiveness, and legitimacy of the Department's AI capabilities as outlined in the National Defense Strategy and Section 1513 of the National Defense Authorization Act (NDAA) for 2023. This requirement funds activities to develop, procure and maintain the necessary commercial and DoD-customized tools to put the DoD AI Ethical Principles into practice across the entire AI product lifecycle. RAI leaders across the Department are going to need access to utilize tools that support the capability development process, including in areas of explainability of models, bias detection, and other areas necessary for RAI. This requirement provides for the integration of commercially available tools to include an Explainable AI tool, Synthetic Data & Anonymization tool, Data Management and Traceability tool, Continuous Integration/Continual Delivery tool, Auto-Machine Learning tool, Bias Mitigation tool, and the Interference Time tool into CDAO's AI/ML platforms, which will embed the operationalization of the DoD AI Ethics Principles into the developer's workflow. By doing so, these tools will not only provide technical assessments through the project lifecycle, but also allow for traceability and reliability to ensure safe and ethical systems from design to development and deployment to use. This requirement also funds the development of DoD- customized assessments and tools that RAI leads will use across the AI product and acquisition lifecycles. ***FY 2023 Plans:*** In FY 2023, CDAO Plans to develop and maintain the DoD AI Inventory tool, an information-sharing portal website, an executive dashboard, and customized DoD governance tools, and to procure and maintain commercially available tools to support RAI activities. ***FY 2024 Plans:*** In FY 2024, CDAO will continue to develop and maintain the DoD AI Inventory tool and customized DoD governance tools, and to procure and maintain commercially available tools to support RAI activities. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2024 increase funds the development and implementation of web-based and application-based tools reflective of the initial RAI assessments and tools generated in FY 2023.	-	6.437	10.610
Accomplishments/Planned Programs Subtotals	-	13.132	17.247

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0606135D8Z / *Chief Digital Artificial Intelligence Officer*	**Project (Number/Name)** 069 / *Artificial Intelligence & Machine Learning Technologies*

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 6: *RDT&E Management Support*	**R-1 Program Element (Number/Name)** PE 0606225D8Z / *ODNA Technology & Resource Analysis*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	11.919	4.897	3.323	3.386	-	3.386	3.430	3.506	3.580	3.656	-	-
106: *Technology and Resource Analysis*	11.919	4.897	3.323	3.386	-	3.386	3.430	3.506	3.580	3.656	-	-

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

This program supports the Department's initiatives to Defend the Homeland, Deter Aggression and Prevail in Conflict, and Build Enduring Advantage. The Office of Net Assessment develops and coordinates analyses that examine the standing trends and future prospects of U.S. and other military capabilities and military potential. The net assessments address near and long-term problems and opportunities for the U.S. military forces to help counter technological advantages of potential U.S. adversaries. These efforts will pursue research to analyze the future security environment.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	4.897	3.323	3.367	-	3.367
Current President's Budget	4.897	3.323	3.386	-	3.386
Total Adjustments	0.000	0.000	0.019	-	0.019
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	-	-	0.019	-	0.019

Change Summary Explanation

The FY 2024 program increase reflects inflation for net assessments.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0606225D8Z / *ODNA Technology & Resource Analysis*	Project (Number/Name) 106 / *Technology and Resource Analysis*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
106: *Technology and Resource Analysis*	11.919	4.897	3.323	3.386	-	3.386	3.430	3.506	3.580	3.656	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Office of Net Assessment develops and coordinates analyses that examine the standing trends and future prospects of U.S. and other military capabilities and military potential. The net assessments address near and long-term problems and opportunities for the U.S. military forces to help counter technological advantages of potential U.S. adversaries. These efforts will pursue research to analyze the future security environment.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Technology and Resource Analysis	4.897	3.323	3.386
Description: The Office of Net Assessment develops and coordinates analyses that examine the standing trends and future prospect of U.S. and other military capabilities and military potential. The net assessments address near and long-term problems and opportunities for the U.S. military forces to help counter technological advantages of potential U.S. adversaries. These efforts will pursue research to analyze the future security environment.			
FY 2023 Plans: Continue and initiate efforts to pursue research that identifies new technological innovations and analyzes the future security environment, including: - Continuing analysis on future concepts of operation and possible courses of action and responses to emerging capabilities. - Continuing investment in a Biosciences Net Assessment and initiating analysis in future warfare areas to assess potential revolutionary advances. - Initiating analysis in information areas for potential advanced capability demonstrations and a potential Net Assessment.			
FY 2024 Plans: Continue and initiate efforts to pursue research that identifies new technological innovations and analyzes the future security environment, including: - Continuing analysis on future concepts of operation and possible courses of action and responses to emerging capabilities. - Continuing investment in a Biosciences Net Assessment and initiating analysis in future warfare areas to assess potential revolutionary advances. - Initiating analysis in information areas for potential advanced capability demonstrations and a potential Net Assessment.			
FY 2023 to FY 2024 Increase/Decrease Statement:			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0606225D8Z / *ODNA Technology & Resource Analysis*	**Project (Number/Name)** 106 / *Technology and Resource Analysis*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
The FY 2024 minimal increase for net assessments inflation.			
Accomplishments/Planned Programs Subtotals	4.897	3.323	3.386

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 6: *RDT&E Management Support*	**R-1 Program Element (Number/Name)** PE 0606300D8Z / *Defense Science Board*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	0.000	0.000	2.500	2.352	0.000	2.352	2.389	2.535	2.589	2.645	Continuing	Continuing
807: *Defense Science Board*	0.000	0.000	2.500	2.352	0.000	2.352	2.389	2.535	2.589	2.645	Continuing	Continuing

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

This program supports the Department's initiatives to Build Long-Term Advantage, and Build a Resilient Joint Force and Defense Ecosystem.

The Secretary of Defense, in accordance with the Federal Advisory Committee Act (FACA) (5 U.S.C., Appendix) and 41 C.F.R. § 102- 3.50(d), established the Defense Science Board (DSB) as a discretionary advisory committee. The DSB provides independent advice to the Under Secretary of Defense for Research & Engineering, the Secretary of Defense, the Deputy Secretary of Defense, the Chairman of the Joint Chiefs of Staff, and other Department officials for all matters relating to the acquisition processes, research and development, manufacturing, production, and logistics; command, control, communications and intelligence activities related to acquisition, military construction and procurement. The DSB is concerned with the pressing and complex technological problems facing the DoD in such areas as research, engineering, organizational structure and process, business and functional concepts, and manufacturing, and ensures the identification of new technologies and new applications of technology in those areas to strengthen national security.

The funds provided allows for the procurement of professional, analytical, and administrative services, to include the tasks of planning, preparation, execution, administrative support, logistics, and documentation for Subcommittee meetings and conferences. The vendors also provide essential services in support of the DSB and the DSB staff in the following areas: technical, business, and administrative planning; organizing, managing, coordinating, and tracking (e.g., cost, schedule, and deliverables); and performance management, data management, and subcontract management along with refining initial and final reports of the various study groups.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 6: *RDT&E Management Support*	**R-1 Program Element (Number/Name)** PE 0606300D8Z / *Defense Science Board*

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	0.000	2.532	2.394	-	2.394
Current President's Budget	0.000	2.500	2.352	-	2.352
Total Adjustments	0.000	-0.032	-0.042	-	-0.042
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-0.032			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	-	-	-0.042	-	-0.042

Change Summary Explanation

FY 2024 reduction of $0.042 million is comprised of a realignment of $0.052 million to support Historically Black Colleges and Universities/Minority Serving Institutions program, which is a priority of the Under Secretary of Defense for Research and Engineering (USD(R&E)), $0.003 million to support departmental priorities and an economic assumption increase of $0.013 million.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0606300D8Z / *Defense Science Board*	Project (Number/Name) 807 / *Defense Science Board*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
807: *Defense Science Board*	0.000	0.000	2.500	2.352	0.000	2.352	2.389	2.535	2.589	2.645	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Secretary of Defense, in accordance with the Federal Advisory Committee Act (FACA) (5 U.S.C., Appendix) and 41 C.F.R. § 102- 3.50(d), established the Defense Science Board (DSB) as a discretionary advisory committee. The DSB provides independent advice to the Under Secretary of Defense for Research & Engineering, the Secretary of Defense, the Deputy Secretary of Defense, the Chairman of the Joint Chiefs of Staff, and other Department officials for all matters relating to the acquisition processes, research and development, manufacturing, production, and logistics; command, control, communications and intelligence activities related to acquisition, military construction and procurement. The DSB is concerned with the pressing and complex technological problems facing the DoD in such areas as research, engineering, organizational structure and process, business and functional concepts, and manufacturing, and ensures the identification of new technologies and new applications of technology in those areas to strengthen national security.

Contracted services are critical to the success of the DSB. The funds provided allows for the procurement of professional, analytical, and administrative services, to include the tasks of planning, preparation, execution, administrative support, logistics, and documentation for Subcommittee meetings and conferences. The vendors also provide essential services in support of the DSB and the DSB staff in the following areas: technical, business, and administrative planning; organizing, managing, coordinating, and tracking (e.g., cost, schedule, and deliverables); and performance management, data management, and subcontract management along with refining initial and final reports of the various study groups.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Defense Science Board	-	2.500	2.352
Description: The Secretary of Defense, in accordance with the Federal Advisory Committee Act (FACA) (5 U.S.C., Appendix) and 41 C.F.R. § 102- 3.50(d), established the Defense Science Board (DSB) as a discretionary advisory committee. The DSB provides independent advice to the Under Secretary of Defense for Research & Engineering, the Secretary of Defense, the Deputy Secretary of Defense, the Chairman of the Joint Chiefs of Staff, and other Department officials for all matters relating to the acquisition processes, research and development, manufacturing, production, and logistics; command, control, communications and intelligence activities related to acquisition, military construction and procurement. The DSB is concerned with the pressing and complex technological problems facing the DoD in such areas as research, engineering, organizational structure and process, business and functional concepts, and manufacturing, and ensures the identification of new technologies and new applications of technology in those areas to strengthen national security.			
FY 2023 Plans: Contracted services are critical to the success of the DSB. The funds provided allows for the procurement of professional, analytical, and administrative services, to include the tasks of planning, preparation, execution, administrative support, logistics,			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0606300D8Z / *Defense Science Board*	**Project (Number/Name)** 807 / *Defense Science Board*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
and documentation for Subcommittee meetings and conferences. The vendors also provide essential services in support of the DSB and the DSB staff in the following areas: technical, business, and administrative planning; organizing, managing, coordinating, and tracking (e.g., cost, schedule, and deliverables); and performance management, data management, and subcontract management along with refining initial and final reports of the various study groups. ***FY 2024 Plans:*** Contracted services are critical to the success of the DSB. The funds provided allows for the procurement of professional, analytical, and administrative services, to include the tasks of planning, preparation, execution, administrative support, logistics, and documentation for Subcommittee meetings and conferences. The vendors also provide essential services in support of the DSB and the DSB staff in the following areas: technical, business, and administrative planning; organizing, managing, coordinating, and tracking (e.g., cost, schedule, and deliverables); and performance management, data management, and subcontract management along with refining initial and final reports of the various study groups. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The decrease of $0.148 million between FY 2023 and FY 2024 is the result of a realignment of funds for higher departmental priorities.			
Accomplishments/Planned Programs Subtotals	-	2.500	2.352

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 6: *RDT&E Management Support*	**R-1 Program Element (Number/Name)** PE 0606301D8Z / *Aviation Safety Technologies*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	0.000	0.000	0.000	0.213	-	0.213	0.223	0.227	0.232	0.237	Continuing	Continuing
057: *Force Safety & Occupational Health (FSOH)*	-	0.000	0.000	0.213	-	0.213	0.223	0.227	0.232	0.237	Continuing	Continuing

Note

New Start (Y/N): Yes

A. Mission Description and Budget Item Justification

This is an FY 2024 new start effort that supports the Department's initiative Taking Care of Our People. The requirements are aligned to DoD/Federal strategic direction, such as the DoD Digital Modernization Strategy, DoD and Federal Data Strategies, and Personnel and Readiness Strategy for 2030.

In order to protect the lives, safety, health, and welfare of the DoD workforce, and the significant investments we make in our weapons systems, platforms and infrastructure, we must acknowledge Safety and Occupational Health (SOH). Ensuring the safety of our workforce requires an enduring safety culture, where regular and consistent hazard, near-miss and mishap reporting is the norm – at least on-par with industry and the private sector aviation and industrial communities. According to the 2020 National Commission on Military Aviation Safety (NCMAS) report, this begins with a centralized system and processes with which to gather, synthesize, and report Safety data at all levels. In addition to the NCMAS report, the Readiness Subcommittee of the House Armed Services Committee (HASC-R), in their report for the FY 2022 NDAA, directed the Department to establish uniform data collection standards and a centralized collection system for mishap information. Currently, the DoD collects SOH information from disparate, incomplete, and often overlapping sources - a process that hinders opportunities for timely or in-depth analysis and Department-wide mishap prevention efforts. Many of the DoD Components, including some of the Combatant Commands, do not have a safety information management system to enter, track, or manage mishaps, near-misses, or hazards. Without such a system and process, the Department is unable to adequately identify and analyze trends across the DoD Components, share lessons learned, and track corrective actions in response to recommendations.

This effort addresses the Congressional requirements and identified capability gaps through development of a safety information case management system. The system will be based on the safety data standards, which have been defined and coordinated for Department-wide implementation and which will be incorporated into Department of Defense Instruction (DoDI) 6055.07 “Mishap Notification, Investigation, Reporting, and Record Keeping.” A central SOH information management system based on the newly approved safety data standards will provide the capability to those DoD Components without an existing automated tool, and will be available for all DoD Components. It will provide leaders current, accurate, and actionable safety information and insights to forecast, mitigate, and prevent future mishaps, injuries, and occupational illnesses, and to drive safety innovation and modernization.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 6: *RDT&E Management Support*	**R-1 Program Element (Number/Name)** PE 0606301D8Z / *Aviation Safety Technologies*

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	0.000	0.000	0.000	-	0.000
Current President's Budget	0.000	0.000	0.213	-	0.213
Total Adjustments	0.000	0.000	0.213	-	0.213
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• New Start	-	-	0.213	-	0.213

Change Summary Explanation

This is a new start reflecting the Department’s emphasis and prioritization on safety data standardization and modernization. The Department’s senior safety governance forum, the Defense Safety Oversight Council (DSOC), will oversee these efforts. The DSOC includes the Congressionally-mandated Joint Safety Council.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0606301D8Z / *Aviation Safety Technologies*	Project (Number/Name) 057 / *Force Safety & Occupational Health (FSOH)*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
057: *Force Safety & Occupational Health (FSOH)*	-	0.000	0.000	0.213	-	0.213	0.223	0.227	0.232	0.237	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

New Start (Y/N): Yes

A. Mission Description and Budget Item Justification

This effort supports the Department's initiative Taking Care of Our People. The requirements are aligned to DoD/Federal strategic direction, such as the DoD Digital Modernization Strategy, DoD and Federal Data Strategies, and Personnel and Readiness Strategy for 2030.

In order to protect the lives, safety, health, and welfare of the DoD workforce, and the significant investments we make in our weapons systems, platforms and infrastructure, we must acknowledge Safety and Occupational Health (SOH). Ensuring the safety of our workforce requires an enduring safety culture, where regular and consistent hazard, near-miss and mishap reporting is the norm – at least on-par with industry and the private sector aviation and industrial communities. According to the 2020 National Commission on Military Aviation Safety (NCMAS) report, this begins with a centralized system and processes with which to gather, synthesize, and report Safety data at all levels. In addition to the NCMAS report, the Readiness Subcommittee of the House Armed Services Committee (HASC-R), in their report for the FY 2022 NDAA, directed the Department to establish uniform data collection standards and a centralized collection system for mishap information. Currently, the DoD collects SOH information from disparate, incomplete, and often overlapping sources - a process that hinders opportunities for timely or in-depth analysis and Department-wide mishap prevention efforts. Many of the DoD Components, including some of the Combatant Commands, do not have a safety information management system to enter, track, or manage mishaps, near-misses, or hazards. Without such a system and process, the Department is unable to adequately identify and analyze trends across the DoD Components, share lessons learned, and track corrective actions in response to recommendations.

This effort addresses the Congressional requirements and identified capability gaps through development of a safety information case management system. The system will be based on the safety data standards, which have been defined and coordinated for Department-wide implementation and which will be incorporated into Department of Defense Instruction (DoDI) 6055.07 “Mishap Notification, Investigation, Reporting, and Record Keeping.” A central SOH information management system based on the newly approved safety data standards will provide the capability to those DoD Components without an existing automated tool, and will be available for all DoD Components. It will provide leaders current, accurate, and actionable safety information and insights to forecast, mitigate, and prevent future mishaps, injuries, and occupational illnesses, and to drive safety innovation and modernization.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Force Safety & Occupational Health (FSOH)	-	0.000	0.213

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0606301D8Z / *Aviation Safety Technologies*	**Project (Number/Name)** 057 / *Force Safety & Occupational Health (FSOH)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Description: Develop safety information case management tool for entering, tracking, and managing the lifecycle of mishaps and hazards from identification through investigation to mitigation, as well as the sharing of lessons learned and best practices. ***FY 2023 Plans:*** Develop safety information case management tool based on defined and approved safety data business processes and standards and conduct pilot program with select DoD Components that do not have an existing safety information management system. ***FY 2024 Plans:*** Continue with the development of safety information case management tool based on defined and approved safety data business processes and standards and conduct pilot program with select DoD Components that do not have an existing safety information management system. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2024 New Start in support of the ongoing evolution of the safety information case management tool to expand to additional DoD Component users, conduct further testing as needed, address deficiencies, ensure capabilities meet safety data and process standards, provide training, and prepare for implementation.			
Accomplishments/Planned Programs Subtotals	-	0.000	0.213

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 6: *RDT&E Management Support*	**R-1 Program Element (Number/Name)** PE 0606771D8Z / *Cyber Resiliency & Cybersecurity Policy*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	0.000	34.450	51.901	45.194	-	45.194	43.160	17.929	17.790	18.161	Continuing	Continuing
145: *Cyber Resiliency & Cybersecurity Policy*	0.000	26.699	51.901	45.194	-	45.194	43.160	17.929	17.790	18.161	Continuing	Continuing
147: *Securing the Defense Industrial Base (DIB): Cybersecurity Maturity Model Certification (CMMC)*	-	7.751	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

This program supports the Department's initiatives to Defend the Homeland and Build Sustainable and Long-Term Advantage.

The Cyber Resiliency & Cybersecurity Policy program supports the efforts of OUSD A&S, focusing on the defense of the Department’s critical mission weapon systems and Defense Critical Infrastructure from cyber attack, protecting the Department’s sensitive unclassified information residing within the Defense Industrial Base (DIB) sector and supply chain, and capability portfolio management for Joint Cyber Capabilities used by the Cyber Mission Force. This program funds the following critical efforts:

1) Cybersecurity for Weapon Systems and Critical Infrastructure: Lead the Department’s Strategic Cybersecurity Program (SCP) to continue critical weapon systems and defense infrastructure cybersecurity assessments and mitigations.

OASD(A)/Cyber Warfare Directorate Cyber Resiliency efforts are aligned with the following initiatives:

Assess:
- Conduct of mission based cyber risk assessments for priority Defense Missions in support of CCMDs.
- Conduct Deep Cyber Resiliency Assessments (DCRA) in support of CCMDs and asset owners.

Inventory:
- Develop, sustain, and employ Cyber Risk Mitigation Tool (CRMT), an Enterprise-wide decision support tool for tracking cyber vulnerability assessments and mitigations.

Prioritize:

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 6: *RDT&E Management Support*	**R-1 Program Element (Number/Name)** PE 0606771D8Z / *Cyber Resiliency & Cybersecurity Policy*

- Prioritize Cyber Risk Mitigations based upon mission analysis conducted by Mission Focused Cyber Hardening Teams.

2) DIB Cybersecurity:
Development, implementation and sustainment of the Cybersecurity Maturity Model Certification (CMMC) framework that incorporates NIST SP 800-171 standards and references into a unified standard that encompasses the progression of cybersecurity practices to secure Controlled Unclassified Information (CUI) within the DIB sector.

Conduct pathfinders to assess the feasibility and efficacy of employing emerging commercial services/tools/platforms that provide insights into cybersecurity threats and vulnerabilities that are relevant to the DIB sector and the DoD supply chain.

Partner with the DIB sector to demonstrate cost-effective and scalable cybersecurity services that augment and/or enhance existing commercial capabilities and services. Focus on cybersecurity services for small-to-medium sized DIB companies that are critical to the DoD supply chain but lack sufficient cybersecurity capabilities to protect CUI.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	31.460	32.306	31.813	-	31.813
Current President's Budget	34.450	51.901	45.194	-	45.194
Total Adjustments	2.990	19.595	13.381	-	13.381
• Congressional General Reductions	-	-0.405			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	20.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	2.990	-	13.381	-	13.381

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2022	FY 2023
Project: 145: *Cyber Resiliency & Cybersecurity Policy*		
Congressional Add: *Deep Cyber Resiliency Assesments*	-	20.000
Congressional Add Subtotals for Project: 145	-	20.000
Congressional Add Totals for all Projects	-	20.000

Change Summary Explanation
FY 2024 increase to support Deep Cyber Resiliency Assessments.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0606771D8Z / *Cyber Resiliency & Cyber security Policy*	Project (Number/Name) 145 / *Cyber Resiliency & Cybersecurity Policy*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
145: *Cyber Resiliency & Cybersecurity Policy*	0.000	26.699	51.901	45.194	-	45.194	43.160	17.929	17.790	18.161	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Cyber Resiliency & Cybersecurity Policy program supports the efforts of OUSD(A&S), focusing on the defense of the Department's critical mission weapon systems and Defense Critical Infrastructure from cyber attack, protecting the Department's sensitive unclassified information residing within the Defense Industrial Base (DIB) sector and supply chain, and capability portfolio management for Joint Cyber Capabilities used by the Cyber Mission Force. This program funds the following critical efforts:

1) Cybersecurity for Weapon Systems and Critical Infrastructure: Lead the Department's Strategic Cybersecurity Program (SCP) to continue critical weapon systems and defense infrastructure cybersecurity assessments and mitigations.

OASD(A)/Cyber Warfare Directorate Cyber Resiliency efforts are aligned with the following initiatives:

Assess:
- Conduct of mission focused cyber risk assessments for priority Defense Missions in support of CCMDs.
- Conduct Deep Cyber Resiliency Assessments (DCRA) in support of CCMDs and asset owners.

Inventory:
- Develop, sustain, and employ Cyber Risk Mitigation Tool (CRMT), an Enterprise-wide decision support tool for tracking cyber vulnerability assessments and mitigations.

Prioritize:
- Prioritize Cyber Risk Mitigations based upon mission analysis conducted by Mission Focused Cyber Hardening Teams.

2) DIB Cybersecurity:
Development, implementation and sustainment of the Cybersecurity Maturity Model Certification (CMMC) framework that incorporates NIST SP 800-171 standards and references into a unified standard that encompasses the progression of cybersecurity practices to secure Controlled Unclassified Information (CUI) within the Defense Industrial Base (DIB) sector.

Conduct pathfinders to assess the feasibility and efficacy of employing emerging commercial services/tools/platforms that provide insights into cybersecurity threats and vulnerabilities that are relevant to the DIB sector and the DoD supply chain.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0606771D8Z / *Cyber Resiliency & Cyber security Policy*	**Project (Number/Name)** 145 / *Cyber Resiliency & Cybersecurity Policy*

Partner with the DIB sector to demonstrate cost-effective and scalable cybersecurity services that augment and/or enhance existing commercial capabilities and services. Focus on cybersecurity services for small-to-medium sized DIB companies that are critical to the DoD supply chain but lack sufficient cybersecurity capabilities to protect CUI.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Cyber Resiliency & Cybersecurity Policy	26.699	31.901	45.194

Description: FY 2022 Accomplishments:
Assessments:

Conduct Cyber Risk Assessments in support of CCMDs:
- Combatant Command (CCMD) Mission Analysis: Began pilot of analytic approach with USSPACECOM to define mission essential tasks.
- Mission Resilience (MR) Games: Completed MR I in support of USTRANSCOM and USEUCOM to assess Global Logistics mission in a contested cyberspace environment. Began preparation for MR II in support of USSPACECOM.
- Deep Cyber Resiliency Assessments (DCRAs): Completed multiple DCRAs for Mission Partners across the DoD including a high priority special request from a CCMD.
- In coordination with the Services, National Security Agency, DoD CIO, Joint Staff, USCYBERCOM, and USSTRATCOM, developed the requirements and desired functionality for the Cyber Risk Mitigation Tool (CRMT).
- Based on these requirements, the CRMT team worked with the Defense Threat Reduction Agency, Air Force Research Laboratory, MITRE, Johns Hopkins Applied Physics Laboratory, Air Force Cyber Resiliency Office for Weapons Systems (CROWS), and Advance Analytics (ADVANA) leadership to develop the general implementation and schema of the CRMT.
- Launched a NIPRnet-based version of the CRMT tool during the COVID restrictions to allow for demonstration of potential functions and enable gathering of specific use cases.
- Launched SIPRnet-based version of the CRMT providing analysis and status of Cybersecurity assessments under Section 1647 of the National Defense Authorization (NDAA) Act for FY 2016 and Section 1650 of the NDAA for FY 2017, covering priority weapon systems and critical infrastructure respectively.
- Advocated and provided initial funding to put ADVANA on JWICS to enable the CRMT to provide in depth analytics on cyber vulnerabilities and mitigations while ensuring data security.
- Began development of the structure and functions in the JWICS environment to enable Initial Operational Capability (IOC) of the CRMT by the end of FY 2022.
- Collected, compiled, and standardized the data required to meet IOC functionality of the CRMT on JWICS.

Cybersecurity for Weapon Systems and Defense Critical Infrastructure (DCI):
- Developed Strategic Cybersecurity Program Directive Type Memorandum establishing with support from stakeholders for issuance.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0606771D8Z / *Cyber Resiliency & Cyber security Policy*	**Project (Number/Name)** 145 / *Cyber Resiliency & Cybersecurity Policy*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
- Inaugurated cybersecurity contribution as a factor in determining overall acquisition risk through OUSD(A&S) Integrated Acquisition Portfolio Reviews. - Established working group to address section 1521 of the NDAA for FY 2022 requirement for identification of Executive Agent for procurement of cyber tools, data, and services. - Developed a Cyber Risk Mitigation Plan (CRMP) in support of identified installation cyber risks. - Supported Cyber Supply Chain Risk Management initiatives across the Department including support to implementation of Section 889/1656 Prohibitions on covered information and communication technologies for programs in acquisition and sustainment. - Began development and establishment of a standardized risk calculus for reporting control systems in relation to critical infrastructure, a control systems and critical infrastructure common lexicon, taxonomy, and ontology and an assessment reporting template of minimum required data for control systems and critical infrastructure. Capability Portfolio Management for Cyber Capabilities: - Conducted mission engineering analysis to support the USD(A&S)-chaired Cyberspace Operations Enterprise Integrated Acquisition Portfolio review (IAPR) meeting on June 28, 2022, which highlighted the need for a dedicated and enduring joint cyberspace operations capabilities System of Systems (SoS) Systems Engineering & Integration (SE&I) lead organization. - In coordination with USCYBERCOM, updated the cyber access and tools acquisition, development, and sustainment strategy and conducted an internal DoD directed study on Joint Cyber Warfighting Architecture (JCWA) enhancement. ***FY 2023 Plans:*** Cybersecurity for Weapon Systems and Defense Critical Infrastructure (DCI): - Lead the Department's Strategic Cybersecurity Program (SCP) to continue critical weapon systems and defense critical infrastructure cybersecurity assessments and mitigations. - Develop, update, and refine cybersecurity Policy. - Support cybersecurity reviews of MDAPs where USD(A&S) is the MDA. Develop enduring solutions for the Department on future assessments and mitigations. - Conduct SCP Pilots to inform cybersecurity best practices for weapon systems in development using multiple acquisition pathways. Perform Mission Level Cyber Risk Assessments (CRAs): 1) Plan and Execute Mission Resiliency (MR) II in coordination with the USTRANSCOM and USEUCOM. 2) Plan and Execute MR III in collaboration with USNORTHCOM 3) Perform Deep Cyber Resiliency Assessments (DCRAs) in support of CCMD priorities.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0606771D8Z / *Cyber Resiliency & Cyber security Policy*	**Project (Number/Name)** 145 / *Cyber Resiliency & Cybersecurity Policy*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
- Prioritize Mitigations and vulnerabilities based upon mission analyses conducted by Mission Focused Cyber Hardening Teams, DCRAs, wargaming, and program management office assessments. - Oversee and track Service/Agency execution of system-level cyber vulnerability assessments for additional priority weapons systems added in JROCM 039-26. - Lead Weapons Systems Cybersecurity Council of Colonels, with representation from US Air Force, US Army, US Navy, US Marine Corps, PCA, DoD CIO, Joint Staff J6. - Lead Cybersecurity Community of Practice (CCOP) with OUSD(R&E) to foster sharing of vital cybersecurity information and best practices across the DoD Community. - Participate in PCA-led DoD Cyber Strategy Line of Effort 9, focused on Mission Assurance for weapons systems and critical infrastructure. Capability Portfolio Management for Cyber Capabilities: - Advance and mature capabilities for conducting mission engineering for cyberspace operations. - Manage the portfolio of Joint Cyber Warfighting Architecture (JCWA) components to enable the cyber mission force to efficiently and effectively conduct offensive and defensive cyber missions. Support offensive and defensive architecture development and portfolio management in collaboration with USCYBERCOM. - As PSA OPR for the UP, oversee the Air Force's, as DoD EA, capability development via portfolio management and governance. Assess UP's interfaces, dependencies, and linkages with other components of the JCWA to integrate and analyze data from offensive and defensive operations and enable effective and efficient offensive and defensive effects. - As PSA OPR for the Unified Platform component of JCWA, assess the effectiveness of USCYBERCOM requirements generation, mission engineering, and capability prioritization for UP acquisition. Assess the timeliness and effectiveness of UP acquisition in response to USCYBERCOM requirements and involvement in and impact on the mission engineering process. Assess the maturity of UP's Software Acquisition Pathway (SWaP) implementation and coordinate any necessary modifications to DoD SWaP policy. - Manage the portfolio of DoD cyber training systems; including the DoDs PCTE and govern the PCTE as a member of the PCTE governance boards. - Conduct Cybersecurity review of Joint Cyber Capabilities in development to enhance the Cybersecurity of Weapon Systems in development and sustainment. Defense Industrial Base (DIB) Cybersecurity: - Implement the revised Cybersecurity Maturity Model Certification (CMMC) framework based on the outcome of rulemaking, emerging cyber threats, and DoD leadership decisions. - Execute CMMC Pilots in concert with Military Services, DoD agencies, and international partners in support of the CMMC rollout. - Conduct risk reduction pathfinders on the implementation of CMMC Level 3 enhanced security requirements.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0606771D8Z / *Cyber Resiliency & Cyber security Policy*	**Project (Number/Name)** 145 / *Cyber Resiliency & Cybersecurity Policy*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
- Develop and test full operational capability of the CMMC Enterprise Mission Assurance Support Service (Emass) database execute periodic releases. - Partner with the DIB sector to analyze and demonstrate promising and cost-effective capabilities and candidate solutions related to supply chain risk management and DIB cybersecurity			
FY 2024 Plans: Conduct Cyber Risk Assessments in support of CCMDs: - Combatant Command (CCMD) Mission Analysis: Complete second CCMD assist with analytic approach. - Mission Resilience (MR) Games: Prepare for MR IV with CCMD and complete MR III. - Deep Cyber Resiliency Assessments: Perform multiple DCRAs for Mission Partners across the DoD. Cybersecurity for Weapon Systems and Defense Critical Infrastructure (DCI): - Lead the Department's Strategic Cybersecurity Program (SCP) to continue critical weapon systems and defense critical infrastructure cybersecurity assessments and mitigations. - Develop, update, and refine cybersecurity Policy. - Support cybersecurity reviews of MDAPs where USD(A&S) is the MDA. Develop enduring solutions for the Department on future assessments and mitigations. - Conduct SCP Pilots to inform cybersecurity best practices for weapon systems in development using multiple acquisition pathways. - Codify USD(A&S) cybersecurity reviews across programs to inform milestone decision authority determinations - Codify USD(A&S) cybersecurity policy and implementation guides for DoD installations, facilities, and DoD-owned critical infrastructure. - Codify USD(A&S) cyber Supply Chain Risk Management policy and implementation guides in coordination with DoD CIO and USD(I&S) for programs and procurement. - Support identification of knowledge, skills, and abilities required of personnel to implement cybersecurity policy, plans, and initiatives to defend DoD's critical infrastructure, installations, and facilities. Cyber Risk Information Management: - Continue refine CRMT Functionality in response to user feedback. Address updating of data not available by automated means, and build out connection to additional APIs as appropriate. - Aggressively engage CRMT user community and drive user employment of the CRMT in support of multiple cyber risk management forums. Capability Portfolio Management for Cyber Capabilities:			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0606771D8Z / *Cyber Resiliency & Cyber security Policy*	**Project (Number/Name)** 145 / *Cyber Resiliency & Cybersecurity Policy*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
- Advance and mature capabilities for conducting mission engineering for cyberspace operations. - Manage the portfolio of Joint Cyber Warfighting Architecture (JCWA) components to enable the cyber mission force to efficiently and effectively conduct offensive and defensive cyber missions. Support offensive and defensive architecture development and portfolio management in collaboration with USCYBERCOM. - As PSA OPR for the United Platform (UP), oversee the Air Force's, as DoD EA, capability development via portfolio management and governance. Assess UP's interfaces, dependencies, and linkages with other components of the JCWA to integrate and analyze data from offensive and defensive operations and enable effective and efficient offensive and defensive effects. - As the OUSD(A&S) Cyberspace Operations Enterprise portfolio manager OPR, assess the effectiveness of USCYBERCOM requirements generation, mission engineering, and capability prioritization for cyberspace operations capabilities acquisition. In support of the calendar year 2024 USD(A&S)-chaired Cyberspace Operations Enterprise Integrated Acquisition Portfolio review (IAPR) meeting, conduct mission engineering analysis to identify capability gaps across the priority cyberspace operations mission thread. The results will inform OSD fiscal year 2026 program budget review. Defense Industrial Base (DIB) Cybersecurity: - Partner with the DoD CIO and the DIB sector to analyze and demonstrate promising and cost-effective capabilities and candidate solutions related to supply chain risk management and DIB cybersecurity. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2024 decrease is due to this PE receiving a congressional add in FY 2023 for Deep Cyber Resiliency Assessments. This program received a baseline increase to conduct four Deep Cyber Resiliency Assessments in CONUS on Defense Critical Infrastructure and conduct a pilot to improve cybersecurity and cyber harden a mission critical supply chain in the Defense Industrial Base (DIB). Cybersecurity Maturity Model Certification program moved to Program Element 0305104D8Z starting in FY 2024.			
Accomplishments/Planned Programs Subtotals	26.699	31.901	45.194

	FY 2022	FY 2023
Congressional Add: Deep Cyber Resiliency Assesments	-	20.000
FY 2023 Plans: Congressional add funds were provided to conduct four additional Deep Cyber Resilience Assessments in support of Combatant Commands and asset owners.		

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0606771D8Z / *Cyber Resiliency & Cyber security Policy*	**Project (Number/Name)** 145 / *Cyber Resiliency & Cybersecurity Policy*

	FY 2022	FY 2023
Provide support to the Combatant Command Mission Analytics with United States Space Command and United States Indo-Pacific Command. Procure equipment for a new facility in Huntsville, AL and Crystal City, VA to enable the teams to conduct the Assessments in a Top Secret environment. Establish Mission Level Cyber Risk Assessment capability in Crystal City, VA.		
Congressional Adds Subtotals	-	20.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0606771D8Z / *Cyber Resiliency & Cyber security Policy*	Project (Number/Name) 147 / *Securing the Defense Industrial Base (DIB): Cybersecurity Maturity Model Certification (CMMC)*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
147: *Securing the Defense Industrial Base (DIB): Cybersecurity Maturity Model Certification (CMMC)*	-	7.751	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This program has been moved to PE 0305104D8Z / Securing the Defense Industrial Base (DIB): Cybersecurity Maturity Model Certification (CMMC)

A. Mission Description and Budget Item Justification

This program supports the Department's initiatives to Deter Aggression and Prevail in Conflict, Defend the Homeland, and Build Enduring Advantage

Development, implementation and sustainment of the Cybersecurity Maturity Model Certification (CMMC) framework that incorporates multiple cybersecurity standards and references into a unified standard that encompasses both the progression of cybersecurity practices as well as the maturity of processes to secure Controlled Unclassified Information (CUI) within the Defense Industrial Base (DIB) sector.

Conduct pathfinders to assess the feasibility and efficacy of employing emerging commercial services/tools/platforms that provide insights into cybersecurity threats and vulnerabilities that are relevant to the DIB sector and the DoD supply chain.

Partner with the DIB sector to demonstrate cost-effective and scalable cybersecurity services that augment and/or enhance existing commercial capabilities and services. Focus on cybersecurity services for small-to-medium sized DIB companies that are critical to the DoD supply chain but lack sufficient cybersecurity capabilities to protect CUI.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Securing the Defense Industrial Base (DIB): Cybersecurity Maturity Model Certification (CMMC)	7.751	-	-
Description: FY 2022 Accomplishments: Completed an eight month programmatic review of Cybersecurity Maturity Model Certification (CMMC) in November of 2021 resulting CMMC 2.0 with a more streamlined and improved program implementation.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0606771D8Z / *Cyber Resiliency & Cyber security Policy*	**Project (Number/Name)** 147 / *Securing the Defense Industrial Base (DIB): Cybersecurity Maturity Model Certification (CMMC)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Developed Enterprise Mission Assurance Support Service (eMASS) CMMC 2.0 compliant database which required significant changes for artifacts and metrics. Developed a comprehensive 32 Code of Federal Regulations(CFR) Rule for CMMC that went into coordination August of 2022 Completed five congressional on Defense Industrial Base Cybersecurity information requests.			
Accomplishments/Planned Programs Subtotals	7.751	-	-

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 6: *RDT&E Management Support*	**R-1 Program Element (Number/Name)** PE 0203345D8Z / *Defense Operations Security Initiative (DOSI)*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	2.985	2.833	3.034	3.112	-	3.112	3.177	3.194	3.258	3.323	Continuing	Continuing
345: *Defense Operations Security Initiative*	2.985	2.833	3.034	3.112	-	3.112	3.177	3.194	3.258	3.323	Continuing	Continuing

Program MDAP/MAIS Code:
Project MDAP/MAIS Code(s): 003

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

This program supports the Department's initiatives to Deter Aggression, Defend the Homeland, and Build Sustainable and Long-Term Advantage.

The Defense Operations Security Initiative (DOSI) establishes and leads the Department's next generation Operations Security (OPSEC) capability development and affiliated investment strategy. Investments support DoD's current and emerging OPSEC capability gaps, including countering advances in non-U.S. Intelligence, Surveillance, and Reconnaissance (ISR) capabilities and denying the understanding of U.S. capability, capacity, readiness and critical technology and information from adversaries. These investments spur Department innovation and preserve U.S. technology superiority. DOSI analysis and engineering lead the community's ability to sustain and maximize technology advantage as they are transitioned to Service and Agency programs for sustainment, maintenance, and capacity programming. Test and evaluation analyses establish measure and countermeasure effectiveness in current and emerging operational environments.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	2.925	3.034	3.112	-	3.112
Current President's Budget	2.833	3.034	3.112	-	3.112
Total Adjustments	-0.092	0.000	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.092	-			

Change Summary Explanation

No significant change from FY 2023 to FY 2024.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0203345D8Z / *Defense Operations Security Initiative (DOSI)*	Project (Number/Name) 345 / *Defense Operations Security Initiative*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
345: *Defense Operations Security Initiative*	2.985	2.833	3.034	3.112	-	3.112	3.177	3.194	3.258	3.323	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 003

A. Mission Description and Budget Item Justification

DOSI establishes and leads the Department's next generation Operations Security (OPSEC) capability development and affiliated investment strategy. Investments support DoD's current and emerging OPSEC capability gaps, including countering advances in non-U.S. Intelligence, Surveillance, and Reconnaissance (ISR) capabilities and denying the understanding of U.S. capability, capacity, readiness and critical technology and information from adversaries. These investments spur Department innovation and preserve U.S. technology superiority. DOSI analyses and engineering activities lead the community's ability to sustain and maximize technology advantages as they are transitioned to Service and Agency programs for sustainment, maintenance, and capacity programming. Results of tests and evaluations enable the community to identify OPSEC measure and countermeasure effectiveness in current and emerging operational environments.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Defense Operations Security Initiative	2.833	3.034	3.112
Description: RDT&E investments focused on countering advances in non-U.S. ISR capabilities and denying adversaries' understanding of U.S. capability, capacity, readiness, and critical technology and information. These investments spurred Department innovation towards preserving U.S. information and technology superiority. DOSI's analyses and engineering activities enabled the OPSEC community's ability to sustain and maximize technological advantages.			
FY 2023 Plans: - Oversee research, development, and testing on next generation capabilities that counter foreign ISR capabilities and deny adversaries' understanding of U.S. capability, capacity and readiness. - Provide oversight and advocacy for transitioning developed capabilities into formalized program offices and program executive offices across DoD Components. - Participate in Defense RDT&E processes to advance basic and applied research, science and technology, and technology development and testing to elevate OPSEC capability and capacity across the Department.			
FY 2024 Plans: - Continue to oversee research, development, and testing on next generation capabilities that counter foreign ISR capabilities and deny adversaries' understanding of U.S. capability, capacity and readiness. - Continue to provide oversight and advocacy for transitioning developed capabilities into formalized program offices and program executive offices across DoD Components.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0203345D8Z / *Defense Operations Security Initiative (DOSI)*	**Project (Number/Name)** 345 / *Defense Operations Security Initiative*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
- Continue to participate in Defense RDT&E processes to advance basic and applied research, science and technology, and technology development and testing to elevate OPSEC capability and capacity across the Department. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2024 minimal increase due to program adjustments.			
Accomplishments/Planned Programs Subtotals	2.833	3.034	3.112

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

The acquisition, management, and contracting strategy involves the following:

• Adhere to guidance outlined in DoD 5000, Directive 7, Federal Acquisition Regulations (FAR), and FAR Supplement Policies and Procedures.

• RDT&E OPSEC capabilities, systems, tools, products, and services through a disciplined, yet agile, process that ensures signature management and signature obfuscation capabilities are available for DoD components.

• Sustain an acquisition process that is responsive and responsible to internal and external customers and stakeholders.

• Continue to support the warfighter's need for capabilities that dominate today's dynamic, networked battlespace by providing strategy across the DoD for the planning and execution of OPSEC.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 6: *RDT&E Management Support*	**R-1 Program Element (Number/Name)** PE 0303260D8Z / *Defense Military Deception Program Office (DMDPO)*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	0.984	0.825	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.809
891: *Defense Military Deception Program*	0.984	0.825	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.809
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

This program supports the Department's initiatives to Deter Aggression, Defend the Homeland, and Build Sustainable and Long-Term Advantage.

The Sensitive Messaging and Operations in the Information Environment (SM&OIE) RDT&E program, which was repurposed out of the prior Defense Military Deception Program Office, brings value to the Defense Intelligence Enterprise by investing in new ideas and technologies to support growing Department-wide SM&OIE activities. The SM&OIE RDT&E program enhances acquisition and mission execution by helping transition new technologies, fund studies, conduct analyses of alternatives, develop product improvement efforts, and provide funding for SM&OIE innovation efforts. The program pursues projects that provide incremental improvements as well as those with the greatest potential to strategically transform DoD SM&OIE, with a primary focus on closing capabilities gaps. Program supports growing interest in SM&OIE from the Executive Office of the President, Congress, the National Security Council, and the National Intelligence Council.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	0.850	0.000	0.000	0.000	0.000
Current President's Budget	0.825	0.000	0.000	0.000	0.000
Total Adjustments	-0.025	0.000	0.000	0.000	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.025	-			

Change Summary Explanation

Funds were transferred to Operation and Maintenance for sustainment tasks.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 6: *RDT&E Management Support*	**R-1 Program Element (Number/Name)** PE 0303260D8Z / *Defense Military Deception Program Office (DMDPO)*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Defense Military Deception Program Office	0.825	0.000	0.000
Description: The Sensitive Messaging and Operations in the Information Environment (SM&OIE) RDT&E program, repurposed out of the prior Defense Military Deception Program Office, brings value to the Defense Intelligence Enterprise by investing in new ideas and technologies to support growing Department-wide SM&OIE activities. The SM&OIE RDT&E program enhances acquisition and mission execution by helping transition new technologies, fund studies, conduct analyses of alternatives, develop product improvement efforts, and provide funding for SM&OIE innovation efforts. The program pursues projects that provide incremental improvements as well as those with the greatest potential to strategically transform DoD SM&OIE, with a primary focus on closing capabilities gaps. Program supports growing interest in SM&OIE from the Executive Office of the President, Congress, the National Security Council, and the National Intelligence Council. ***FY 2023 Plans:*** N/A ***FY 2024 Plans:*** N/A ***FY 2023 to FY 2024 Increase/Decrease Statement:*** N/A			
Accomplishments/Planned Programs Subtotals	0.825	0.000	0.000

D. Other Program Funding Summary ($ in Millions)

Line Item	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
• 0303260D8Z O&M DW: *Defense Military Deception Program Office*	0.520	0.545	0.817	0.000	0.817	0.842	0.870	0.887	0.905	Continuing	Continuing

Remarks

E. Acquisition Strategy

The acquisition, management, and contracting strategy involves the following:
• Adhere to guidance outlined in DoD 5000, Directive 7, Federal Acquisition Regulations (FAR), and FAR Supplement Policies and Procedures.
• Acquire and sustain SM&OIE capabilities, systems, tools, products, and services through a disciplined, yet agile, process that ensures information related capabilities are available for DoD components.
• Sustain an acquisition process that is responsive and responsible to internal and external customers and stakeholders.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 6: *RDT&E Management Support*	**R-1 Program Element (Number/Name)** PE 0303260D8Z *I Defense Military Deception Program Office (DMDPO)*

• Continue to support the warfighter's need for capabilities that dominate today's dynamic, networked battlespace by providing governance, oversight, and strategy across the DoD for the planning and execution of SM&OIE activities.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 6: *RDT&E Management Support*	**R-1 Program Element (Number/Name)** PE 0305245D8Z / *Intelligence Capabilities and Innovation Investments*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	0.000	60.000	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
245: *Intelligence Capabilities and Innovation Investments*	0.000	60.000	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

Classified.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	0.000	0.000	0.000	-	0.000
Current President's Budget	60.000	0.000	0.000	-	0.000
Total Adjustments	60.000	0.000	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	60.000	-	-	-	-

Change Summary Explanation

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0305245D8Z / *Intelligence Capabilities and Innovation Investments*	Project (Number/Name) 245 / *Intelligence Capabilities and Innovation Investments*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
245: *Intelligence Capabilities and Innovation Investments*	0.000	60.000	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Classified.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Classified ***Description:*** Classified	60.000	-	-
Accomplishments/Planned Programs Subtotals	60.000	-	-

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

The contracting strategy follows guidance outlined in the DoD 5000 series directives, Federal Acquisition Regulations (FAR), and Defense Federal Acquistion Regulation (DFAR).

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 0607210D8Z / *Industrial Base Analysis and Sustainment Support*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	398.110	342.242	830.294	1,017.141	-	1,017.141	1,149.175	1,019.409	781.133	717.601	Continuing	Continuing
819: *Industrial Base Analysis and Sustainment*	394.360	334.542	830.294	1,017.141	-	1,017.141	1,149.175	1,019.409	781.133	717.601	Continuing	Continuing
821: *Microelectronics*	3.750	7.700	-	-	-	-	-	-	-	-	0.000	11.450

Note

New Start (Y/N): N

A. Mission Description and Budget Item Justification

The IBAS program element line is one component of a broader DoD investment strategy to build and strengthen the defense industrial base and secure U.S. supply chains. Residing within the Manufacturing, Capacity Expansion and Investment Prioritization (MCEIP) Directorate, within the Office of the Assistant Secretary of Defense for Industrial Base Policy (OASD(IBP)), IBAS investments are used discretely and in tandem with other DoD investment programs, such as MCEIP office Defense Production Act (DPA) Title III, to ensure collaborative and non-duplicative investment against critical defense industrial base and U.S. supply chain issues. The IBAS program element supports MCEIP office priorities through investment in prime and sub-tier suppliers to mitigate supply chain risks and eliminate production capacity bottlenecks. IBAS program element investments are further synchronized across the department through coordination with other research and development programs, such as the OSD Manufacturing Technology program, residing in the Office of the Under Secretary of Defense for Research and Engineering (OSD(R&E)).

This program element supports the Department's initiatives to Defend the Homeland, Build Sustainable and Long-Term Advantage, and Taking Care of People.

Industrial Base Analysis and Sustainment (IBAS) Support was established in accordance with 10 USC Sec 4817 Industrial Base Fund. The ability of the United States to maintain readiness, and to surge and sustain in response to an emergency, directly relates to the capacity, capabilities, and resiliency of our manufacturing and defense industrial base and supply chains. IBAS authorities and flexibility are key components to build the industrial capabilities needed to innovate, produce, and sustain the weapon systems for today and tomorrow.

The IBAS Program element provides the Department with a unique capability to achieve the strategic aims of the 2022 National Defense Strategy, which calls for a strong, resilient, responsive and healthy U.S. Industrial Base (IB) that underpins current and future U.S. force readiness. This program element is uniquely positioned to improve the U.S. Industrial Base's competitiveness and ability to respond to the Department's needs by applying focused investments to 1) monitor and assess the current state of the IB, 2) address critical issues in the IB relating to urgent operational needs, 3) address supply chain vulnerabilities, and 4) support efforts to expand the Industrial Base.

Global supply chain disruptions have become more common, with recent events highlighting risks and vulnerabilities that undermine our national security. The February 24, 2022 report on Executive Order (E.O.) 14017, "America's Supply Chains", and the 2022 Industrial Base Capabilities (ICR) report, each outline strategic focus areas and enabling capabilities, their associated vulnerabilities, and provide recommendations to strengthen the defense industrial base.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 0607210D8Z / *Industrial Base Analysis and Sustainment Support*

Management Process – To successfully execute the FY 2024 budget, the IBAS Program Office within the Office of the Assistant Secretary of Defense for Industrial Base Policy (OASD(IBP)) will oversee the health of the IBAS portfolio and project codes. The IBAS Program Office coordinates with a Military Service or defense agency technical lead to develop and execute an acquisition strategy and implementation plans for each strategic focus area.

FY 2024 strategic focus areas that will be executed in IBAS Project Code P819 include workforce, critical materials and chemicals, castings and forgings, kinetic weapons, energy storage and batteries, microelectronics, and biomanufacturing. Descriptions of each focus area are included in the P819 R-2a.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	335.410	588.094	636.406	-	636.406
Current President's Budget	342.242	830.294	1,017.141	-	1,017.141
Total Adjustments	6.832	242.200	380.735	-	380.735
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	242.200			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-9.916	-			
• Program Adjustments	16.748	-	380.735	-	380.735

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2022	FY 2023
Project: 819: *Industrial Base Analysis and Sustainment*		
Congressional Add: *Program Increase*	10.000	-
Congressional Add: *Advanced Nanomaterials Manufacturing / Metal-organic frameworks*	7.500	5.000
Congressional Add: *Automated textile manufacturing*	10.000	7.500
Congressional Add: *Industrial Skills*	10.000	-
Congressional Add: *Interdisciplinary Center for Advanced Manufacturing Systems*	10.000	10.000
Congressional Add: *Freeze Dried Plasma*	10.000	-
Congressional Add: *Lead-free Electronics*	7.500	-
Congressional Add: *Machine Tooling and Advanced Manufacturing*	20.000	-
Congressional Add: *Pilot Mask Technology*	5.000	-
Congressional Add: *Precision Optics Manufacturing*	4.000	10.000

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 0607210D8Z *I Industrial Base Analysis and Sustainment Support*

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2022	FY 2023
Congressional Add: *Submarine Workforce Development*	20.000	-
Congressional Add: *Weldable Ultra Hard Armor*	3.000	-
Congressional Add: *Accelerated training in defense manufacturing*	5.000	5.000
Congressional Add: *Advanced Headborne Systems Manufacturing*	7.500	5.000
Congressional Add: *Carbon/Carbon Industrial Base Enhancement*	6.000	3.000
Congressional Add: *Career and Technical Education Pilot*	10.000	10.000
Congressional Add: *Defense Supply Chain Enhancement*	10.000	-
Congressional Add: *Digital Engineering Enabled Workforce Development*	7.000	-
Congressional Add: *Digital Thread Manufacturing Demonstration*	8.000	8.000
Congressional Add: *Enhanced Digital Capabilities*	7.000	-
Congressional Add: *Heavy Rare Earth Elements Program*	80.000	-
Congressional Add: *Rare Earth Elements and Critical Minerals Recovery Technique Demonstration*	3.000	-
Congressional Add: *Rare Earth Separation Technologies*	4.000	-
Congressional Add: *Resilient Manufacturing Ecosystem*	2.500	5.000
Congressional Add: *Ruggedized Transceivers*	10.000	7.500
Congressional Add: *Systems Engineering Technician Education Initiative*	0.550	-
Congressional Add: *Advanced Design and Engineering Capabilities for Small Businesses*	-	12.000
Congressional Add: *Advanced Electrochromic Manufacturing Program*	-	5.000
Congressional Add: *Advanced Thermoplastics Demonstration*	-	4.000
Congressional Add: *Aluminum Armor Plating*	-	1.500
Congressional Add: *Automated Integrated Metrology*	-	5.000
Congressional Add: *Demonstration Scale of REE from Coal Ash Technology*	-	30.000
Congressional Add: *Digital Design and Engineering Demonstration*	-	5.500
Congressional Add: *Expanding U.S. Defense Workforce*	-	20.000
Congressional Add: *Hybrid Manufacturing for Lightweight Defense Components*	-	5.000
Congressional Add: *Munitions Supply Chain Diversification*	-	20.000

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 0607210D8Z *I Industrial Base Analysis and Sustainment Support*

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2022	FY 2023
Congressional Add: *On-Shore Advanced Microelectronic Packaging for Strategic Mission Enablement*	-	40.000
Congressional Add: *On-Shoring Navy Battery Cells*	-	10.000
Congressional Add: *Partnerships For Manufacturing Training Innovation*	-	7.000
Congressional Add: *Systems Engineering Technology (SET) Apprenticeship and Internship Program*	-	1.200
Congressional Add Subtotals for Project: 819	277.550	242.200
Congressional Add Totals for all Projects	277.550	242.200

Change Summary Explanation

P821 Microelectronics FY 2023 funding for the Defense Microelectronics Cross-Function Team effort transitioned organizationally and fiscally on October 1, 2021 from Program Element 0607210D8Z to Program Element 0604294D8Z Microelectronics under the Office of the Undersecretary of Defense for Research and Engineering (OUSD(R&E).

FY 2024 increase provides funding for efforts as addressed in the R2 below: Workforce, Critical Materials and Chemicals, Castings and Forgings, Kinetics Capabilities, Energy Storage and Batteries, Microelectronics,

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0607210D8Z / *Industrial Base Analysis and Sustainment Support*	Project (Number/Name) 819 / *Industrial Base Analysis and Sustainment*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
819: *Industrial Base Analysis and Sustainment*	394.360	334.542	830.294	1,017.141	-	1,017.141	1,149.175	1,019.409	781.133	717.601	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Global supply chain disruptions have become more common, with recent events highlighting risks and vulnerabilities that undermine our national security. The February 24, 2022 report on Executive Order (E.O.) 14017, “America’s Supply Chains”, and the 2022 Industrial Base Capabilities (ICR) report each outline strategic focus areas and enabling capabilities, their associated vulnerabilities, and provide recommendations to strengthen the defense industrial base.

The FY 2024 IBAS budget reflects the DoD’s commitment to ensuring our supply chains can provide our warfighters with decisive advantage. This budget includes investments to respond to E.O. 14017 and ICR findings and recommendations, emerging and modernization priorities and technologies, and other defense requirements. This is the result of significant coordination for each strategic focus area via cross-functional teams (CFT). These CFTs developed an integrated and prioritized investment strategy to address the most pressing needs for each focus area, to include mapping to investment authorities. The FY 2024 IBAS budget reflects the outcome of the CFT recommendations and has been coordinated to complement adjacent investments of related programs including the Defense Production Act (DPA) Title III, Manufacturing Technology (ManTech) program, and at the Military Service level. Accordingly, investments in the following strategic focus areas will establish, sustain, and expand domestic capabilities and capacities to build more sustainable and resilient supply chains.

Workforce – the DoD relies on a skilled workforce to innovate, produce, and sustain our weapon systems. Decades of erosion across workforce development pipelines jeopardize and threaten our industrial base’s ability to remain competitive. Efforts will continue to focus on recruitment, training, and placing skilled workers in support of defense priority states/regions; and coordinating with other interagency programs and leveraging authorities from the Departments of Labor and Education to support priority defense programs. FY 2024's primary effort will be a continuation of a major, multi-year, joint OSD-Navy endeavor begun in FY 2023 focused on ensuring the health and capacity of the DoD’s submarine industrial workforce.

Critical Materials and Chemicals - critical materials and critical chemicals are used in a broad range of DoD weapon systems. Like other industrial sectors such as microelectronics, there is a critical materials market concentration in China which makes U.S. economic and national security vulnerable to disruption. To mitigate risks, the DoD will pursue four lines of effort: 1) Develop and foster new sustainability standards for strategic and critical material intensive industries; 2) Expand sustainable domestic production and processing capacity, including non-traditional mining and recycling; 3) Strengthen U.S. stockpiles; 4) Work with allies and partner nations to promote the sharing of technology, capability, and resources. FY 2024 primary efforts will continue prior year initiatives related to scaling domestic processing of Heavy Rare Earth Elements (HREE).

Kinetic Weapons – kinetic capabilities, including hypersonic weapons, are essential to deterring America’s adversaries, who continue their military buildups including their own hypersonics capabilities. Current supply chains are vulnerable to raw materials and chemicals shortages; fragile, foreign, and/or sole-source suppliers; and technical challenges of transitioning hypersonic capabilities into production. The DoD will launch efforts to: 1) Address supply chain vulnerabilities of the most critical

chemicals; 2) Update material specifications, including production and quality testing requirements; and 3) Foster sub-tier suppliers and competition in the hypersonic industrial base to enable affordable production. FY 2024 primary focus efforts will improve and expand the hypersonics industrial base.

Energy Storage and Batteries – due to the small DoD market share and customized battery requirements the DoD is unable to fully leverage the large commercial investment in state of the art energy storage technology. The nearly 100% foreign battery supply chain limits the DoD's ability to field battery enabled weapons/platforms free of adversary supply chain control. To mitigate these risks, DoD is investing to develop domestic assured access to batteries through three focus areas: 1) Initiate studies to define the aggregate demand for energy storage and batteries across the DoD; 2) Pivot to commercial standards and batteries to the maximum extent possible; and 3) Establish internal DoD safety testing capacity for energy storage and batteries for future weapons systems. FY 2024 primary efforts will initiate deep dive DoD demand analysis and identify commercial sourcing synergies.

Castings and Forgings – machine tools and cast and forged parts are critical to the development, procurement, and sustainment of all major defense systems. Cast and forged parts are found in 20 percent of the products representing the U.S. Gross Domestic Product. Continuous industry consolidation and offshoring since the 1960's have hollowed out domestic capability, reducing or eliminating competition and increasing our dependence on other nations, including China. To mitigate these risks, the DoD will: 1) Continue refinement and begin implementation of a cross-service casting and forging strategy to inform policy and investment decisions; 2) Conduct research activities to expand sub-tier supplier development and to improve rapid designs and affordable and reliable production; and 3) Invest to modernize relevant organic industrial base capabilities. FY 2024 primary investments will initiate deep dive analyses to inform strategic investment strategies. They will also center on research into ways to supplement the production of cast and forged products, reconstitution of research capabilities for metals manufacturing, and efforts to create new tool and industrial skill training capabilities to support critical programs.

Microelectronics - components are the foundation of modern economy and military systems. Various vulnerabilities threaten the DoD's ability to source microelectronics needed to sustain programs of record. In order to prepare the Department for increased global economic and strategic challenges, the DoD must take action to ensure access to the microelectronic components needed to sustain our defense programs and systems effectively and affordably. The Department also needs a better strategy to transition leading edge technology developed by both government and industry to DoD programs of record, to ensure the Department maintains a competitive edge. To respond to the threat and establish a secure and assured domestic supply chain, the DoD will pursue multiple lines of microelectronics efforts. Efforts included in IBAS are 1) Establishing domestic advanced packaging capabilities; 2) Establishing data repository to manage obsolescence; and 3) Establishing workforce efforts needed to design and make microelectronic components domestically.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Industrial Base Analysis and Sustainment (IBAS) Support	56.992	588.094	1,017.141
Description: IBAS currently focuses efforts and investments for all fiscal years in the categories listed above and below, continuing investments to mitigate supply chain risks and findings from Executive Order 14017, and on-going assessments for both traditional defense sectors and cross-cutting sectors. Investments in Workforce, Critical Materials and Chemicals, Castings and Forgings, Kinetics Capabilities, Energy Storage and Batteries, Microelectronics,			
FY 2023 Plans:			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
1. Workforce Industrial Skills Development and Acceleration (National Imperative for Industrial Skills (NIIS) initiative, and Submarine Industrial Workforce): FY 2023 and FY 2024 Plans are similar. See FY 2024 Plans discussions provided below. Divestiture Pilot: To respond to new threats, the DoD needs to divest from old programs and build new capabilities. While necessary, divesting often creates long downtimes within the supply chain prior to the start of new work. These production gaps risk permanent loss of workers and capability needed to produce new programs. pilot regional projects to minimize program divestiture impacts. Efforts include 1) retrain and retain workforce for future production requirements, e.g. shift from aluminum to steel welding; and 2) capitalize and qualify as new suppliers for other programs. Efforts will continue to focus on transition from aluminum construction to supporting Program Executive Office Strategic Submarines' Columbia Class Program and Program Executive Office Attack Submarines' Virginia Class Program. 2. Critical Chemicals and Materials Sector: Heavy Rare Earth (HREE): continued efforts initiated in prior years to establish, sustain, and improve value-added manufacturing domestic rare earth capabilities and commercialize products. Continued the design and scaling of two domestic HREE processing lines in support of the DoD's efforts to address supply chain risks associated with the dependence on rare earth elements from foreign non-allied countries. Light Rare Earth Elements (LREE): Efforts initiated to establish, sustain, and improve value-added manufacturing domestic rare earth capabilities and commercialize products. Designing and scaling domestic LREE processing line in support of the DoD's efforts to address supply chain risks associated with the dependence on rare earth elements from foreign non-allied countries. Other Material Sectors – expanded, sustained, and improved the value-added domestic manufacturing capabilities for critical materials such as boron and carbon fibers, magnesium, and tantalum for defense applications. 3. Castings and Forgings and Machine Tools Castings and Forgings Analysis: Execute projects to provide timely, assured access to the raw and refined metals (including bar and plate stock, wire, and powder) and other materials , semi-fabricated products, and refractories needed to produce the cast, forged, and additively manufactured parts required to equip and sustain U.S. and other forces as required to fulfill national strategic guidance (i.e., the National Security Strategy and National Defense Strategy) and published operational plans. 4. Energy Storage and Batteries: initiated a series of studies to assess and analyze 1) DoD consumption and purchasing patterns; 2) domestic commercial sources of supply and their capability and capacity to support DoD needs; and 3) domestic			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
testing facilities and capabilities for future acquisition requirements. FY 2023 and FY 2024 Plans are similar. See FY 2024 Plans discussions provided below. 5. Kinetic Weapons Hypersonics: initiated efforts to improve manufacturing processes and expand capacity for hypersonics programs, to continue to help drive cost down and increase affordability to field hypersonic weapon systems for the Navy and Army. Focused on sub-tier suppliers to improve yield rates, accelerate production timelines, and establish second sources for critical subcomponents. 6. Microelectronics Microelectronics Secure Packaging and Enterprise Electronic Parts Management System (EEPMS): FY 2023 and FY 2024 Plans are similar. See FY 2024 Plans discussions provided below. Advanced Secure Packaging (RESHORE) – Nearly all - 97% --of semiconductor packaging is currently off-shore creating global exposure and security risks. . To address this - the Department is standing up domestic State of the Art manufacturing packaging capabilities and technologies. This effort will leverage the semiconductor industry movement to 2.5D/3D advanced packaging by investing in on-shore facilities with commercial underpinnings with the goal of ensuring access and availability and will enable comprehensive microelectronics security integration. Electronic Parts Management System (EPMS) – To improve risk management, he DoD must possess the capability to aggregate demand and quickly delineate parts data and purchasing patterns from global supply chains. EPMS will establish an enterprise-wide capability to provide quick and detailed access to parts information, purchasing patterns and mitigate potential supply chain risks. The FY 2023 activity launched a study of existing capabilities and gaps, and continued with outreach to potential stakeholders and their leadership, assessing existing systems as potential sources of information or features, determining the optimal architecture, delineating the requirements and examining potential policy changes to enable the full functionality of EPMS. Secure Packaging –establish a US-owned, domestic, trusted, pure-play and open-access Advanced Packaging Ecosystem for low volume production of 2.5-D and 3-D Advanced System Integration and Packaging secure solutions. Targeted capabilities included: establishing wafer preparation and wafer bumping capabilities on 300mm substrates; continued development of advanced interposer; manufacturing capability; initiating Fan-Out Wafer-Level Packaging capability; initiating domestic High Density Build-Up substrates / High Density Interconnect processes; initiating design, testing and thermal management capability; and initiating efforts to mitigate and improve access to materials and chemicals needed for a secure packaging ecosystem. ***FY 2024 Plans:*** 1. Workforce			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Industrial Skills Development and Acceleration (National Imperative for Industrial Skills (NIIS) initiative): All 16 previously funded efforts in the NIIS portfolio continue in FY 2024 at various planned programmatic stages, iteratively testing, validating and refining multiple elements or segments of the initiative's 'Industrial Skills Workforce Development Ecosystem Model.' The intent is to produce increasing levels of real world system maturity, harmonization/integration and effectiveness as depicted in the model. Submarine Industrial Workforce: IBAS, in partnership with the Navy submarine enterprise, will continue to invest in the industrial base's development of the necessary recruitment functions, training and education programs, and wrap-around support for critical workforce development needs. The objective is to accelerate the path to establishing at-scale regional training systems and other workforce pipeline delivery modes as needed to create sufficient capability to provide "ready to work" high skill technical tradespeople at the production levels needed to meet the nuclear Navy's submarine modernization requirements. This includes identifying new workforce supply sources and opportunities for disadvantaged/underserved and underrepresented populations through big data analytics. Efforts will continue to focus on priority states/regions where key suppliers reside. Launched regional training systems in New England and Virginia. This strategy relies on the use of regional coordinators to help establish and improve essential organizational regional relationships and better align DoD, other USG agency capabilities, state/local, and nongovernmental investments in each defense-critical region. 2. Critical Chemicals and Materials Sector: Rare Earth Elements (REE): Continue efforts initiated in prior years to establish, sustain, and improve value-added manufacturing domestic rare earth capabilities and commercialize products. Continue the design and scaling of two domestic REE processing lines in support of the DoD's efforts to address supply chain risks associated with the dependence on rare earth elements from foreign non-allied countries. Continue to explore prototype technologies and processes for REE separation and processing to support new domestic sources. Other Material Sectors – expand, sustain, and improve the value-added domestic manufacturing capabilities for critical materials such as boron and carbon fibers, magnesium, and tantalum for defense applications. Chemical Energetics: launch efforts to sustain and expand domestic capacities for priority chemicals in support of the DoD's energetics and munitions supply chain. 3. Castings and Forgings (C&F)and Machine Tools Conduct analysis to refine the cross-Service casting and forging strategy and continue to develop and execute projects specified by that strategy. Increase the pace and scope of research into ways to supplement or obviate the need for cast and forged products, and to leverage the benefits of Industry 4.0 capabilities, including but not limited to industrial automation and robotics. Continue work with the Navy to accelerate planned metalworking process improvement and workforce development efforts,			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
reconstitute casting and forging-related capabilities for materials processing and welding/joining plus additive manufacturing, develop modern computational tools to support advanced applied metallurgy, and reduce barriers to entry posed by part qualification processes. Work with the Army to improve production and enabling capabilities at key suppliers of aviation and ground combat systems. Work with the Navy and DPA Title III to stand up a second source for large steel plate. Understand the capabilities of, and, where appropriate, expand C&F-related joint/government/industry/academic centers of excellence. Execute projects to provide timely, assured access to the raw and refined metals (including bar and plate stock, wire, and powder) and other materials, semi-fabricated products, and refractories needed to produce the cast, forged, and additively manufactured parts required to equip and sustain U.S. and other forces as required to fulfill national strategic guidance (i.e., the National Security Strategy and National Defense Strategy) and published OPlans and CONPLANs. 4. Energy Storage and Batteries: continue a series of previous year studies to assess and analyze 1) DoD consumption and purchasing patterns; 2) domestic commercial sources of supply and their capability and capacity to support DoD needs; 3) Identifying opportunities for standardization; and 4) current and emerging supply chain threats to key DoD warfighting capabilities. These efforts will provide a Department-wide inventory of fielded battery systems and costs, centralize information on current and future DoD battery needs and populate a DoD Battery Database. The effort will also assess current and future supply chain risks and associated threats to operational capabilities; Better position DoD to leverage high tech affordable domestic battery production for Electric Vehicles and other applications. 5. Kinetic Weapons Hypersonics: Continue industrial base projects improving U.S. manufacturing capabilities and expand capacity for hypersonics programs in coordination with other OSD and Military Service organizations. Efforts target critical paths to increase capacity of existing suppliers, establish second sources and improve production capability to meet requirements. Nine projects started in FY 2023 continue to help drive cost down and increase affordability to field hypersonic weapon systems for the Navy and Army. 6. Emerging Technology Flexible Biomanufacturing: investments to support the expansion of the domestic bioindustrial manufacturing base to include flexible and modular production assets to deliver critical biomaterials and precursors at necessary scale to support DoD operational needs. Initiate: three flexible industrial scale facilities for an estimated five DoD-relevant molecules; five to six new-build flexible pilot scale facilities to rapidly prototype, test, and evaluate an estimated 20 additional molecules relevant to DoD and the bioeconomy; and one first-of-its-kind, domestic, modular biomanufacturing center to enable prototyping and some commercial-scale production of an estimated five DoD-relevant molecules and rapid configuration to advance process optimization and deployable capabilities.			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
7. Microelectronics Secure Packaging – efforts continue to establish a US-owned, domestic, trusted, pure-play and open-access Advanced Packaging Ecosystem for low volume production of 2.5-D and 3-D Advanced System Integration and Packaging secure solutions. Targeted activities and capabilities will include: Tooling will be installed, qualified and brought on line to support advanced packaging manufacturing. Targeted processes will include: wafer preparation and wafer bumping capabilities on 300mm substrates, advanced interposer manufacturing capability, Fan-Out Wafer-Level Packaging capability, High Density Build-Up substrates / High Density Interconnect printed circuit boards, advanced 2.5/ 3D packages, substrate and board design, testing (module, package, substrate and board) and thermal management capability. Domestic access and sourcing of materials and chemicals will begin to take shape. Security solutions will be moving toward completion. Prototype development and planning will be about 50% completed. Enterprise Parts Management System (EPMS) – activity will primarily consist of system development to include: completion of the PDR, 50% progress toward the critical design review, minimum viable product development and delivery. Policy will continue to be developed to ensure full functionality, integration and adoption of EPMS. Radar Frequency (RF) Microelectronics – activity will primarily be focused on developing a Prototype X-band Radar for Homeland Cruise Missile Defense to be used for the Fire Control Radar program. Activities will include addressing supply chain risks by adapting commercial technology to defense applications and improvements to provide critical SWAP-C advantages. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** P819 IBAS Baseline net increase of $48.076 million reflects OSD internal realignment of funds for DoD priorities. Significant issues include increase of $73.000 million for Microelectronics and Workforce; increase of $165.000 million for bioindustrial manufacturing; reduction of $184.000 million for Critical Chemicals and Hypersonics.			
Accomplishments/Planned Programs Subtotals	56.992	588.094	1,017.141

	FY 2022	FY 2023
Congressional Add: Program Increase ***FY 2022 Accomplishments:*** Apply to supply chain analysis in multiple sectors including supply chain resiliency, and additional workforce development efforts. Possible partial offset to SBIR/STTR taxes applicable to Congressional Add totals.	10.000	-
Congressional Add: Advanced Nanomaterials Manufacturing / Metal-organic frameworks ***FY 2022 Accomplishments:*** Expand Supply Chain - No domestic capability exists for mature metal organic frameworks (MOF) compound to meet soldier chemical, biological, radiological, and nuclear filter requirements.	7.500	5.000

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	FY 2022	FY 2023
Funds will establish domestic capability to manufacture at scale and incorporate MOF filter media into M61 filters. ***FY 2023 Plans:*** Design a post-processing Dual-Use Manufacturing Prototype Line (DUMPL) specifically for MOF (synthesis reactors are available for rent). Procure, Install, Assemble and begin qualification of the DUMPL Line.		
Congressional Add: Automated textile manufacturing ***FY 2022 Accomplishments:*** Established partnership to prototype and implement automated manufacturing processes for advanced textiles needed for defense use and develop associated workforce curricula and training programs needed for successful industry adoption and use. ***FY 2023 Plans:*** Expand partnerships to prototype and implement automated manufacturing processes for advanced textiles needed for defense use and develop associated workforce curricula and training programs needed for successful industry adoption and use.	10.000	7.500
Congressional Add: Industrial Skills ***FY 2022 Accomplishments:*** National Imperative for Industrial Skills (NIIS) - Assess requirements, expand recruitment, expand and accelerate training in key sectors as needed.	10.000	-
Congressional Add: Interdisciplinary Center for Advanced Manufacturing Systems ***FY 2022 Accomplishments:*** Lower the barriers for entry to small and medium manufacturers to adopt manufacturing capabilities including 5-axis, additive, digital and Internet of Things (IOT) 4.0 capabilities ***FY 2023 Plans:*** Continue to expand workforce development projects related to digital engineering and systems engineering technical training programs.	10.000	10.000
Congressional Add: Freeze Dried Plasma ***FY 2022 Accomplishments:*** Freeze-dried medical products with greater longevity would increase the opportunity for injured warfighters operating in austere environments to receive transfusions sooner in the process. To optimize transfusion therapy on the battlefield far forward, additional development of manufacturing technology must be done to enable production of freeze-dried pathogen-inactivated plasma, cryoprecipitate, and cryo-depleted plasma, all of which can be used for immediate treatment of wounded service members at the point of injury.	10.000	-
Congressional Add: Lead-free Electronics	7.500	-

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	FY 2022	FY 2023
FY 2022 Accomplishments: Tin-based solders are unable to withstand military operational requirements, resulting in reliability and performance deficiencies. This effort developed alternative solder alloys and delivered a solder performance specification, a DoD solder users' handbook, and an implementation roadmap that can accelerate the transition to lead-free electronics for defense systems.		
Congressional Add: Machine Tooling and Advanced Manufacturing ***FY 2022 Accomplishments:*** This effort established a DoD partnership with Department of Energy (DoE) Oak Ridge National Lab (ORNL) called “America’s Cutting Edge (ACE).” ACE applies the robust functional capacity of the Manufacturing Demonstration Facility (MDF) as a Hub for a public-private partnership that can leverage an existing $1.5 billion DoE Research and Development (R&D) Partnership to restore U.S. machine tool prominence. Workforce Component: Accelerate workers into and through training and development pipelines to meet requirements.	20.000	-
Congressional Add: Pilot Mask Technology ***FY 2022 Accomplishments:*** Sustain life support supply chains for pilot masks - contracted due to limited investment for pilot masks and related technology. Today's aircraft have surpassed older, obsolete technology.	5.000	-
Congressional Add: Precision Optics Manufacturing ***FY 2022 Accomplishments:*** Precision Optics are used in almost every DoD platform but the collapse of the commercial optics community and decades of decreased DoD investment has endangered domestic capability for skilled workers and stable suppliers. Precision Optics Manufacturing provides a multi-prong approach to improve industrial base resilience and expands workforce development programs. ***FY 2023 Plans:*** Continue to grow the number of high schools and 2-year colleges teaching precision optics curricula, and consequently, continue growing the annual pipeline of new, qualified technicians. This project has a goal of 800 optics technicians per year by 2025, as originally planned in the project’s 5-year commitment to address the DoD’s critical shortage of precision optics technicians.	4.000	10.000
Congressional Add: Submarine Workforce Development ***FY 2022 Accomplishments:*** Public private partnership with states mitigating workforce shortfalls within the submarine supply chain. Established partnership to identify workforce needs through industry champions and senior executives who have decision-making authority and are passionate about the submarine industrial sector.	20.000	-
Congressional Add: Weldable Ultra Hard Armor	3.000	-

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	FY 2022	FY 2023
FY 2022 Accomplishments: Expand ground vehicle light weight armor supply chain. Develop full-scale manufacturing process for producing an ultra-hard armor that is weldable.		
Congressional Add: Accelerated training in defense manufacturing ***FY 2022 Accomplishments:*** Improve the nation's capacity to produce and deliver workers with industrial skills to meet defense technology, acquisition, and operational needs through the demonstration of the potential of the ADTM training program that cuts training time up to 75 percent and can be the replicable model training program for a national network of regional training centers serving the Defense Industrial Base. ***FY 2023 Plans:*** Continue to increase the number of skilled workers through the ADTM program that cuts training time up to 75 percent to support the defense industrial base.	5.000	5.000
Congressional Add: Advanced Headborne Systems Manufacturing ***FY 2022 Accomplishments:*** Conduct prototyping efforts that demonstrate and develop solutions to modernize manufacturing to create better-quality helmets and visors to meet more stringent survivability and weight standards, enabling a more rapid evolution of helmet upgrades to improve protection, reduce rejection rates, and rapidly respond to surge capabilities. ***FY 2023 Plans:*** Provide open competition and target FY23Q3 for award and kick-off.	7.500	5.000
Congressional Add: Carbon/Carbon Industrial Base Enhancement ***FY 2022 Accomplishments:*** Development and expansion of the carbon-carbon manufacturing ecosystem for high temperature applications. ***FY 2023 Plans:*** Continue to increase capacity for carbon-carbon material production for high temperature applications.	6.000	3.000
Congressional Add: Career and Technical Education Pilot ***FY 2022 Accomplishments:*** Conduct prototyping efforts that expand career and technical education in industrial skills. ***FY 2023 Plans:*** Continue to conduct prototyping efforts that expand career and technical education in industrial skills.	10.000	10.000
Congressional Add: Defense Supply Chain Enhancement	10.000	-

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	FY 2022	FY 2023
FY 2022 Accomplishments: Develop and enhance regional defense supply chain workforce in manufacturing technologies and processes.		
Congressional Add: Digital Engineering Enabled Workforce Development ***FY 2022 Accomplishments:*** Develop and deploy digital engineering centric academic programs to support enhanced digital manufacturing skills and talent development for the defense industrial base.	7.000	-
Congressional Add: Digital Thread Manufacturing Demonstration ***FY 2022 Accomplishments:*** Develop and execute projects that promote the adoption of advanced technologies, skilled workforce development, and the integration of digital tools (especially in situ sensors and metrology capabilities) by current and prospective defense manufacturers. ***FY 2023 Plans:*** Continue execution of projects that promote the adoption of advanced technologies, skilled workforce development, and the integration of digital tools (especially in situ sensors and metrology capabilities) by current and prospective defense manufacturers.	8.000	8.000
Congressional Add: Enhanced Digital Capabilities ***FY 2022 Accomplishments:*** Develop and deploy digital engineering centric academic programs to support enhanced digital manufacturing skills and talent development for the defense industrial base.	7.000	-
Congressional Add: Heavy Rare Earth Elements Program ***FY 2022 Accomplishments:*** Efforts to establish, sustain, and improve value-added manufacturing domestic rare earth capabilities and commercialize products. Continue the design and build of two domestic HREE processing lines in support of the DoD's efforts to address supply chain risks associated with the dependence on rare earth elements from foreign non-allied countries.	80.000	-
Congressional Add: Rare Earth Elements and Critical Minerals Recovery Technique Demonstration ***FY 2022 Accomplishments:*** Development and demonstration of industrial scale processes related to recovering rare earth elements from mining byproducts.	3.000	-
Congressional Add: Rare Earth Separation Technologies ***FY 2022 Accomplishments:*** Development and demonstration of industrial scale processes related to separating rare earth elements from raw ore and/or end products through recycling.	4.000	-
Congressional Add: Resilient Manufacturing Ecosystem	2.500	5.000

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	FY 2022	FY 2023
FY 2022 Accomplishments: Deployment of a micro-defense additive manufacturing ecosystem focused on transitioning materials, processes, equipment and people into a production environment. ***FY 2023 Plans:*** Continue to expand micro-defense additive manufacturing ecosystem focused on transitioning materials, processes, equipment and people into a production environment.		
Congressional Add: Ruggedized Transceivers ***FY 2022 Accomplishments:*** Establish a reliable domestic supply chain for fiber optic transceivers capable of supporting current and future DoD program demands. ***FY 2023 Plans:*** Contract review, negotiation, initial contract award and project kick off. The FY23 effort will establish and begin the qualification of manufacturing capacity of aerospace-grade fiber optic transceivers capable of data transport of up to 200 Gbps over multimode fiber.	10.000	7.500
Congressional Add: Systems Engineering Technician Education Initiative ***FY 2022 Accomplishments:*** Advance training in digital engineering and manufacturing methods and processes through the creation of a 2-year degree in Systems Engineering Technology.	0.550	-
Congressional Add: Advanced Design and Engineering Capabilities for Small Businesses ***FY 2023 Plans:*** Establish partnerships with industry, academia, and the NIST MEP program to create and deliver training in the use of advanced design and engineering capabilities by small businesses.	-	12.000
Congressional Add: Advanced Electrochromic Manufacturing Program ***FY 2023 Plans:*** Establish partnerships to prototype and implement the production of advanced electrochomic substances for use in military applications.	-	5.000
Congressional Add: Advanced Thermoplastics Demonstration ***FY 2023 Plans:*** Establish partnerships to develop and implement training programs in the creation and application of advanced thermoplastic compounds in military systems.	-	4.000
Congressional Add: Aluminum Armor Plating ***FY 2023 Plans:*** Establish partnerships to prototype and implement the production of advanced aluminum armor plating for use in military applications.	-	1.500
Congressional Add: Automated Integrated Metrology	-	5.000

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	FY 2022	FY 2023
FY 2023 Plans: Leverage existing partnerships to develop and execute projects that demonstrate and accelerate the creation and use of automated integrated metrology capabilities in production machines (both additive and subtractive) across a variety of metal and composite materials.		
Congressional Add: Demonstration Scale of REE from Coal Ash Technology ***FY 2023 Plans:*** Establish a full scale plant to extract rare earth elements from coal ash. Enables scale up from small scale demonstration project previously funded by IBAS which proved out feasibility and process for commercial scale.	-	30.000
Congressional Add: Digital Design and Engineering Demonstration ***FY 2023 Plans:*** Establish partnership to prototype and develop project-based industrial workforce training in the theory and practice of digital design and engineering for military applications.	-	5.500
Congressional Add: Expanding U.S. Defense Workforce ***FY 2023 Plans:*** Conduct prototyping efforts to expand U.S. defense workforce.	-	20.000
Congressional Add: Hybrid Manufacturing for Lightweight Defense Components ***FY 2023 Plans:*** Leverage existing partnerships to develop and execute projects that accelerate the application of hybrid (additive plus subtractive) manufacturing processes, a variety of metal and composite materials, and advanced digital metrology to the rapid production of lightweight defense components.	-	5.000
Congressional Add: Munitions Supply Chain Diversification ***FY 2023 Plans:*** Focus on sub-tier manufactures for munitions production.	-	20.000
Congressional Add: On-Shore Advanced Microelectronic Packaging for Strategic Mission Enablement ***FY 2023 Plans:*** Develop advanced packaging manufacturing technology and capabilities to address gaps in the domestic ecosystem.	-	40.000
Congressional Add: On-Shoring Navy Battery Cells ***FY 2023 Plans:*** Develop advanced battery manufacturing technology and capabilities to address gaps with domestic sourcing of cells.	-	10.000
Congressional Add: Partnerships For Manufacturing Training Innovation ***FY 2023 Plans:*** Conduct prototyping effort to build partnerships for manufacturing training program.	-	7.000
Congressional Add: Systems Engineering Technology (SET) Apprenticeship and Internship Program	-	1.200

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	FY 2022	FY 2023
FY 2023 Plans: Continue to expand systems engineering technician training program.		
Congressional Adds Subtotals	277.550	242.200

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

NA

D. Acquisition Strategy

NA

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense			Date: March 2023
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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
IBAS Baseline Program Efforts - Prior Years	C/Various	various : various	289.723	9.800		-		-		-		-	Continuing	Continuing	-
Workforce Initiatives	C/FFP	SE New Eng Def Ind Assoc; Senedia; Auburn Univ; TX A&M; Americom; RD Solutions; Inst Advanced Learning; VT Tech Coll; Aeromarck; IACMI; BG Workforce Solutions; 202 Group; Poplicus; Productive Res : Multiple States	47.028	91.794	Mar 2023	234.500	Jun 2023	263.500	Jun 2024	-		263.500	Continuing	Continuing	-
Critical Chemicals: Heavy Rare Earth Elements Supply Chain Resiliency	C/FFP	MP Mine Operations LLC & Lynas LLC : CA & Texas	5.363	36.500	Jun 2023	50.000	Jun 2023	227.692	Sep 2024	-		227.692	Continuing	Continuing	-
Technical Initiatives Other: Adv Headborne sys; carbon/carbon IB; lead-free; directed energy; enhanced digital; freeze dried plasma; metal organic frameworks; pilot mask technology; radar technolkogy	C/FFP	Multiple : Multiple	-	157.888	Mar 2023	45.661	Sep 2023	20.055	Mar 2024	-		20.055	Continuing	Continuing	-
Castings and Forgings (Advanced Machine Tools)	FFRDC	Oakridge National Laboratories : Oakridge, TN	29.667	21.507	Mar 2022	32.500	Jun 2023	172.300	Jun 2024	-		172.300	Continuing	Continuing	-
Microelectronics	C/FFP	pending : pending	-	8.000	Jun 2022	96.204	Jun 2023	310.284	Jun 2024	-		310.284	Continuing	Continuing	-
Hypersonics Weapons Components	C/FFP	TBD : TBD	-	-		118.000	Jun 2023	10.000	Jun 2024	-		10.000	Continuing	Continuing	-
Congressional Adds FY23 - details pending	C/TBD	TBD : TBD	-	-		242.200		-		-		-	Continuing	Continuing	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0607210D8Z / *Industrial Base Analysis and Sustainment Support*	Project (Number/Name) 819 / *Industrial Base Analysis and Sustainment*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	371.781	325.489		819.065		1,003.831		-		1,003.831	Continuing	Continuing	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Joint Army NASA Air Force (JANNAF) Executive Committee Support	C/FFP	Johns Hopkins : MD	0.628	0.266	Sep 2022	0.265	Sep 2023	0.134	Sep 2023	-		0.134	Continuing	Continuing	-
		Subtotal	0.628	0.266		0.265		0.134		-		0.134	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
OSD SETA Support	Various	Frontier Technologies Inc : VA	18.939	3.936	Nov 2021	5.271	Mar 2023	7.403	Mar 2024	-		7.403	Continuing	Continuing	-
Army/Navy Program Management	MIPR	DEVCOM CBC, NSWC Crane, PEO Stri : IL/IN/FL	3.012	3.475	Dec 2021	4.317	Dec 2022	4.397	Dec 2023	-		4.397	Continuing	Continuing	-
IBAS Technical Teams Support	C/FFP	Booz Allen Hamilton : Alexandria, VA	-	1.376	Jun 2022	1.376	Mar 2023	1.376	Dec 2023	-		1.376	Continuing	Continuing	-
		Subtotal	21.951	8.787		10.964		13.176		-		13.176	Continuing	Continuing	N/A

	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	394.360	334.542		830.294		1,017.141		-		1,017.141	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 7	**R-1 Program Element (Number/Name)** PE 0607210D8Z / *Industrial Base Analysis and Sustainment Support*	**Project (Number/Name)** 819 / *Industrial Base Analysis and Sustainment*

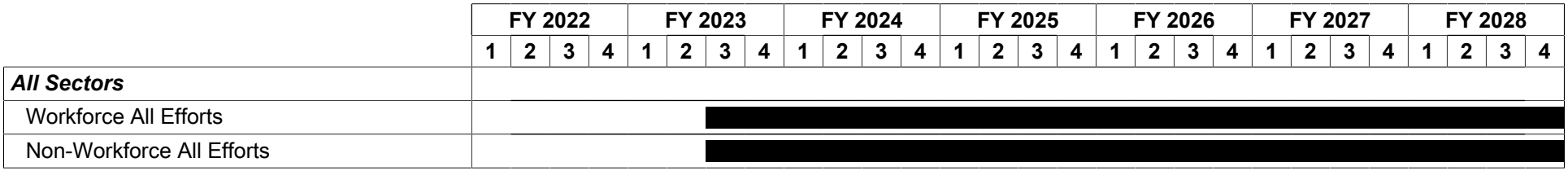

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 7	**R-1 Program Element (Number/Name)** PE 0607210D8Z / *Industrial Base Analysis and Sustainment Support*	**Project (Number/Name)** 819 / *Industrial Base Analysis and Sustainment*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
All Sectors				
Workforce All Efforts	3	2023	4	2028
Non-Workforce All Efforts	3	2023	4	2028

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0607210D8Z / *Industrial Base Analysis and Sustainment Support*	Project (Number/Name) 821 / *Microelectronics*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
821: *Microelectronics*	3.750	7.700	-	-	-	-	-	-	-	-	0.000	11.450
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

In FY 2023, Microelectronics funding for the Defense Microelectronics Cross-Function Team effort transitioned from Program Element 0607210D8 to Program Element 0604294D8Z Microelectronics under the Office of the Undersecretary of Defense for Research and Engineering (OUSD(R&E)).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Microelectronics Cross Functional Team	7.700	-	-
Description: The Cross-Functional Team (CFT) was established effective January 2021 to develop a DoD strategy, implementation, and transition plan to increase efficiency and minimize vulnerabilities within the Department's microelectronic supply chain, strengthening the domestic microelectronics Industrial Base and efforts to cost-effectively modernize and sustain DoD systems.			
Accomplishments/Planned Programs Subtotals	7.700	-	-

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0607210D8Z / *Industrial Base Analysis and Sustainment Support*	Project (Number/Name) 821 / *Microelectronics*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Microelectronics Studies, Strategic Initiatives, and Policy Assessments	C/FFP	CTC Aero, : Port Jefferson, NY	1.818	3.220	Dec 2021	-		-		-		-	0.000	5.038	-
Microelectronics Study	FFRDC	Institute for Defense Analysis : VA	-	0.500	Jan 2022	-		-		-		-	0.000	0.500	-
		Subtotal	1.818	3.720		-		-		-		-	0.000	5.538	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Reimburse Program Management Support from Various DoD Organizations	MIPR	Various : Various	0.668	1.169	Dec 2021	-		-		-		-	0.000	1.837	-
SETA Program Management Support via FFRDC	FFRDC	Aerospace : CA	0.400	0.870	Dec 2021	-		-		-		-	0.000	1.270	-
SETA Program Management Support Contract	C/CPFF	Various : Various	0.829	1.590	Feb 2022	-		-		-		-	0.000	2.419	-
Expenses, Building Rent & Pentagon Force Protection Services	MIPR	GSA : VA	0.035	0.351	Nov 2021	-		-		-		-	0.000	0.386	-
		Subtotal	1.932	3.980		-		-		-		-	0.000	5.912	N/A

	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	3.750	7.700		-		-		-		-	0.000	11.450	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 7	**R-1 Program Element (Number/Name)** PE 0607210D8Z / *Industrial Base Analysis and Sustainment Support*	**Project (Number/Name)** 821 / *Microelectronics*

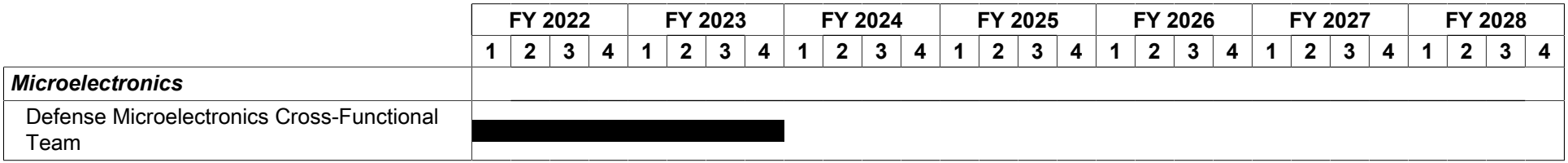

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 7	**R-1 Program Element (Number/Name)** PE 0607210D8Z / *Industrial Base Analysis and Sustainment Support*	**Project (Number/Name)** 821 / *Microelectronics*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Microelectronics				
Defense Microelectronics Cross-Functional Team	1	2022	4	2023

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 0607310D8Z / *CWMD Systems: Operational Systems Development*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	51.825	17.953	15.427	12.713	0.000	12.713	12.481	14.238	13.351	13.649	-	-
242: *CWMD Systems: Operational System Development*	51.825	17.953	15.427	12.713	0.000	12.713	12.481	14.238	13.351	13.649	-	-

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

This program supports the Department's initiatives to Deter Aggression, Defend the Homeland, Provide Nuclear Deterrence, and Build Sustainable and Long-Term Advantage.

The Countering Weapons of Mass Destruction (CWMD) Systems research and development activities (RDAs) enhance DoD's capabilities to campaign across the domains of threats and spectrums of conflict by: "improving our understanding of the operational environment – including in the information domain; sowing doubt among competitors that they would be able to achieve their objectives and conduct unattributed coercive actions; disrupting competitor actions that would afford them warfighting advantages; reinforcing our own warfighting advantages; and enhancing our interoperability and access to address acute forms of coercion" (2022 National Defense Strategy (NDS)).

RDAs provide enhanced offensive Counterproliferation capabilities. The CWMD Systems portfolio enables DoD to prevent adversary development, acquisition, transfer, deployment, and use of weapons of mass destruction. Likewise, the portfolio's investments deliver capabilities to "take action against actors of concern and reduce access to WMD development pathways" and "delays further development, degrades capabilities where possible, and, if necessary, prevents WMD use" (DRAFT 2022 DoD Strategy to Counter Weapons of Mass Destruction).

The CWMD Systems portfolio is executing along cohesive lines of effort (LOEs) designed to prepare the Joint Force for a Future Operating Environment in which adversary pursuit or possession of WMDs pose threats ranging from existential to tactical, and limit U.S. strategic choices. These LOEs create unique options across the continuum of conflict, including exquisite tactical situational awareness, the ability to rapidly generate options, low visibility methods of maneuver, and the capability to employ immediate effects without diminishing future capabilities. These LOEs enable active campaigning to support Integrated Deterrence that mitigate risk to mission and risk to force.

The Office of the Secretary of Defense uses the CWMD Systems portfolio to invest strategically in projects across the Military Services, Combatant Commands, and Defense Agencies. Funding is prioritized for projects that close Joint Force warfighter capability gaps. An annual investment strategy is used to meet emergent operational and capability needs validated by the Joint Force, yielding new fielded capabilities within one to two years.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 0607310D8Z / *CWMD Systems: Operational Systems Development*

The CWMD Systems: Operational Systems Development program invests in upgrades of and enhancements to fielded systems that counter WMD proliferation. Funds are used for integration of operational prototypes into fielded systems, or other upgrades and enhancements, including any necessary test and evaluation. Investments modernize existing counter WMD capabilities within the Department of Defense to enhance the Joint Force's lethality by upgrading and enhancing currently fielded systems. Upgraded capabilities illuminate WMD networks; exploit vulnerabilities in networks, programs, facilities, and weapons systems; and disable or defeat WMD and their delivery systems.

This program funds labor, materials, and travel requirements, performed by a government agency or by private individuals or organizations under a contract with the government, for activities and acquisitions including RDT&E, assessments and analyses, research studies, education, and other activities related to capability development and fielding.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	18.616	15.427	15.968	0.000	15.968
Current President's Budget	17.953	15.427	12.713	0.000	12.713
Total Adjustments	-0.663	0.000	-3.255	0.000	-3.255
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	-0.663	-	-3.255	0.000	-3.255

Change Summary Explanation

FY 2024 funding realigned for higher priority requirements.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0607310D8Z / *CWMD Systems: Operational Systems Development*	Project (Number/Name) 242 / *CWMD Systems: Operational System Development*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
242: *CWMD Systems: Operational System Development*	51.825	17.953	15.427	12.713	0.000	12.713	12.481	14.238	13.351	13.649	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This program supports the Department's initiatives to Defend the Homeland, Provide Nuclear Deterrence, and Build Sustainable and Long-Term Advantage.

The Countering Weapons of Mass Destruction (CWMD) Systems portfolio aligns with the National Defense Strategy objective of “dissuading, preventing, or deterring state adversaries and non-state actors from acquiring, proliferating, or using weapons of mass destruction.”

The CWMD Systems portfolio enhances warfighter lethality by developing capabilities to exploit and defeat critical nodes of nuclear, chemical and biological weapons, ballistic missile programs, and proliferation networks; additionally the program develops offensively-oriented capabilities to disrupt Weapons of Mass Destruction (WMD) proliferation networks and detect, disable, or defeat WMD and delivery systems. Investments result in capabilities fielded to the Joint Force, enabling it to reduce WMD threats and create options for the United States to prevent WMD use.

The Office of the Secretary of Defense uses the CWMD Systems portfolio to invest strategically in projects across the Military Services, Combatant Commands, and Defense Agencies. Funding is prioritized for projects that close Joint Force warfighter capability gaps. An annual investment strategy is used to meet emergent operational and capability needs validated by the Joint Force, yielding new fielded capabilities within one to two years.

The CWMD Systems: Operational Systems Development program invests in upgrades of and enhancements to fielded systems that counter WMD proliferation. Funds are used for integration of operational prototypes into fielded systems, or other upgrades and enhancements, including any necessary test and evaluation. Investments modernize existing counter WMD capabilities within the Department of Defense to enhance the Joint Force’s lethality by upgrading and enhancing currently fielded systems. Upgraded capabilities illuminate WMD networks; exploit vulnerabilities in networks, programs, facilities, and weapons systems; and disable or defeat WMD and their delivery systems.

This program funds labor, materials, and travel requirements, performed by a government agency or by private individuals or organizations under a contract with the government, for activities and acquisitions including RDT&E, assessments and analyses, research studies, education, and other activities related to capability development and fielding.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: CWMD Systems: Operational Systems Development	17.953	15.427	12.713

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 7	**R-1 Program Element (Number/Name)** PE 0607310D8Z / *CWMD Systems: Operational Systems Development*	**Project (Number/Name)** 242 / *CWMD Systems: Operational System Development*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Description: The CWMD Systems: Operational Systems Development program invests in upgrades of and enhancements to fielded systems that counter WMD proliferation. Funds are used for integration of operational prototypes into fielded systems, or other upgrades and enhancements, including any necessary test and evaluation. Investments modernize existing counter WMD capabilities within the Department of Defense to enhance the Joint Force's lethality by upgrading and enhancing currently fielded systems. Upgraded capabilities illuminate WMD networks; exploit vulnerabilities in networks, programs, facilities, and weapons systems; and disable or defeat WMD and their delivery systems. ***FY 2023 Plans:*** • Enhanced and fielded operational CWMD capabilities to US Special Operations Command. • Upgraded and enhanced DoD capabilities to counter WMD proliferation. • Partnered with the Military Services and Defense Agencies to mature and transition advanced prototypes to fielded CWMD capabilities. • Enhanced Air Force Technical Applications Center (AFTAC) ability to support nuclear treaty monitoring and nuclear event detection. • Upgraded and enhanced fielded systems for the Joint Force to detect, disrupt, and defeat WMD and WMD networks. Projects are classified. ***FY 2024 Plans:*** • Enhance and field operational CWMD capabilities to US Special Operations Command. • Upgrade and enhance Service, Combatant Command, and Defense Agency capabilities to detect, disable, or defeat WMD. • Upgrade and enhance DoD capabilities to counter WMD proliferation. • Upgrade or enhance fielded systems for the Joint Force to detect, disrupt, and defeat WMD and WMD networks. Projects are classified. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The FY 2024 funding decrease is representative of program adjustments to align with National Defense Strategy priorities.			
Accomplishments/Planned Programs Subtotals	17.953	15.427	12.713

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 7	**R-1 Program Element (Number/Name)** PE 0607310D8Z / *CWMD Systems: Operational Systems Development*	**Project (Number/Name)** 242 / *CWMD Systems: Operational System Development*

D. Acquisition Strategy

The Office of the Deputy Assistant Secretary of Defense for Threat Reduction and Arms Control (ODASD(TRAC)) establishes annual priorities based on national and DoD strategies and senior leader guidance. Based on those priorities, TRAC solicits project proposals from Combatant Commands, Military Services, and Defense Agencies, and interagency partners. To be selected, a proposed project must have a validated requirement, an engaged requirement champion, a viable acquisition strategy, and a qualified program management office. A technology project must identify its starting and desired end-state Technology Readiness Level. Likewise, the end-user for any proposed project must demonstrate a long-term plan for acceptance and sustainment of a fieldable capability. Project period of performance is typically 12-24 months.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 7	**R-1 Program Element (Number/Name)** PE 0607310D8Z / *CWMD Systems: Operational Systems Development*	**Project (Number/Name)** 242 / *CWMD Systems: Operational System Development*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Upgrade & enhance Special Operations Forces (SOF) CWMD capabilities	MIPR	USSOCOM : TBD	13.113	7.714	Jan 2022	6.944	Jan 2023	5.760	Jan 2024	-		5.760	-	-	-
Enhance Service capabilities to detect, disable, or defeat WMD	Various	TBD : TBD	13.112	2.978	Jan 2022	2.468	Jan 2023	2.023	Jan 2024	-		2.023	-	-	-
Enhance Air Force Technical Applications Center (AFTAC) capabilities to support nuclear treaty monitoring and nuclear event detection	MIPR	AFTAC : TBD	13.276	3.351	Jan 2022	2.776	Jan 2023	2.275	Jan 2024	-		2.275	-	-	-
Upgrade fielded CWMD Systems	Various	Various : Various	12.324	3.910	Jan 2022	3.239	Jan 2023	2.655	Jan 2024	-		2.655	-	-	-
		Subtotal	51.825	17.953		15.427		12.713		-		12.713	-	-	N/A

Remarks

N/A

	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	51.825	17.953		15.427		12.713		-		12.713	-	-	N/A

Remarks

N/A.

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 7	**R-1 Program Element (Number/Name)** PE 0607310D8Z / *CWMD Systems: Operational Systems Development*	**Project (Number/Name)** 242 / *CWMD Systems: Operational System Development*

CWMD Systems: Operational System Development
BA 7 / PE 0607310D8Z

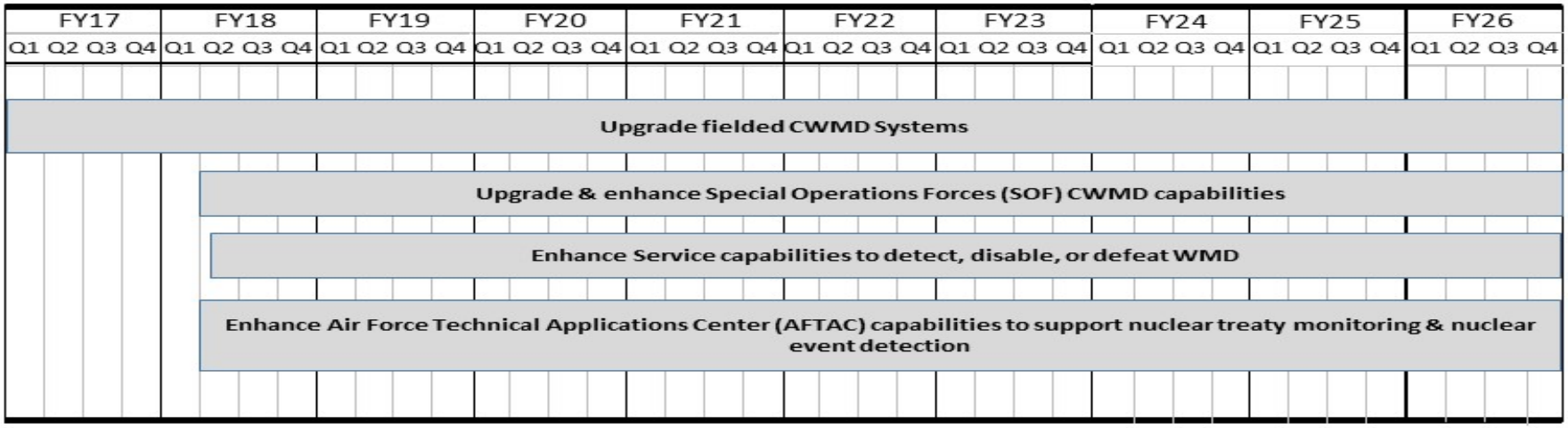

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 0303140D8Z / *Information Systems Security Program*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	173.833	69.191	43.135	97.171	-	97.171	20.369	19.586	19.539	19.739	Continuing	Continuing
140: *Information Systems Security Program (ISSP)*	173.833	49.191	43.135	97.171	-	97.171	20.369	19.586	19.539	19.739	Continuing	Continuing
141: *ISSP - Center for Academic Excellence*	-	20.000	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

This program supports the Department's initiatives to Defend the Homeland and Build Sustainable and Long-Term Advantage.

The DoD CIO Information Systems Security Program (ISSP) provides for focused research, development, testing and integration of technology and technical solutions critical to the Defense Cybersecurity and Information Assurance (CS&IA) Program to meet the requirements of 10 USC 2224 (Defense Information Assurance Program), 44 USC 3544, (Federal Information Security Management Act of 2002), OMB Circular A-130, DoD Directives/Instructions 8500, 8510, 8520, 8530, and 8540, and Executive Order 14028 “Improving the Nation’s Cybersecurity”. This program is funded under Budget Activity 7, Operational System Development, because it integrates technology and technical solutions to the Defense CS&IA Program.

ISSP RDT&E supports the DoD CIO and its mission partners: on architecting, engineering, and technical matters for developing governance processes and structures; on evolving and enabling a more integrated and synchronized DOD information environment that provides a network of shared core enterprise services for integrated information sharing and collaboration and to close identified gaps across all mission areas; on the protection of National Security Systems; on the adoption of zero trust cybersecurity principles; on the continued development of the U.S. Government’s ability to prevent and defend against adversarial and/or commercial information and communications technology supply-chain attacks on its mission critical systems, networks, and devices; on improving oversight of the life-cycle management of cybersecurity risks; and on the integration of cybersecurity standards, methods, and procedures across the DoD for a more robust and resilient cybersecurity posture.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 0303140D8Z / *Information Systems Security Program*

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	69.191	43.135	17.076	-	17.076
Current President's Budget	69.191	43.135	97.171	-	97.171
Total Adjustments	0.000	0.000	80.095	-	80.095
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	-	-	80.095	-	80.095

Change Summary Explanation

FY 2024 funding increase due to Zero Trust initiative enhancements.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0303140D8Z / *Information Systems Security Program*	Project (Number/Name) 140 / *Information Systems Security Program (ISSP)*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
140: *Information Systems Security Program (ISSP)*	173.833	49.191	43.135	97.171	-	97.171	20.369	19.586	19.539	19.739	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

This program supports the Department's initiatives to Defend the Homeland and Build Sustainable and Long-Term Advantage.

The DoD CIO Information Systems Security Program (ISSP) provides for focused research, development, testing and integration of technology and technical solutions critical to the Defense Cybersecurity and Information Assurance (CS&IA) Program to meet the requirements of 10 USC 2224 (Defense Information Assurance Program), 44 USC 3544, (Federal Information Security Management Act of 2002), OMB Circular A-130, DoD Directives/Instructions 8500, 8510, 8520, 8530, and 8540, and Executive Order 14028 “Improving the Nation’s Cybersecurity”. This program is funded under Budget Activity 7, Operational System Development, because it integrates technology and technical solutions to the Defense CS&IA Program.

ISSP RDT&E supports the DoD CIO and its mission partners: on architecting, engineering, and technical matters for developing governance processes and structures; on evolving and enabling a more integrated and synchronized DOD information environment that provides a network of shared core enterprise services for integrated information sharing and collaboration and to close identified gaps across all mission areas; on the protection of National Security Systems; on the adoption of zero trust cybersecurity principles; on the continued development of the U.S. Government’s ability to prevent and defend against adversarial and/or commercial information and communications technology supply-chain attacks on its mission critical systems, networks, and devices; on improving oversight of the life-cycle management of cybersecurity risks; and on the integration of cybersecurity standards, methods, and procedures across the DoD for a more robust and resilient cybersecurity posture.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Information Systems Security Program Plans and Accomplishments	49.191	43.135	97.171
FY 2023 Plans: $35.290 million: Classified Add $7.845 million: • Work with industry to develop new technologies that upgrade cybersecurity to current legacy networks and have the potential to evolve into systems that are part of a new cybersecurity architecture and command and control capability.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 7	**R-1 Program Element (Number/Name)** PE 0303140D8Z / *Information Systems Security Program*	**Project (Number/Name)** 140 / *Information Systems Security Program (ISSP)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
• Continue to develop and refine policies to support strategies for acquisition program protection and oversight. Develop strategies, standards, and tools to address supply chain risk management, and continue to collaborate with private industry for commercially acceptable global sourcing and supply chain standards. • Continue to evaluate cyber activities for more efficient mitigation investment decisions, to include metrics focused on the cybersecurity domain, and support for policy development and refinement, policy oversight and formulation of programmatic advice, and participation in various collaborative advisory and governance bodies. • Accelerate Cloud security guidance and procedures by commercial Cloud service providers, and continued refinement and oversight of policies and capabilities to support comprehensive cybersecurity capability for secure mobility processes in the DOD information environment. • Continue development and engineering support for critical DOD Information architectures, C4I tactical networks, coalition, and mission partner's networks. Support includes implementing the DOD information environment strategy, related metrics, analyses, DOD Information Environment) policies, Cybersecurity Reference architecture (CSRA) and Zero Trust Reference Architecture (ZTRA), and capabilities to ensure best value architectural decisions are made early to affect the most impact, while increasing mission and security for the entire DoD enterprise. • Continue to develop and implement strategies for successful defenses and operations in the event of sophisticated cyber adversaries and large-scale cyber incidents, to include threat-based system-security-engineering efforts and development of critical design artifacts (threat analyses, risk analyses, system-of- system-security architectures). • Support analyses on various aspects of cybersecurity for cloud-based computing for the DoD, applicable risk factors, and continual refinement of mitigation controls as part of the risk management framework regime in support of DoD CIO's goal of accelerating the adoption of cloud computing within the department. Robust and comprehensive Cloud Risk Management will assist the DoD community with addressing security requirements for systems transitioning to the commercial cloud. • Continue refinement and integration of policies with the risk management framework (RMF), supportive standards, guidance, efficiencies, and web-based processes to strengthen controls and protections for information systems. • Continue to improve mission assurance, mitigation analyses, and vulnerability detection (hardware and software testing) for acquisitions to build-in cybersecurity early (i.e., cybersecurity built in vice bolted on), especially key acquisition programs-of-record			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 7	**R-1 Program Element (Number/Name)** PE 0303140D8Z / *Information Systems Security Program*	**Project (Number/Name)** 140 / *Information Systems Security Program (ISSP)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
(i.e., Major Automated Information Systems; Major Defense Acquisition Programs, and other special interest developmental and acquisition activities). Investments include Program Protection, Systems Engineering, and Acquisition standards.			
FY 2024 Plans: $10.000 million: Enhancement to accelerate secure internet protocol router network Zero Trust capabilities. $50.000 million: Native Zero Trust private cloud pilot $20.000 million: Native Zero Trust private cloud operational environment pilot. $17.171 million: • Work with industry to develop new technologies that upgrade cybersecurity to current legacy networks and have the potential to evolve into systems that are part of a new cybersecurity architecture and command and control capability. • Continue to develop and refine policies to support strategies for acquisition program protection and oversight. Develop strategies, standards, and tools to address supply chain risk management, and continue to collaborate with private industry for commercially acceptable global sourcing and supply chain standards. • Continue to evaluate cyber activities for more efficient mitigation investment decisions, to include metrics focused on the cybersecurity domain, and support for policy development and refinement, policy oversight and formulation of programmatic advice, and participation in various collaborative advisory and governance bodies. • Accelerate Cloud security guidance and procedures by commercial Cloud service providers, and continued refinement and oversight of policies and capabilities to support comprehensive cybersecurity capability for secure mobility processes in the DOD information environment.. • Continue development and engineering support for C4I tactical networks, coalition, and mission partner's networks. Support includes implementing the Cybersecurity Reference architecture and Zero Trust architecture and strategy, related metrics, analyses, Joint Information Environment Single Security Architecture (SSA) policies, architectures, and capabilities to ensure best value architectural decisions are made early to affect the most impact, while increasing mission and security for the entire DoD enterprise. • Continue to develop and implement strategies for successful defenses and operations in the event of sophisticated cyber adversaries and large-scale cyber incidents, to include threat-based system-security-engineering efforts and development of critical design artifacts (threat analyses, risk analyses, system-of- system-security architectures).			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 7	**R-1 Program Element (Number/Name)** PE 0303140D8Z / *Information Systems Security Program*	**Project (Number/Name)** 140 / *Information Systems Security Program (ISSP)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
• Support analyses on various aspects of cybersecurity for cloud-based computing for the DoD, applicable risk factors, and continual refinement of mitigation controls as part of the risk management framework regime in support of DoD CIO's goal of accelerating the adoption of cloud computing within the department. Robust and comprehensive Cloud Risk Management will assist the DoD community with addressing security requirements for systems transitioning to the commercial cloud. • Continue refinement and integration of policies with the risk management framework (RMF), supportive standards, guidance, efficiencies, and web-based processes to strengthen controls and protections for information systems. • Continue to improve mission assurance, mitigation analyses, and vulnerability detection (hardware and software testing) for acquisitions to build-in cybersecurity early (i.e., cybersecurity built in vice bolted on), especially key acquisition programs-of-record (i.e., Major Automated Information Systems; Major Defense Acquisition Programs, and other special interest developmental and acquisition activities). Investments include Program Protection, Systems Engineering, and Acquisition standards. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2024 funding increase due to Zero Trust initiative enhancements.			
Accomplishments/Planned Programs Subtotals	49.191	43.135	97.171

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
• PE 0303140D8Z O&M DW: *Information System Security Program*	23.423	21.190	45.993	-	45.993	43.028	44.674	46.372	49.057	-	-

Remarks

D. Acquisition Strategy

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0303140D8Z / *Information Systems Security Program*	Project (Number/Name) 140 / *Information Systems Security Program (ISSP)*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Studies and Analysis	Option/ Various	Various : Various	7.527	-		-		80.095		-		80.095	-	-	-
Technical Engineering Services	Option/ Various	Various : Various	105.204	36.088	Jul 2022	33.785	Feb 2023	8.500	Mar 2024	-		8.500	-	-	-
Services Support	Option/ Various	Various : Various	21.474	-		-		-		-		-	-	-	-
		Subtotal	134.205	36.088		33.785		88.595		-		88.595	-	-	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support	Option/ Various	Various : Various	2.624	8.361	Mar 2022	8.612	Mar 2023	8.576	Mar 2024	-		8.576	Continuing	Continuing	-
Engineering Support	Option/ Various	Various : Various	26.342	4.742	Apr 2022	0.738	Apr 2023	-		-		-	Continuing	Continuing	-
Research & Development	Option/ Various	Various : Various	10.662	-		-		-		-		-	-	-	-
		Subtotal	39.628	13.103		9.350		8.576		-		8.576	Continuing	Continuing	N/A

Remarks

NA

	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	173.833	49.191		43.135		97.171		-		97.171	Continuing	Continuing	N/A

Remarks

NA

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 7	**R-1 Program Element (Number/Name)** PE 0303140D8Z / *Information Systems Security Program*	**Project (Number/Name)** 140 / *Information Systems Security Program (ISSP)*

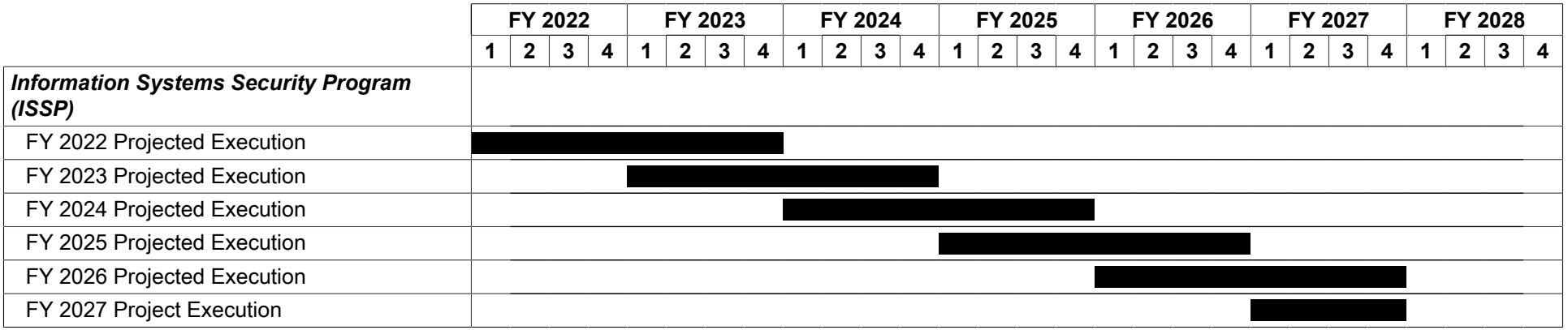

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 7	**R-1 Program Element (Number/Name)** PE 0303140D8Z / *Information Systems Security Program*	**Project (Number/Name)** 140 / *Information Systems Security Program (ISSP)*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Information Systems Security Program (ISSP)				
FY 2022 Projected Execution	1	2022	4	2023
FY 2023 Projected Execution	1	2023	4	2024
FY 2024 Projected Execution	1	2024	4	2025
FY 2025 Projected Execution	1	2025	4	2026
FY 2026 Projected Execution	1	2026	4	2027
FY 2027 Project Execution	1	2027	4	2027

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0303140D8Z / *Information Systems Security Program*	Project (Number/Name) 141 / *ISSP - Center for Academic Excellence*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
141: *ISSP - Center for Academic Excellence*	-	20.000	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

This project supports the creation of a talent marketplace to recruit and retain current cyber professionals, develop the next generation federal cyber workforce, and advance academic resources for emerging cyber workforce operational requirements.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: ISSP - Center for Academic Excellence	20.000	-	-
Description: This project supports the creation of a talent marketplace to recruit and retain current cyber professionals, develop the next generation federal cyber workforce, and advance academic resources for emerging cyber workforce operational requirements.			
Accomplishments/Planned Programs Subtotals	20.000	-	-

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0303140D8Z / *Information Systems Security Program*	Project (Number/Name) 141 / *ISSP - Center for Academic Excellence*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Technical Engineering Services	MIPR	Various : Various	-	20.000	Oct 2022	-		-		-		-	Continuing	Continuing	-
		Subtotal	-	20.000		-		-		-		-	Continuing	Continuing	N/A

	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	20.000		-		-		-		-	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 7	**R-1 Program Element (Number/Name)** PE 0303140D8Z / *Information Systems Security Program*	**Project (Number/Name)** 141 / *ISSP - Center for Academic Excellence*

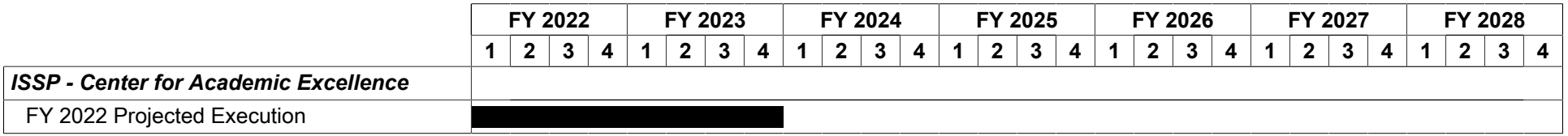

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 7	**R-1 Program Element (Number/Name)** PE 0303140D8Z / *Information Systems Security Program*	**Project (Number/Name)** 141 / *ISSP - Center for Academic Excellence*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
ISSP - Center for Academic Excellence				
FY 2022 Projected Execution	1	2022	4	2023

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 0305104D8Z *I Securing the Defense Industrial Base (DIB): Cybersecurity Maturity Model Certification (CMMC)*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	0.000	-	10.000	25.655	-	25.655	25.649	25.639	25.758	26.300	Continuing	Continuing
334: *Securing the DIB: CMMC*	-	-	10.000	25.655	-	25.655	25.649	25.639	25.758	26.300	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

New Start (Y/N): No

The Cybersecurity Maturity Model Certification (CMMC) program is a continuation of efforts contained in PE 0606771D8Z, Cyber Resiliency & Cybersecurity Policy.

A. Mission Description and Budget Item Justification

This program supports the Department's initiatives to Deter Aggression, Defend the Homeland, and Build Sustainable and Long-Term Advantage.

Development, implementation and sustainment of CMMC framework designed to provide increased assurance to the Department of Defense (DoD) that defense contractors and subcontractors are compliant with existing information protection requirements for Federal Contract Information (FCI) and Controlled Unclassified Information (CUI) and are protecting such information at a level commensurate with risk from cybersecurity threats, including Advanced Persistent Threats (APTs).

Assess the feasibility and efficacy of employing emerging commercial services/tools/platforms that provide insights into cybersecurity threats and vulnerabilities that are relevant to the DIB sector and the DoD supply chain.

Partner with the DIB sector and other government agencies to demonstrate cost-effective and scalable cybersecurity services that augment and/or enhance existing commercial capabilities and services. Focus on cybersecurity services for small-to-medium sized DIB companies that are critical to the DoD supply chain but lack sufficient cybersecurity capabilities to protect CUI.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 0305104D8Z *I Securing the Defense Industrial Base (DIB): Cybersecurity Maturity Model Certification (CMMC)*

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	0.000	10.000	14.000	-	14.000
Current President's Budget	0.000	10.000	25.655	-	25.655
Total Adjustments	0.000	0.000	11.655	-	11.655
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Year	-	-	11.655	-	11.655

Change Summary Explanation

The FY 2024 increase enables the Department to complete development of the CMMC 2.0 program and associated rulemaking requirements under 32 and 48 Code of Federal Regulations (CFR). The Department will develop additional training, initiate and maintain metrics collection and analysis, develop enhanced assessment data automation, and support partnering with other agencies or military with the development of cybersecurity capabilities that will enhance the DIB's protection of sensitive unclassified information. The Department will increase the level of effort for coordinating with our international partners to support their efforts to meet CMMC assessment and DoD cybersecurity requirements.

C. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Securing the DIB: CMMC	0.000	10.000	25.655
FY 2023 Plans: - Revise Cybersecurity Maturity Model Certification (CMMC) framework based on the outcome of rulemaking, emerging cyber threats, and Department of Defense (DoD) leadership decisions. - Support development and execution of DIB cybersecurity initiatives in concert with Military Services, DoD agencies, and international partners in support of the CMMC rollout and protecting the DIB. - Receive final approval from Office of Management of Budget to codify the CMMC 2.0 program in the 32 Code of Federal Regulations (CFR). Continue rulemaking for developing program areas to include the international implementation for the program currently in work with DoD. - Support the Office of the Under Secretary of Defense for Acquisition and Sustainment (OUSD(A&S)) with the initial development of the 48 CFR rulemaking which updates the Defense Federal Regulations Supplement (DFARS)to permit the contractual implementation the 32 CFR approved CMMC 2.0 program. - Continue to develop and update required Congressional and Government Accountability Office reporting requirements and provide responses to Request For Information.			

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 0305104D8Z *I Securing the Defense Industrial Base (DIB): Cybersecurity Maturity Model Certification (CMMC)*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
- Support the continued assessment and development the Cybersecurity as a Service (CaaS) requirements. - Support the develop of training programs to further the education of DIB Cybersecurity and CMMC within the defense industrial base. - Continue development of the CMMC instantiation of the Enterprise Mission Assurance Support Service (eMASS)that provides the Department with a secure database for CMMC assessment data and automated data flows with the Department's Supplier Performance Risk System (SPRS), the Defense Industrial Base Cybersecurity Assessment Center (DIBCAC) as well as the Accreditation Body. Update CMMC eMASS to support the implementation of the CMMC scoring methodology and allow for the use of Plans of Actions and Milestones. ***FY 2024 Plans:*** - Implement the revised CMMC framework based on the outcome of rulemaking, emerging cyber threats, and DoD leadership decisions. - Complete adjudication of all public comments received on the proposed rule and receive Office of Management of Budget (OMB) approval to release as a final rule in 32 Code of Federal Regulations (CFR). - Codify the CMMC program in both 32 CFR and 48 CFR, and initiate implementation in DoD. - Continue to develop and update required Congressional and Government Accountability Office reports and Request For Information responses regarding the DoD CMMC Program. - Continue to support the develop and assessment of the Cybersecurity as a Service (CaaS) requirements. - Partner with the Defense Acquisition University and other entities to continue development of various training initiatives to further the cybersecurity and CMMC education for the Department and the defense industrial base. - In coordination with the Defense Information Systems Agency (DISA), continue to perform Enterprise Mission Assurance Support Service (eMASS) database upgrades and host services on milCloud 2.0. Complete the Level 3 workflow implementation in CMMC eMASS. - Initiate CMMC metrics collection of outcome-oriented performance measures effort to evaluate the program's effectiveness as a component of the Department's effort to enhance cybersecurity of the DIB. Additionally, the program will collect process focused metrics to evaluate the various internal CMMC process. These metrics will used to provide the program with the ability to conduct predictive analyses. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funds costs associated with the initial implementation of the CMMC 2.0 requirement, to include development of additional training, metrics collection and analysis, enhanced data automation for assessment data, and partnering with other agencies or military development of cybersecurity capabilities that will enhance the protection of sensitive unclassified information in the DIB. Funds			

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 0305104D8Z *I Securing the Defense Industrial Base (DIB): Cybersecurity Maturity Model Certification (CMMC)*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
will also support increased coordination requirements with international partners to support the initial implementation of CMMC 2.0.			
Accomplishments/Planned Programs Subtotals	0.000	10.000	25.655

D. Other Program Funding Summary ($ in Millions)

N/A

Remarks

E. Acquisition Strategy

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0305104D8Z / *Securing the Defense Industrial Base (DIB): Cybersecurity Maturity Model Certification (CMMC)*	Project (Number/Name) 334 / *Securing the DIB: CMMC*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Technical Support Services	Option/ Various	Various : Various	-	-		10.000	Mar 2023	25.655	Mar 2024	-		25.655	Continuing	Continuing	-
		Subtotal	-	-		10.000		25.655		-		25.655	Continuing	Continuing	N/A

	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	-		10.000		25.655		-		25.655	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 7	**R-1 Program Element (Number/Name)** PE 0305104D8Z / *Securing the Defense Industrial Base (DIB): Cybersecurity Maturity Model Certification (CMMC)*	**Project (Number/Name)** 334 / *Securing the DIB: CMMC*

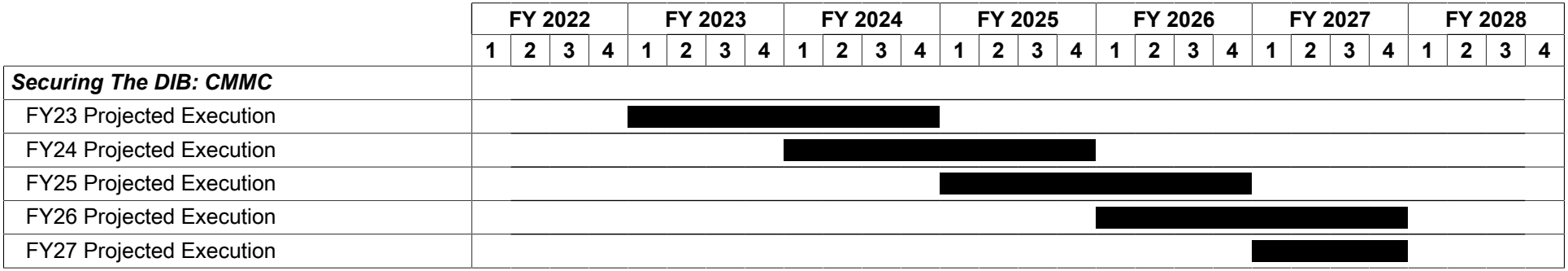

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 7	**R-1 Program Element (Number/Name)** PE 0305104D8Z / *Securing the Defense Industrial Base (DIB): Cybersecurity Maturity Model Certification (CMMC)*	**Project (Number/Name)** 334 / *Securing the DIB: CMMC*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Securing The DIB: CMMC				
FY23 Projected Execution	1	2023	4	2024
FY24 Projected Execution	1	2024	4	2025
FY25 Projected Execution	1	2025	4	2026
FY26 Projected Execution	1	2026	4	2027
FY27 Projected Execution	1	2027	4	2027

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 0305172D8Z / *Combined Advanced Applications*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	0.000	0.000	49.380	52.736	-	52.736	61.746	61.025	66.251	67.644	Continuing	Continuing
333: *Combined Advanced Applications*	0.000	0.000	49.380	52.736	-	52.736	61.746	61.025	66.251	67.644	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

Combined Advanced Applications details are classified and are reported in accordance with Title 10, United States Code, Section 119(a)(1) in the Special Access Program Annual Report to Congress.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	0.000	49.380	52.440	-	52.440
Current President's Budget	0.000	49.380	52.736	-	52.736
Total Adjustments	0.000	0.000	0.296	-	0.296
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	-	-	0.296	-	0.296

Change Summary Explanation

FY 2024 increase reflects minimal program adjustments to support Combined Advanced Applications.

C. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Combined Advanced Applications	-	49.380	52.736
Description: Information is classified.			
FY 2023 Plans:			

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 0305172D8Z / *Combined Advanced Applications*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Information is classified. ***FY 2024 Plans:*** Information is classified. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2024 increase reflects minimal program adjustments to support Combined Advanced Applications.			
Accomplishments/Planned Programs Subtotals	-	49.380	52.736

D. Other Program Funding Summary ($ in Millions)

N/A

Remarks

E. Acquisition Strategy

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 7	**R-1 Program Element (Number/Name)** PE 0305172D8Z / *Combined Advanced Applications*	**Project (Number/Name)** 333 / *Combined Advanced Applications*

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Technical Engineering Services	Option/ Various	Various : Various	-	-		28.640	Jul 2023	28.040	Jul 2024	-		28.040	Continuing	Continuing	-
Services Support	Option/ Various	Various : Various	-	-		10.070	May 2023	12.296	Jul 2024	-		12.296	Continuing	Continuing	-
		Subtotal	-	-		38.710		40.336		-		40.336	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Engineering Support	Option/ Various	Various : Various	-	-		10.670	Jul 2023	12.400	Jul 2024	-		12.400	Continuing	Continuing	-
		Subtotal	-	-		10.670		12.400		-		12.400	Continuing	Continuing	N/A

	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	-		49.380		52.736		-		52.736	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 7	**R-1 Program Element (Number/Name)** PE 0305172D8Z / *Combined Advanced Applications*	**Project (Number/Name)** 333 / *Combined Advanced Applications*

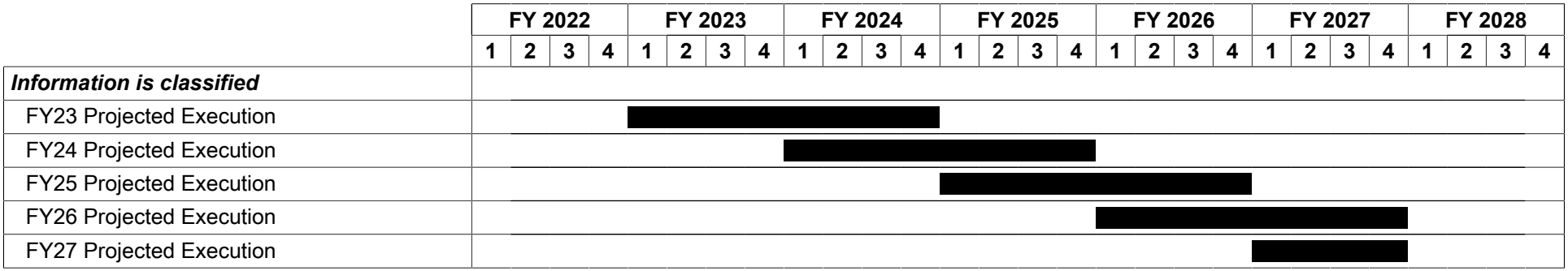

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 7	**R-1 Program Element (Number/Name)** PE 0305172D8Z / *Combined Advanced Applications*	**Project (Number/Name)** 333 / *Combined Advanced Applications*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Information is classified				
FY23 Projected Execution	1	2023	4	2024
FY24 Projected Execution	1	2024	4	2025
FY25 Projected Execution	1	2025	4	2026
FY26 Projected Execution	1	2026	4	2027
FY27 Projected Execution	1	2027	4	2027

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 0305186D8Z / *Policy R&D Programs*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	54.836	4.540	8.818	6.263	-	6.263	6.271	6.281	6.288	6.421	-	-
186: *Policy R&D Programs*	54.836	4.540	8.818	6.263	-	6.263	6.271	6.281	6.288	6.421	-	-

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

This program supports the Department's initiatives to Defend the Homeland, and Deter Aggression.

The Policy R&D Program supports the National Defense Strategy by providing analysis to overcome military security challenges. Since the global environment is dynamic, research is necessary for continued understanding of military structures, foreign cultures, and ethnic issues. Examines demographic data, investigates future global security challenges, provides insights to inform critical national security decisions, explores ways to build partnership capabilities to counter organizational warfare, develop foreign military infrastructure, and deny sanctuary to extremist groups. Program blends several disciplines including surveillance, operations, policy, information management, cyber policy, training and technology.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	4.591	6.214	6.228	-	6.228
Current President's Budget	4.540	8.818	6.263	-	6.263
Total Adjustments	-0.051	2.604	0.035	-	0.035
• Congressional General Reductions	-	-0.396			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	3.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.051	-			
• Program Adjustments	-	-	0.035	-	0.035

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2022	FY 2023
Project: 186: *Policy R&D Programs*		
Congressional Add: *Policy Research and Development Programs*	-	3.000
Congressional Add Subtotals for Project: 186	-	3.000

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 0305186D8Z / *Policy R&D Programs*

Congressional Add Details ($ in Millions, and Includes General Reductions)

	FY 2022	FY 2023
Congressional Add Totals for all Projects	-	3.000

Change Summary Explanation

FY 2024 minimal increase for program adjustments to account for inflation.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0305186D8Z / *Policy R&D Programs*	Project (Number/Name) 186 / *Policy R&D Programs*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
186: *Policy R&D Programs*	54.836	4.540	8.818	6.263	-	6.263	6.271	6.281	6.288	6.421	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Provide analysis to overcome military security challenges. Since the global environment is dynamic, research is necessary for continued understanding of military structures, foreign cultures, and ethnic issues. Examines demographic data, investigates future global security challenges, provides insights to inform critical national security decisions, explores ways to build partnership capabilities to counter organizational warfare, develop foreign military infrastructure, and deny sanctuary to extremist groups. Program blends several disciplines including surveillance, operations, policy, information management, cyber policy, training and technology.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Future Security Challenges	1.583	2.611	2.563

Description: Provides program management oversight and technical support to identify current and emerging future security challenges to the Department, and for international cooperation activities with Allies and international partners to confront these challenges. Anticipates exploitation of technology, including available and advanced capabilities, and work with the international commercial sector and academia concerning adversary's application of technology. Program explores processes and policy to integrate international capabilities across the spectrum of security challenges.

FY 2023 Plans:

Continue oversight and technical support to:

• Perform ongoing trend analysis and develop mitigation options for addressing program risks with increased emphasis on the INDO-PACOM AOR.

• Develop opportunities to apply risk management methodologies to identified program areas.

• Working with our international partners, develop net-centric enterprise technologies to remove international sharing barriers identified with maritime information, intelligence, and data being collected by DoD and foreign governments.

• Research military competition among nations in the Far and Middle East and highlight potential capabilities and policies each nation may utilize in future armed conflicts.

• Continue to enhance strategies and relationships with European nations based on the exchange of information through education opportunities and existing policies.

• Research and analyze particular Far (China) and Middle East countries as it relates to their decision-making process, financial position,
leadership, political dynamics, technical abilities and internal social tensions and stability.

• Continue research efforts within the Services and Combatant Commands to better analyze and demonstrate enduring

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 7	**R-1 Program Element (Number/Name)** PE 0305186D8Z / *Policy R&D Programs*	**Project (Number/Name)** 186 / *Policy R&D Programs*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
counterinsurgency operational capabilities. ***FY 2024 Plans:*** Continue efforts to include: • The INDO-PACOM AOR remains an area with increased emphasis and the program will continue to perform trend analysis and developing mitigation options. • Develop opportunities to apply risk management methodologies to identified program areas. • Working with our international partners, develop net-centric enterprise technologies to remove international sharing barriers identified with maritime information, intelligence, and data being collected by DoD and foreign governments. • Research military competition among nations in the Far and Middle East and highlight potential capabilities and policies each nation may utilize in future armed conflicts. • Continue to enhance strategies and relationships with European nations based on the exchange of information through education opportunities and existing policies. • Research and analyze particular Far (China) and Middle East countries as it relates to their decision-making process, financial position, leadership, political dynamics, technical abilities and internal social tensions and stability. • Continue research efforts within the Services and Combatant Commands to better analyze and demonstrate enduring counterinsurgency operational capabilities. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Decrease is due to Federally Funded Research and Development Center (FFRDC) reduction and in support of Departmental efficiencies.			
Title: Long Term Competitions (LTC) Program	2.257	2.507	3.000
Description: Request supports the Long Term Competitions (LTC) program which is an analytical effort chartered to provide the DoD senior leadership with an understanding of key long-term developments and dynamics in specific areas of the global security environment, and to develop competitive strategies for their consideration as the Department seeks to address these long term challenges. The LTC Program will provide rigorously analyzed competitive strategy recommendations to these senior DoD leaders, and will require the support of organizations and experts outside of government to deliver the highest quality analysis, concepts and recommendations. Funding for the LTC program will be used to: bring outside experts into Task Force working groups and strategy review teams; contract studies; support wargaming and workshops; conduct analytical studies of key developments and dynamics, and their impact on the future security environment and U.S. military capabilities in that environment; and explore new approaches to addressing key analytical requirements. Assessments of the ability of future forces to achieve objectives at the campaign level. These assessments include wargaming, qualitative, and quantitative analytic methods. They will both inform and be informed by the Support for Strategic Analysis (SSA)			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 7	**R-1 Program Element (Number/Name)** PE 0305186D8Z / *Policy R&D Programs*	**Project (Number/Name)** 186 / *Policy R&D Programs*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
defense planning scenarios (DPS). They will identify risk and potential trade-space among force structure, capabilities, and readiness to inform senior leader decision-making. ***FY 2023 Plans:*** Specific efforts are classified. ***FY 2024 Plans:*** Specific efforts are classified. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The increase supports the growth in the number of LTC program studies.			
Title: Defense Planning Scenarios Activities ***Description:*** This program is classified. ***FY 2023 Plans:*** Specific efforts are classified. ***FY 2024 Plans:*** Specific efforts are classified. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** No change to planned costs.	0.700	0.700	0.700
Accomplishments/Planned Programs Subtotals	4.540	5.818	6.263

	FY 2022	FY 2023
Congressional Add: Policy Research and Development Programs	-	3.000
FY 2023 Plans: Supports off-shore wind energy research and development.		
Congressional Adds Subtotals	-	3.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0305186D8Z / *Policy R&D Programs*	Project (Number/Name) 186 / *Policy R&D Programs*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Policy R&D Programs	Various	National Defense Univ, FFRDCs : Various	54.836	4.540		8.818		6.263		-		6.263	Continuing	Continuing	N/A
		Subtotal	54.836	4.540		8.818		6.263		-		6.263	Continuing	Continuing	N/A

Remarks

The Policy R&D Program provides analysis to overcome military challenges and for continued understanding of military structures, foreign cultures and ethnic issues.

	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	54.836	4.540		8.818		6.263		-		6.263	Continuing	Continuing	N/A

Remarks

NA

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 7	**R-1 Program Element (Number/Name)** PE 0305186D8Z / *Policy R&D Programs*	**Project (Number/Name)** 186 / *Policy R&D Programs*

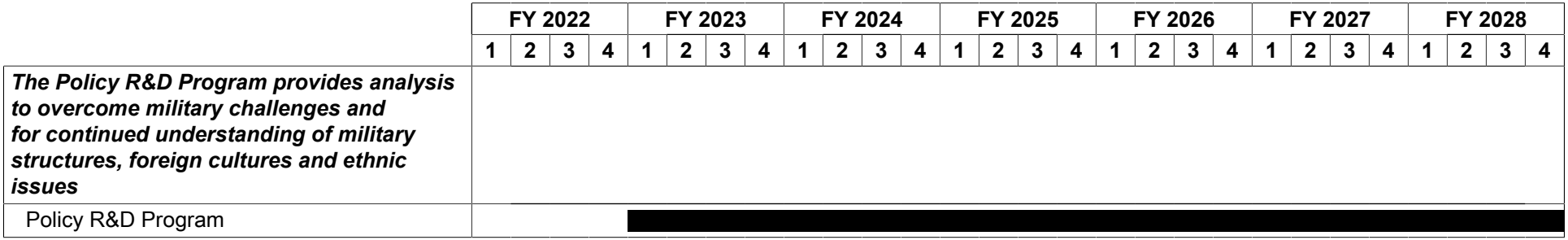


Exhibit R-4A, RDT&E Schedule Details: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 7	**R-1 Program Element (Number/Name)** PE 0305186D8Z / *Policy R&D Programs*	**Project (Number/Name)** 186 / *Policy R&D Programs*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
The Policy R&D Program provides analysis to overcome military challenges and for continued understanding of military structures, foreign cultures and ethnic issues				
Policy R&D Program	1	2023	4	2028

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 0305199D8Z / *Net Centricity*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	151.518	12.651	17.192	23.275	-	23.275	20.786	19.410	19.312	19.718	Continuing	Continuing
199: *GIG Evaluation Facilities (GIG-EF) and GIG Enterprise-Wide Systems Engineering Advisory Activities*	151.518	12.651	17.192	23.275	-	23.275	20.786	19.410	19.312	19.718	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

This program supports the Department's initiatives to Deter Aggression, Defend the Homeland, and Build Sustainable and Long-Term Advantage.

The Net Centricity program provides technical analysis, systems engineering and capability oversight of programs, projects, initiatives and activities to maximize the Department’s return on investment in information technology resources and affect a comprehensive approach for assessing and procuring critical information systems from initial design through capability development. Specific Command, Control, and Communications (C3) disciplines include: Tactical (Space, Aerial, Terrestrial, and Maritime) Communications, Applications, Services, Information Sharing, and Command, Control, Communications (C3) Infrastructure; Satellite Communications (SATCOM) including SATCOM terminals and gateways and associated Defense; Electromagnetic Spectrum (EMS) Enterprise capabilities, infrastructure, architectures, and data. Information Systems Network (DISN) infrastructure; commercial mobile devices, and Positioning, Navigation and Timing (PNT). DoD CIO provides strategic direction, policy guidance, and oversight that enables the Department to effectively research, define, prioritize, acquire, field, and sustain C3 capabilities in support of DoD operations and the warfighter.

These funds provide the capability for the warfighter to research, conduct technical analyses and assessments, evaluate, manage and deconflict radio frequencies through ground, air, and space communication networks. The funds will be used to develop and synchronize information assurance and mission assurance capabilities with other joint information environment capabilities to provide secure access to information and services (e.g. Cryptographic Modernization Management plan). Additionally, funding will continue to be utilized to support development of common standards and protocols across the DoD. This effort includes the Joint Interoperability Enhancement Process (IEP) that allows operators, engineers, and program managers to verify capabilities and identify issues in a design with Joint / Allied units prior to system fielding, or with fielded systems to identify required changes for systems upgrade planning.

These joint standards, protocols, and processes will be used for implementation and testing to ensure the TDL capabilities are synchronized with the development and integration timelines of other planned network-enabled DODIN initiatives. The DoD cannot assume the same robust, uninterrupted, tactical-to-strategic command and control network will remain intact against a peer-level adversary. Rather than existing across a single domain, these new network paths must leverage space, air, land, surface, sub-surface, and cyber to ensure redundancy against attack. To build confidence in our communication ability in a contested theater, the DoD must make

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 0305199D8Z / *Net Centricity*

targeted investments that increase communication resiliency. The Net Centricity program provides this resilient architecture and leverages multiple waveforms carried across space, air, land, surface, sub-surface and cyber to minimize periods that C2 will be degraded when communicating in a highly contested environment.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	13.132	17.917	23.146	-	23.146
Current President's Budget	12.651	17.192	23.275	-	23.275
Total Adjustments	-0.481	-0.725	0.129	-	0.129
• Congressional General Reductions	-	-0.725			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.481	-			
• Program Adjustments	-	-	0.129	-	0.129

Change Summary Explanation

The increase from FY 2023 to FY 2024 is due to additional modeling and simulation efforts, development and test, and for spectrum research, technical analyses and assessment, evaluation and sustainable spectrum access activities; validate and monitor the efficacy of the multiple systems Mode S IFF implementation; finalize Stage2/3 DoD/FAA/NTIA Model and predecessor metrics; Develop 5G technology standards contributions and support continued analysis in the area of Public Safety Communications (PSC) including NextGen 911, FirstNet and Land Mobile Radio (LMR).

C. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Net Centricity Plans and Accomplishments	12.651	17.192	23.275
Description: The Net Centricity program provides technical analysis, systems engineering and capability oversight of programs, projects, initiatives and activities to maximize the Department's return on investment in information technology resources and affect a comprehensive approach for assessing and procuring critical information systems from initial design through capability development. Specific Command, Control, and Communications (C3) disciplines include: Tactical (Space, Aerial, Terrestrial, and Maritime) Communications, Applications, Services, Information Sharing, and Command, Control, Communications (C3) Infrastructure; Satellite Communications (SATCOM) including SATCOM terminals and gateways and associated Defense; Electromagnetic Spectrum (EMS) Enterprise capabilities, infrastructure, architectures, and data. Information Systems Network (DISN) infrastructure; commercial mobile devices, and Positioning, Navigation and Timing (PNT). DoD CIO provides strategic direction, policy guidance, and oversight that enables the Department to effectively research, define, prioritize, acquire, field, and sustain C3 capabilities in support of DoD operations and the warfighter.			

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 0305199D8Z / *Net Centricity*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
FY 2023 Plans: Continue technical assessment/refine commercial wireless policy guidance to support CMD strategy implementation; continue assessments of the effects of cybersecurity policies. – Continue to refine CMD certification processes, Mobile Application Management (MAM)/Mobile Device Management (MDM) guidelines, and guidelines for personal user based enforcement; update approved product matrix for CMD. – Continue implementation assessments to refine mobile application and device strategies. – Review/refine mobile application approval process guides, DoD Mobile PKI guides, and procedure for the Electronic Flight Bag (EFB). – Development of an analytical model that facilitates rapid, safe, and operationally adequate access to the 1030/1090MHz spectrum. _ Develop a resilient, secure, and adaptive tactical IT infrastructure capable of operating within a contested, congested, and operationally limited electromagnetic Spectrum (EMS) environment, capable of sharing EMS data across DoD at all classification levels. _ Develop EMS statistical and associative modeling and simulation techniques. – Modernize DoD's spectrum dependent systems to a fully integrated information and decision support architecture for all-domain maneuver and fires superiority. – Modernize spectrum data, data collection, databases, storage retrieval, and aggregation. – Develop AI-enabled spectrum data analytics. – Modernize Electromagnetic Battle Management, Situational Awareness and C2 integration. – Continue 5G experimentation for dynamic, bidirectional, cognitive spectrum sharing. – Continue technical and business case analyses for Commercial mobile devices and voice encryption. – Update the Radio and Communication Security modernization plan for tactical radios. Assess Service implementation. – Continue analysis to update the CJTF Architecture to reflect Component C4II capability plans. – Continue development of interoperable Land Mobile Radio (LMR) standards to support public safety communications. – Continue analysis to of LMR policy implementation; refine procedures to support LMR implementation in the DoD. – Continue analysis of Waveform Development and Management in the DoD. – Continue analysis to maintain authoritative list of DoD-approved waveforms and supporting repository to maintain waveform baseline. – Continue technical analysis on methods for securing ISR data over wireless platforms and extended encryption of these devices, conduct implementation assessments through UAS encryption data calls. – Continue technical analysis and support for Protected, Wideband, Narrowband, and Commercial SATCOM. Assess strategy alignment. – Update SATCOM Synchronization Architectures for Protected, Wideband, Narrowband and Commercial SATCOM capabilities.			

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 0305199D8Z / *Net Centricity*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
– Continue compliance reviews of select programs; identify shortfalls in program bandwidth supportability planning and analysis and provide recommendations for corrective action. – Continue efforts to implement SATCOM Gateway Right-sizing approaches to optimize SATCOM gateways across the defense enterprise. – Continue technical/requirements analysis and feasibility assessments for implementing legacy narrowband solutions for MUOS payload. – Continue analysis to support implementation approaches for JIPM alternatives. – Conduct follow-on analysis in support of the Protected SATCOM AoA recommendations and preferred alternative. – Continue support for the WCS AOA and follow-on analysis. – Continue technical analysis to improve DoD utilization of Commercial SATCOM capabilities. – Conduct Airborne ISR (AISR) transport analysis of alternatives follow on analysis based on AoA recommendations and preferred alternatives. Update AISR transport reference and solution architecture artifacts to support implementation. – Continue technical analysis of Coalition C2 and MNIS, analyze Coalition C2 functional requirements, strategic policy development and capability strategies to guide Mission Partner Environment (MPE) development. – Continue technical analysis of selected joint and Service C2 programs/initiatives to promote enterprise approaches for data and services. – Continue technical analysis for the implementation of Common Mission Network Transport (CMNT) capability. – Continue technical analysis of MNIS programs and initiatives, related acquisition strategies, and functional requirements. – Continue analyses to address adoption and evolution of mission services as candidate enterprise services for the JIE. – Conduct follow-on analysis to inform implementation of the EoA recommendations for the GCCS Family of Systems. – Continue analysis of capability needs to enable command and control across the JIE. Evaluate Enterprise Operations Center architectures, and information requirements to support investment decisions in JIE C2 capabilities. – Continue analysis of requirements, capability gaps and integrated priority lists of all joint requirements for C3 capabilities to support DoD CIO engagement in the C4/Cyber Functional Capability Board. – Continue wireless architecture and advanced technologies analysis to inform Department-wide policies and implementation of mobility solutions. – Continue technical analysis to support compliance oversight of waveform policies and technical profile specifications. – Continue efforts to refine communications policies and analysis technologies applicable to commercial mobile devices. – Continue DoD Commercial Mobility implementation and systems engineering analysis Defense Mobile Unclassified and Classified Capabilities (DMUC/DMCC). – Continue analysis to support DMUC derived credentials implementation. – Continue analysis of 5G technology for DoD tactical use. – Develop 5G standards engagement plan. – Continue technical analysis for Network Management (NM) interoperability, architecture and data artifacts.			

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 0305199D8Z / *Net Centricity*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
– Continue systems engineering and architecture analysis for JIE tactical processing nodes (TPNs). – Continue analysis to address implementation of TSVSIC for tactical radios. – Continue efforts to determine strengths, weaknesses, and uses of waveforms and network management capabilities; identified gaps; assesse new technologies in support of waveform and network management efforts. – Continue technical analysis to support implementation of the network management strategy and roadmap. – Continue development of data ontologies and NIEM compliant IEPDs for network management. – Continue technical analysis in support of C3 policies, plans, studies, roadmaps, and capability assessments. – Continue end-to-end analysis of the SATCOM environment; support technical evaluations of end-to-end capabilities. – Continue studies and analysis in support of the DoD CIO's Mobile Device Strategy and Mobile Device Security Efforts. – Continue Hub-Based HF Communications Concept to provide protected high rate communications needed for long range connectivity in satellite-denied environments – Continue Wideband SATCOM AoA user demand projections develop planning decks and scenario guidance with Joint Staff/J6 coordinated scenarios description paper and CAPE concurrence. – Continue technical analysis/studies related to the migration of current applications and services to DoD Core Data Centers and support rationalization of applications for the JIE. – Continue technical analysis to support implementation of JIE capability upgrades and technical planning. – Continue studies and analysis to progress of JIE technical implementation actions. – Continue technical analysis and studies related to SDN as an approach to network normalization and security. – Continue Joint IEP analysis for Link 16 and work on adding Variable Message Format (VMF), through the FYDP. – Continue support for Allied and Coalition interoperability efforts including NATO migration plan, JSF partner interoperability, US/ Swedish MIEA, and integration of US and foreign communications and C2 systems. – Assess developing waveform technologies for improving the robustness and scalability of current TDL networks. – Continue efforts to refine and implement gateway right sizing options; evaluate RF terminal solutions and baseband equipment suites including the number and types of equipment needed to meet the future needs of the war fighter. Coordinate and facilitate Teleport Program Office oversight initiatives. – Continue analysis to evolve SATCOM networks toward EOIP modem architecture. Continue support of video dissemination and two-way GBS capabilities to inform follow on implementation across the Department. – Continue analysis for the SATCOM International Standards Committee (SISC). Participate in the development of US lead Standardized Agreements (STANAGS) and provide a technical review of other nation's STANAG's for accuracy, completeness, and feasibility. – Continue efforts to evaluate and implement acquisition strategies for U.S. support to NATO SATCOM. – Continue technical analysis and facilitate execution of the SATCOM Systems Engineering Group (SSEG). – Continue efforts to maintain JIE Infrastructure Framework and synchronization roadmap to track infrastructure deployment or implementation.			

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 0305199D8Z / *Net Centricity*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
– Continue acquisition like review of JIE objectives, plans, technical approaches, schedules and cost factors to support technical reviews of JIE implementation. – Support the development of business case activities as required. Develop guidance (e.g., information system security engineering guidance) and programming recommendations to ensure the integration of Trusted Systems Networks concepts and processes into the acquisition and maintenance of DoD information systems, enclaves, and services, including the purchase and integration of tactical communication commodities.			
FY 2024 Plans: Continue technical assessment/refine commercial wireless policy guidance to support CMD strategy implementation; continue assessments of the effects of cybersecurity policies. – Continue to refine CMD certification processes, Mobile Application Management (MAM)/Mobile Device Management (MDM) guidelines, and guidelines for personal user based enforcement; update approved product matrix for CMD. – Continue implementation assessments to refine mobile application and device strategies. – Review/refine mobile application approval process guides, DoD Mobile PKI guides, and procedure for the Electronic Flight Bag (EFB). – Development of an analytical model that facilitates rapid, safe, and operationally adequate access to the 1030/1090MHz spectrum. _ Develop a resilient, secure, and adaptive tactical IT infrastructure capable of operating within a contested, congested, and operationally limited electromagnetic Spectrum (EMS) environment, capable of sharing EMS data across DoD at all classification levels. _ Develop EMS statistical and associative modeling and simulation techniques. – Modernize DoD's spectrum dependent systems to a fully integrated information and decision support architecture for all-domain maneuver and fires superiority. – Modernize spectrum data, data collection, databases, storage retrieval, and aggregation. – Develop AI-enabled spectrum data analytics. – Modernize Electromagnetic Battle Management, Situational Awareness and C2 integration. – Continue 5G experimentation for dynamic, bidirectional, cognitive spectrum sharing. – Continue technical and business case analyses for Commercial mobile devices and voice encryption. – Update the Radio and Communication Security modernization plan for tactical radios. Assess Service implementation. – Continue analysis to update the CJTF Architecture to reflect Component C4II capability plans. – Continue development of interoperable Land Mobile Radio (LMR) standards to support public safety communications. – Continue analysis to of LMR policy implementation; refine procedures to support LMR implementation in the DoD. – Continue analysis of Waveform Development and Management in the DoD.			

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 0305199D8Z / *Net Centricity*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
– Continue analysis to maintain authoritative list of DoD-approved waveforms and supporting repository to maintain waveform baseline. – Continue technical analysis on methods for securing ISR data over wireless platforms and extended encryption of these devices, conduct implementation assessments through UAS encryption data calls. – Continue technical analysis and support for Protected, Wideband, Narrowband, and Commercial SATCOM. Assess strategy alignment. – Update SATCOM Synchronization Architectures for Protected, Wideband, Narrowband and Commercial SATCOM capabilities. – Continue compliance reviews of select programs; identify shortfalls in program bandwidth supportability planning and analysis and provide recommendations for corrective action. – Continue efforts to implement SATCOM Gateway Right-sizing approaches to optimize SATCOM gateways across the defense enterprise. – Continue technical/requirements analysis and feasibility assessments for implementing legacy narrowband solutions for MUOS payload. – Continue analysis to support implementation approaches for JIPM alternatives. – Conduct follow-on analysis in support of the Protected SATCOM AoA recommendations and preferred alternative. – Continue support for the WCS AOA and follow-on analysis. – Continue technical analysis to improve DoD utilization of Commercial SATCOM capabilities. – Conduct Airborne ISR (AISR) transport analysis of alternatives follow on analysis based on AoA recommendations and preferred alternatives. Update AISR transport reference and solution architecture artifacts to support implementation. – Continue technical analysis of Coalition C2 and MNIS, analyze Coalition C2 functional requirements, strategic policy development and capability strategies to guide Mission Partner Environment (MPE) development. – Continue technical analysis of selected joint and Service C2 programs/initiatives to promote enterprise approaches for data and services. – Continue technical analysis for the implementation of Common Mission Network Transport (CMNT) capability. – Continue technical analysis of MNIS programs and initiatives, related acquisition strategies, and functional requirements. – Continue analyses to address adoption and evolution of mission services as candidate enterprise services for the JIE. – Conduct follow-on analysis to inform implementation of the EoA recommendations for the GCCS Family of Systems. – Continue analysis of capability needs to enable command and control across the JIE. Evaluate Enterprise Operations Center architectures, and information requirements to support investment decisions in JIE C2 capabilities. – Continue analysis of requirements, capability gaps and integrated priority lists of all joint requirements for C3 capabilities to support DoD CIO engagement in the C4/Cyber Functional Capability Board. – Continue wireless architecture and advanced technologies analysis to inform Department-wide policies and implementation of mobility solutions. – Continue technical analysis to support compliance oversight of waveform policies and technical profile specifications.			

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 0305199D8Z / *Net Centricity*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
– Continue efforts to refine communications policies and analysis technologies applicable to commercial mobile devices. – Continue DoD Commercial Mobility implementation and systems engineering analysis Defense Mobile Unclassified and Classified Capabilities (DMUC/DMCC). – Continue analysis to support DMUC derived credentials implementation. – Continue analysis of 5G technology for DoD tactical use. – Develop 5G standards engagement plan. – Continue technical analysis for Network Management (NM) interoperability, architecture and data artifacts. – Continue systems engineering and architecture analysis for JIE tactical processing nodes (TPNs). – Continue analysis to address implementation of TSVSIC for tactical radios. – Continue efforts to determine strengths, weaknesses, and uses of waveforms and network management capabilities; identified gaps; assesse new technologies in support of waveform and network management efforts. – Continue technical analysis to support implementation of the network management strategy and roadmap. – Continue development of data ontologies and NIEM compliant IEPDs for network management. – Continue technical analysis in support of C3 policies, plans, studies, roadmaps, and capability assessments. – Continue end-to-end analysis of the SATCOM environment; support technical evaluations of end-to-end capabilities. – Continue studies and analysis in support of the DoD CIO's Mobile Device Strategy and Mobile Device Security Efforts. – Continue Hub-Based HF Communications Concept to provide protected high rate communications needed for long range connectivity in satellite-denied environments – Continue Wideband SATCOM AoA user demand projections develop planning decks and scenario guidance with Joint Staff/J6 coordinated scenarios description paper and CAPE concurrence. – Continue technical analysis/studies related to the migration of current applications and services to DoD Core Data Centers and support rationalization of applications for the JIE. – Continue technical analysis to support implementation of JIE capability upgrades and technical planning. – Continue studies and analysis to progress of JIE technical implementation actions. – Continue technical analysis and studies related to SDN as an approach to network normalization and security. – Continue Joint IEP analysis for Link 16 and work on adding Variable Message Format (VMF), through the FYDP. – Continue support for Allied and Coalition interoperability efforts including NATO migration plan, JSF partner interoperability, US/ Swedish MIEA, and integration of US and foreign communications and C2 systems. – Assess developing waveform technologies for improving the robustness and scalability of current TDL networks. – Continue efforts to refine and implement gateway right sizing options; evaluate RF terminal solutions and baseband equipment suites including the number and types of equipment needed to meet the future needs of the war fighter. Coordinate and facilitate Teleport Program Office oversight initiatives. – Continue analysis to evolve SATCOM networks toward EOIP modem architecture. Continue support of video dissemination and two-way GBS capabilities to inform follow on implementation across the Department.			

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 0305199D8Z / *Net Centricity*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
– Continue analysis for the SATCOM International Standards Committee (SISC). Participate in the development of US lead Standardized Agreements (STANAGS) and provide a technical review of other nation's STANAG's for accuracy, completeness, and feasibility. – Continue efforts to evaluate and implement acquisition strategies for U.S. support to NATO SATCOM. – Continue technical analysis and facilitate execution of the SATCOM Systems Engineering Group (SSEG). – Continue efforts to maintain JIE Infrastructure Framework and synchronization roadmap to track infrastructure deployment or implementation. – Continue acquisition like review of JIE objectives, plans, technical approaches, schedules and cost factors to support technical reviews of JIE implementation. – Support the development of business case activities as required. Develop guidance (e.g., information system security engineering guidance) and programming recommendations to ensure the integration of Trusted Systems Networks concepts and processes into the acquisition and maintenance of DoD information systems, enclaves, and services, including the purchase and integration of tactical communication commodities. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The increase from FY 2023 to FY 2024 is due to additional modeling & simulation efforts, development and testing, and for spectrum research, technical analyses and assessments, evaluation, and sustainable spectrum access activities; validate and monitor the efficacy of the multiple systems Mode S IFF implementation; finalize Stage2/3 DoD/FAA/NTIA Model and predecessor metrics; Develop 5G technology standards contributions and support continued analysis in the area of Public Safety Communications (PSC) including NextGen 911, FirstNet and Land Mobile Radio (LMR).			
Accomplishments/Planned Programs Subtotals	12.651	17.192	23.275

D. Other Program Funding Summary ($ in Millions)

N/A

Remarks

E. Acquisition Strategy

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 7	**R-1 Program Element (Number/Name)** PE 0305199D8Z / *Net Centricity*	**Project (Number/Name)** 199 / *GIG Evaluation Facilities (GIG-EF) and GIG Enterprise-Wide Systems Engineering Advisory Activities*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Studies and Analysis	Various	Various : Various	29.481	0.084	Mar 2022	0.128	Mar 2023	0.146	Mar 2024	-		0.146	Continuing	Continuing	Continuing
Technical Engineering Services	Various	Various : Various	52.709	6.273	Jul 2022	9.503	Jul 2023	10.129	Mar 2024	-		10.129	Continuing	Continuing	Continuing
		Subtotal	82.190	6.357		9.631		10.275		-		10.275	Continuing	Continuing	N/A

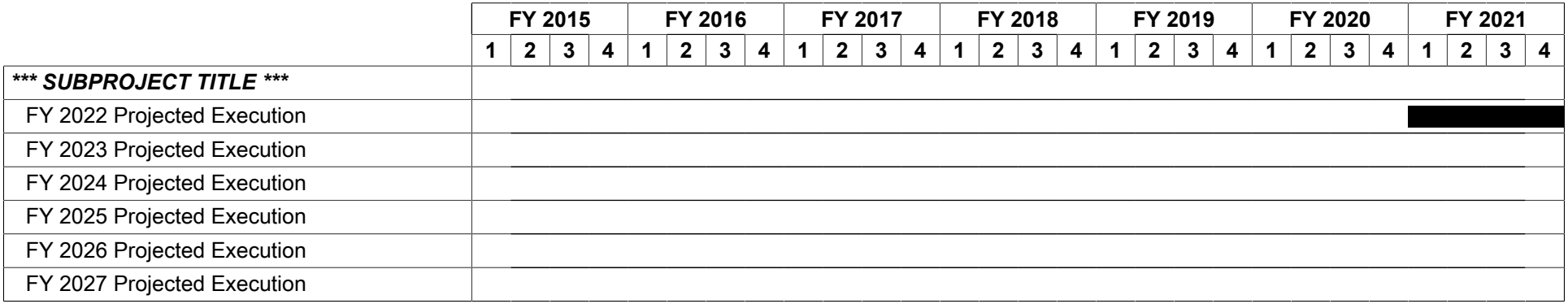
Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support	Various	Various : Various	28.836	6.090	Mar 2022	-		5.000	Mar 2024	-		5.000	Continuing	Continuing	Continuing
Program Support	FFRDC	Various : Various	2.869	-		-		-		-		-	-	-	-
Engineering Support	FFRDC	Various : Various	29.289	0.204	Dec 2021	7.561	Mar 2023	8.000	Mar 2024	-		8.000	Continuing	Continuing	Continuing
R&D Support	Various	Various : Various	8.334	-		-		-		-		-	-	-	-
		Subtotal	69.328	6.294		7.561		13.000		-		13.000	Continuing	Continuing	N/A

	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	151.518	12.651		17.192		23.275		-		23.275	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 7	**R-1 Program Element (Number/Name)** PE 0305199D8Z / *Net Centricity*	**Project (Number/Name)** 199 / *GIG Evaluation Facilities (GIG-EF) and GIG Enterprise-Wide Systems Engineering Advisory Activities*



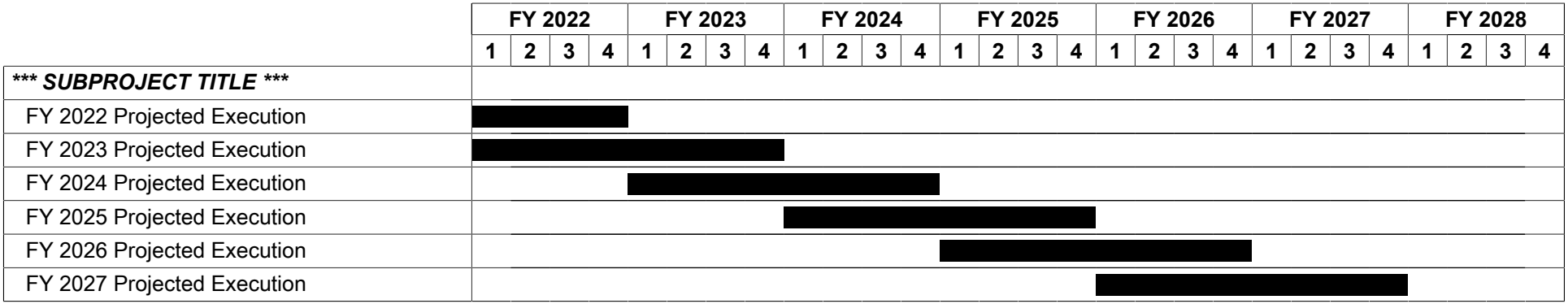


Exhibit R-4A, RDT&E Schedule Details: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 7	**R-1 Program Element (Number/Name)** PE 0305199D8Z / *Net Centricity*	**Project (Number/Name)** 199 / *GIG Evaluation Facilities (GIG-EF) and GIG Enterprise-Wide Systems Engineering Advisory Activities*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
****** SUBPROJECT TITLE ******				
FY 2022 Projected Execution	1	2021	4	2022
FY 2023 Projected Execution	1	2022	4	2023
FY 2024 Projected Execution	1	2023	4	2024
FY 2025 Projected Execution	1	2024	4	2025
FY 2026 Projected Execution	1	2025	4	2026
FY 2027 Projected Execution	1	2026	4	2027

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 0305245D8Z / *Intelligence Capabilities and Innovation Investments*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	0.000	0.000	4.575	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.575
245: *Intelligence Capabilities & Innovation Investments*	0.000	0.000	4.575	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.575

Note

This is not a new start program in FY 2023. This PE's, prior year is reflected in BA 6.

A. Mission Description and Budget Item Justification

Classified program.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	0.000	4.575	0.000	0.000	0.000
Current President's Budget	0.000	4.575	0.000	0.000	0.000
Total Adjustments	0.000	0.000	0.000	0.000	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			

Change Summary Explanation

No change in FY 2024.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0305245D8Z / *Intelligence Capabilities and Innovation Investments*	Project (Number/Name) 245 / *Intelligence Capabilities & Innovation Investments*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
245: *Intelligence Capabilities & Innovation Investments*	0.000	0.000	4.575	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.575
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Classified

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Intelligence Capabilities & Innovation Investments	-	4.575	0.000
Description: Classified ***FY 2023 Plans:*** Classified ***FY 2024 Plans:*** N/A ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Classified			
Accomplishments/Planned Programs Subtotals	-	4.575	0.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

The contracting strategy follows guidance outlined in the DoD 5000 series directives, Federal Acquisition Regulation (FAR), and Defense Federal Acquisition Regulation (DFAR).

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 7	**R-1 Program Element (Number/Name)** PE 0305245D8Z / *Intelligence Capabilities and Innovation Investments*	**Project (Number/Name)** 245 / *Intelligence Capabilities & Innovation Investments*

Remarks

Classified

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 7	**R-1 Program Element (Number/Name)** PE 0305245D8Z / *Intelligence Capabilities and Innovation Investments*	**Project (Number/Name)** 245 / *Intelligence Capabilities & Innovation Investments*

	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Intelligence Capabilities & Innovation Investments																												
Intelligence Capabilities and Innovation Investments					[redacted]																							

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 7	**R-1 Program Element (Number/Name)** PE 0305245D8Z / *Intelligence Capabilities and Innovation Investments*	**Project (Number/Name)** 245 / *Intelligence Capabilities & Innovation Investments*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Intelligence Capabilities & Innovation Investments				
Intelligence Capabilities and Innovation Investments	1	2023	4	2023

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 0305387D8Z / *Homeland Defense Technology Transfer Program*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	25.899	1.261	1.864	1.879	-	1.879	1.882	1.883	1.885	1.925	-	-
387: *Homeland Defense Technology Transfer Program*	25.899	1.261	1.864	1.879	-	1.879	1.882	1.883	1.885	1.925	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

This program supports the Department's initiatives to Defend the Homeland, Build Sustainable and Long-Term, Advantage, and Taking Care of People.

The Homeland Defense Technology Transfer program ensures a successful and balanced transfer of dual-use technology equipment and information to first responders without impeding military readiness. Accelerates dual-use tech transfer to first responders, increases effectiveness of equipment transfers to first responders, and transfers technology through a transitional effort that has dual utility to improve homeland security and enhance public safety without degrading military readiness. The program meets the Congressional intent of Sec 1401 of the National Defense Authorization Act for FY2003 (P.L. 107-314) and supports the National Defense Strategy through continuously delivering performance with affordability and speed as we change Departmental mindset, culture, and management systems.

The program consolidates and coordinates various military endeavors that pass technology and equipment to first responders. Works with a variety of DoD activities, interagency partners, and first responder organizations to ensure that dual-use military technology is expedited into the commercial sector for use by law enforcement, fire, and emergency medical service personnel. Works with the Military Departments and Defense Logistics Agency to ensure that appropriate excess military equipment is made available to the first responder community on an expedited basis. Fulfills Congressional intent to help improve public safety and enhance public security.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 0305387D8Z / *Homeland Defense Technology Transfer Program*

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	1.273	1.864	1.869	-	1.869
Current President's Budget	1.261	1.864	1.879	-	1.879
Total Adjustments	-0.012	0.000	0.010	-	0.010
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.012	-			
• Program Adjustment	-	-	0.010	-	0.010

Change Summary Explanation

Minimal programmatic adjustments for FY 2024 to support a successful and balanced transfer of dual-use technology equipment and information to first responders without impeding military readiness.

C. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Homeland Defense Technology Transfer Program	1.261	1.864	1.879
Description: Provide outreach through coordination and cooperation with inter-agency partners to provide dual-use technology and equipment to first responders. Ensure DoD components conduct Technology Transfer programs that are appropriate for the respective component. Provide information to stakeholders on equipment and technology use and availability. ***FY 2023 Plans:*** Support the first responder community. - Use a consortium of subject matter experts/governance councils to prioritize technology transfer requirements and expedite DoD dual-use technologies. - Continue program outreach activities and prioritize outreach to reflect efficiencies. - Enhance and expedite excess equipment transfer capabilities from service level divestiture efforts and overseas contingency operations. ***FY 2024 Plans:*** Continue efforts in support of the first responder community. - Use a consortium of subject matter experts/governance councils to prioritize technology transfer requirements and expedite DoD dual-use technologies. - Continue program outreach activities and prioritize outreach to reflect efficiencies.			

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 0305387D8Z / *Homeland Defense Technology Transfer Program*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
- Enhance and expedite excess equipment transfer capabilities from service level divestiture efforts and overseas contingency operations. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding remains consistent for the program into FY2024 and support a successful and balanced transfer of dual-use technology equipment and information to first responders without impeding military readiness.			
Accomplishments/Planned Programs Subtotals	1.261	1.864	1.879

D. Other Program Funding Summary ($ in Millions)

N/A

Remarks

E. Acquisition Strategy

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0305387D8Z / *Homeland Defense Technology Transfer Program*	Project (Number/Name) 387 / *Homeland Defense Technology Transfer Program*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Homeland Defense Transfer of Dual-use Technology Equipment	MIPR	Navy Commands : SPAWAR, NSWC, ONR	25.899	1.261		1.864		1.879		-		1.879	Continuing	Continuing	-
		Subtotal	25.899	1.261		1.864		1.879		-		1.879	Continuing	Continuing	N/A

Remarks

N/A

	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	25.899	1.261		1.864		1.879		-		1.879	Continuing	Continuing	N/A

Remarks

N/A

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 7	**R-1 Program Element (Number/Name)** PE 0305387D8Z / *Homeland Defense Technology Transfer Program*	**Project (Number/Name)** 387 / *Homeland Defense Technology Transfer Program*

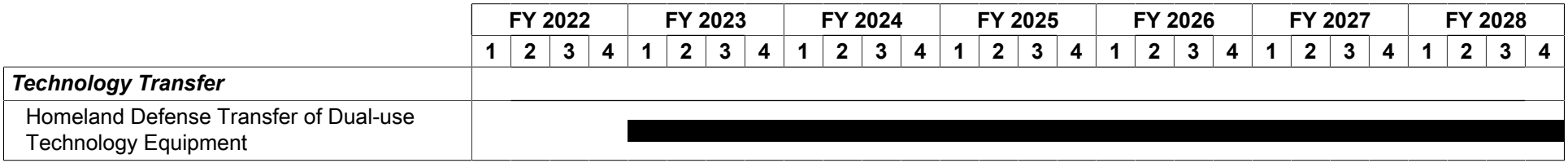

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 7	**R-1 Program Element (Number/Name)** PE 0305387D8Z / *Homeland Defense Technology Transfer Program*	**Project (Number/Name)** 387 / *Homeland Defense Technology Transfer Program*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Technology Transfer				
Homeland Defense Transfer of Dual-use Technology Equipment	1	2023	4	2028

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 0505167D8Z / *Domestic Prepare Against WMD*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	1.760	-	1.760	1.760	3.770	3.800	3.800	Continuing	Continuing
785: *Domestic Prepare Against WMD*	-	0.000	0.000	1.760	-	1.760	1.760	3.770	3.800	3.800	Continuing	Continuing

Note

New Start (Y/N): Yes

A. Mission Description and Budget Item Justification

As a FY 2024 new start, this program supports the Department's initiatives to Deter Aggression, Defend the Homeland, Provide Nuclear Deterrence, and Build Sustainable and Long-Term Advantage.

The Radiological and Nuclear (Rad/Nuc) Detection Gear Modernization and Procurement for the Joint Force research and development activities (RDAs) enhance DoD's capabilities to campaign across the domains of threats and spectrums of conflict by: improving our capability to operate in the Radiological and Nuclear environment – including in the information and early warning domain; reinforcing our own warfighting advantages by providing increased capability to detect and identify radiological and nuclear threats; and enhancing our interoperability and access to address acute forms of coercion. This program is specifically geared to provide improved rad/nuc detection, indications and identification capability to the warfighter and to upgrade obsolete equipment (2022 National Defense Strategy).

RDAs provide enhanced Rad/Nuc capabilities. The Domestic Prepare against WMD portfolio enables DoD to provide Joint force and National Guard capability development for radiological and nuclear (R/N) capability development, acquisition and modernization funding to prepare for or to respond to any emergency involving nuclear, and radiological events in the United States; will ensure DoD strategic direction aligns with the National Defense Strategy's priority for Homeland Defense; is a necessary action in the Homeland to improve resilience; and promotes integrated deterrence of WMD with state, local and other federal agencies.

The Domestic Prepare against WMD portfolio is executing along cohesive lines of effort (LOEs) designed to prepare the Joint Force for a Future Operating Environment in which adversary pursuit or possession of WMDs pose threats ranging from existential to tactical, and limit U.S. strategic choices.

The Office of the Secretary of Defense uses the Domestic Prepare against WMD portfolio to invest strategically in projects across the Military Services, Combatant Commands, and Defense Agencies. Funding is prioritized for projects that close Joint Force warfighter capability gaps. An annual investment strategy is used to meet emergent operational, and capability needs validated by the Joint Force and the National Guard Bureau, yielding new fielded capabilities within one to two years.

The Domestic Prepare against WMD portfolio: Systems Development and Demonstration program invests in maturation of prototypes; integration of technologies, systems and components; developmental and operational test and evaluation; and transition to fielded capabilities that improve capability to detect and identify radiological and nuclear threats. This program accelerates and enables transition of mature technologies to fielded capabilities by leveraging significant science and technology (S&T) investments made by the Department of Defense, other Federal agencies, and industry.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 0505167D8Z / *Domestic Prepare Against WMD*

This program funds labor, materials, and travel to support the requirements of this program, performed by a government agency or by private individuals or organizations under a contract with the government, for activities and acquisitions including RDT&E, assessments and analyses, research studies, education, and other activities related to capability development and fielding.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	0.000	0.000	0.000	-	0.000
Current President's Budget	0.000	0.000	1.760	0.000	1.760
Total Adjustments	0.000	0.000	1.760	0.000	1.760
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• New Start	-	-	1.760	0.000	1.760

Change Summary Explanation

FY 2024 New Start

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0505167D8Z / *Domestic Prepare Against WMD*	Project (Number/Name) 785 / *Domestic Prepare Against WMD*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
785: *Domestic Prepare Against WMD*	-	0.000	0.000	1.760	-	1.760	1.760	3.770	3.800	3.800	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

New Start (Y/N): Yes

A. Mission Description and Budget Item Justification

As a FY 2024 new start, this program supports the Department's initiatives to Deter Aggression, Defend the Homeland, Provide Nuclear Deterrence, and Build Sustainable and Long-Term Advantage.

The Radiological and Nuclear (Rad/Nuc) Detection Gear Modernization and Procurement for the Joint Force research and development activities (RDAs) enhance DoD's capabilities to campaign across the domains of threats and spectrums of conflict by: improving our capability to operate in the Radiological and Nuclear environment – including in the information and early warning domain; reinforcing our own warfighting advantages by providing increased capability to detect and identify radiological and nuclear threats; and enhancing our interoperability and access to address acute forms of coercion. This program is specifically geared to provide improved rad/nuc detection, indications and identification capability to the warfighter and to upgrade obsolete equipment (2022 National Defense Strategy).

RDAs provide enhanced Rad/Nuc capabilities. The Domestic Prepare against WMD portfolio enables DoD to provide Joint force and National Guard capability development for radiological and nuclear (R/N) capability development, acquisition and modernization funding to prepare for or to respond to any emergency involving nuclear, and radiological events in the United States; will ensure DoD strategic direction aligns with the National Defense Strategy's priority for Homeland Defense; is a necessary action in the Homeland to improve resilience; and promotes integrated deterrence of WMD with state, local and other federal agencies.

The Domestic Prepare against WMD portfolio is executing along cohesive lines of effort (LOEs) designed to prepare the Joint Force for a Future Operating Environment in which adversary pursuit or possession of WMDs pose threats ranging from existential to tactical, and limit U.S. strategic choices.

The Office of the Secretary of Defense uses the Domestic Prepare against WMD portfolio to invest strategically in projects across the Military Services, Combatant Commands, and Defense Agencies. Funding is prioritized for projects that close Joint Force warfighter capability gaps. An annual investment strategy is used to meet emergent operational, and capability needs validated by the Joint Force and the National Guard Bureau, yielding new fielded capabilities within one to two years.

The Domestic Prepare against WMD portfolio: Systems Development and Demonstration program invests in maturation of prototypes; integration of technologies, systems and components; developmental and operational test and evaluation; and transition to fielded capabilities that improve capability to detect and identify radiological and nuclear threats. This program accelerates and enables transition of mature technologies to fielded capabilities by leveraging significant science and technology (S&T) investments made by the Department of Defense, other Federal agencies, and industry.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 7	**R-1 Program Element (Number/Name)** PE 0505167D8Z / *Domestic Prepare Against WMD*	**Project (Number/Name)** 785 / *Domestic Prepare Against WMD*

This program funds labor, materials, and travel to support the requirements of this program, performed by a government agency or by private individuals or organizations under a contract with the government, for activities and acquisitions including RDT&E, assessments and analyses, research studies, education, and other activities related to capability development and fielding.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Domestic Prepare Against WMD	0.000	-	1.760
Description: The Domestic Prepare Against WMD: Systems Development and Demonstration program invests in maturation of prototypes; integration of technologies, systems and components; developmental and operational test and evaluation; and transition to Rad/Nuc Defense fielded capabilities. Significant S&T investments in prototype development by the Department of Defense, other Federal agencies, and industry are leveraged, capitalizing on mature technologies to accelerate and enable transition to fielded capabilities. Resulting fielded capabilities protect the warfighter, support indications and early warning, command and control, defend vulnerabilities in networks, programs, facilities, and weapons systems; and enable the disablement or defeat of WMD and their delivery systems. ***FY 2024 Plans:*** • Develop, transition, and field operational Rad/Nuc Detection, Indications and Early warning and Command Control capabilities to the Joint Force and the National Guard Bureau. • Partner with the Military Services and Defense Agencies to mature and transition advanced prototypes to fielded rad/nuc detection and identification capabilities. • Continue maturation of prototypes, systems, and components for test and evaluation by end-users and transition to fieldable rad/Nuc Detection and identification capabilities under other classified projects. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2024 new start. The FY 2024 increase provides resourcing of Research & Development projects for Rad/Nuc detection, and improves rad/nuc defense capabilities fielded to the joint force.			
Accomplishments/Planned Programs Subtotals	0.000	-	1.760

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

N/A

D. Acquisition Strategy

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 7	**R-1 Program Element (Number/Name)** PE 0505167D8Z / *Domestic Prepare Against WMD*	**Project (Number/Name)** 785 / *Domestic Prepare Against WMD*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
• Develop, transition, and field operational Rad/Nuc Detection, Indications and Early warning and Command Control capabilities to the Joint Force and the National Guard Bureau.	C/TBD	TBD : TBD	-	-		-		0.500	Apr 2024	-		0.500	Continuing	Continuing	-
• Partner with the Military Services and Defense Agencies to mature and transition advanced prototypes to fielded rad/nuc detection and identification capabilities.	C/TBD	TBD : TBD	-	-		-		0.500	Apr 2024	-		0.500	Continuing	Continuing	-
• Continue maturation of prototypes, systems, and components for test and evaluation by end-users and transition to fieldable rad/Nuc Detection and identification capabilities under other classified p	C/TBD	TBD : TBD	-	-		-		0.760		-		0.760	Continuing	Continuing	-
		Subtotal	-	-		-		1.760		-		1.760	Continuing	Continuing	N/A

Remarks

New program

	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	-		-		1.760		-		1.760	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 7	**R-1 Program Element (Number/Name)** PE 0505167D8Z / *Domestic Prepare Against WMD*	**Project (Number/Name)** 785 / *Domestic Prepare Against WMD*

	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
• Develop, transition, and field operational Rad/Nuc Detection, Indications and Early warning and Command Control capabilities to the Joint Force and the National Guard Bureau.																												
• Develop, transition, and field operational Rad/Nuc Detection, Indications and Early warning and Command Control capabilities to the Joint Force and the National Guard Bureau.																												
• Partner with the Military Services and Defense Agencies to mature and transition advanced prototypes to fielded rad/nuc detection and identification capabilities.																												
• Partner with the Military Services and Defense Agencies to mature and transition advanced prototypes to fielded rad/nuc detection and identification capabilities.																												
• Continue maturation of prototypes, systems, and components for test and evaluation by end-users and transition to fieldable rad/Nuc Detection and identification capabilities under other classified p																												
• Continue maturation of prototypes, systems, and components for test and evaluation by end-users and transition to fieldable rad/Nuc Detection and identification capabilities under other classified p																												

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 7	**R-1 Program Element (Number/Name)** PE 0505167D8Z / *Domestic Prepare Against WMD*	**Project (Number/Name)** 785 / *Domestic Prepare Against WMD*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
• Develop, transition, and field operational Rad/Nuc Detection, Indications and Early warning and Command Control capabilities to the Joint Force and the National Guard Bureau.				
• Develop, transition, and field operational Rad/Nuc Detection, Indications and Early warning and Command Control capabilities to the Joint Force and the National Guard Bureau.	1	2024	4	2025
• Partner with the Military Services and Defense Agencies to mature and transition advanced prototypes to fielded rad/nuc detection and identification capabilities.				
• Partner with the Military Services and Defense Agencies to mature and transition advanced prototypes to fielded rad/nuc detection and identification capabilities.	1	2024	4	2025
• Continue maturation of prototypes, systems, and components for test and evaluation by end-users and transition to fieldable rad/Nuc Detection and identification capabilities under other classified p				
• Continue maturation of prototypes, systems, and components for test and evaluation by end-users and transition to fieldable rad/Nuc Detection and identification capabilities under other classified p	1	2024	4	2025

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 8: *Software and Digital Technology Pilot Programs*	**R-1 Program Element (Number/Name)** PE 0608648D8Z / *Acquisition Visibility - Software Pilot Program*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	16.220	17.537	15.758	21.355	-	21.355	21.711	21.771	21.897	22.351	Continuing	Continuing
059: *Acquisition Visibility*	16.220	17.537	15.758	21.355	-	21.355	21.711	21.771	21.897	22.351	Continuing	Continuing

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

The Acquisition Visibility (AV) investment funds an agile software program to deliver the Department's authoritative acquisition data through NIPR and SIPR instances of the Defense Acquisition Visibility Environment (DAVE), provide data access and standards via the Acquisition Visibility Data Framework (AVDF), and accelerate the retirement of costly legacy systems. AV is an authoritative source for acquisition data inside the DoD and for Congress, GAO, and the Inspectors General for multiple Adaptive Acquisition Framework (AAF) Acquisition Pathways including all Acquisition Category (ACAT) I – IV programs, Middle Tier of Acquisition programs, as well as National Command, Control, and Communications covered programs. Planned efforts include support to the acquisition data strategy requirements of Section 836 of the National Defense Authorization Act (NDAA) for FY 2021 and data collection and sharing for additional AAF Pathways, to include Defense Business Systems and Software Acquisition. Multiple acquisition data collection and analysis platforms rely on AV Capabilities for authoritative acquisition data, including but not limited to: OSD Comptroller Advanced Analytics (ADVANA), OSD Cost Analysis and Program Evaluation (CAPE) Cost Assessment Data Enterprise, Air Force and Army Program Metrics and Reporting Tools, Navy Research, Development and Acquisition Information System, and the Earned Value Management Central Repository.

The Acquisition Visibility mission is expanding to enable integration and interoperability of acquisition, building an enduring strategic mission advantage by aligning the Department's processes to design, develop, and deliver the acquisition data and analytics capabilities to enable USD(A&S) to meet the Digital Acquisition & Sustainment and Transparency objectives of the Department and the requirements of Congress. Comprehensive digital acquisition, analytics, and increased data transparency and access will improve acquisition decisions, enable sophisticated analysis, and inform innovative ways of doing business so that OUSD(A&S), the OSD staff, and the Services and Components can quickly inform policy and budget decisions with accurate, authoritative data. The increase implements Section 836 of the NDAA for FY 2021 and Sections 805 and 821 of the NDAA for FY 2022 to modernize acquisition decision making.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 8: *Software and Digital Technology Pilot Programs*	**R-1 Program Element (Number/Name)** PE 0608648D8Z *I Acquisition Visibility - Software Pilot Program*

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	18.204	17.123	16.543	-	16.543
Current President's Budget	17.537	15.758	21.355	-	21.355
Total Adjustments	-0.667	-1.365	4.812	-	4.812
• Congressional General Reductions	-	-1.365			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	-0.667	-	4.812	-	4.812

Change Summary Explanation

The FY 2024 increase supports the investment in additional acquisition data governance and data analytics capabilities developed to enable acquisition integration and interoperability:

o Data Transparency ($1.09M): Govern acquisition and sustainment data to manage the timely sharing of data to support NDS and statutory A&S requirements, including the DepSecDef Management Action Group, Interim Program Reviews, Integrated Acquisition Portfolio Reviews, and Department-wide initiatives supported through Advana.

o Data Capture & Sharing ($2.36M): Expand existing acquisition data capabilities, tools, data models, and definitions to enhance transparency across all acquisition pathways and Component acquisition and sustainment data activities.

o Data Analytics ($0.79M): Respond to strategic questions across OUSD(A&S) to fulfill enterprise data requirements.

o Data Analysis ($0.57M): Assess and report on the performance of the acquisition system to inform policy and strategic decision-making including Defense Acquisition Executive Summary Reviews of Major Capabilities, IAPRs, and Services Requirements Review Boards.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 8	R-1 Program Element (Number/Name) PE 0608648D8Z / *Acquisition Visibility - Software Pilot Program*	Project (Number/Name) 059 / *Acquisition Visibility*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
059: *Acquisition Visibility*	16.220	17.537	15.758	21.355	-	21.355	21.711	21.771	21.897	22.351	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

New start (Y/N): No

A. Mission Description and Budget Item Justification

The AV investment funds an agile software program to deliver the Department's authoritative acquisition data through NIPR and SIPR instances of the Defense Acquisition Visibility Environment (DAVE), provide data access and standards via the Acquisition Visibility Data Framework (AVDF), and accelerate the retirement of costly legacy systems. AV is an authoritative source for acquisition data inside the DoD and for Congress, GAO, and the Inspectors General for multiple Adaptive Acquisition Framework (AAF) Acquisition Pathways including all Acquisition Category (ACAT) I – IV programs, Middle Tier of Acquisition programs, as well as National Command, Control, and Communications covered programs. Planned efforts include support to the acquisition data strategy requirements of Section 836 of the NDAA for FY 2021 and data collection and sharing for additional AAF Pathways, to include Defense Business Systems and Software Acquisition. Multiple acquisition data collection and analysis platforms rely on AV Capabilities for authoritative acquisition data, including but not limited to: OSD Comptroller Advanced Analytics (ADVANA), OSD Cost Analysis and Program Evaluation (CAPE) Cost Assessment Data Enterprise, Air Force and Army Program Metrics and Reporting Tools, Navy Research, Development and Acquisition Information System, and the Earned Value Management Central Repository.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Acquisition Visibility Operation & Maintenance Efforts	5.162	7.968	8.156
Description: Acquisition Visibility delivers authoritative, reliable acquisition data to Congress and the Department to enable statutory reporting, executive decision making, and portfolio insight on over $2 trillion in lifecycle funding across approximately 100 active ACAT I programs, as well as approximately 1,000 Acquisition Category (ACAT) II, III, and IV programs, National Command, Control, and Communications covered programs, and 90 Middle Tier of Acquisition (MTA) programs. Acquisition Framework; and 3) support the acquisition data requirements of Section 836 of the NDAA for FY 2021.			
FY 2023 Plans: • Develop, test, and deploy DAVE system performance and align data collection to law and policy for the AAF. • Provide acquisition data analyses and visualizations. • Maintain the Acquisition Information Repository. • Align the Acquisition Visibility Data Framework to reflect evolving AAF data requirements.			
FY 2024 Plans: •Develop, test, and deploy DAVE system performance and align data collection to law and policy for the AAF.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 8	**R-1 Program Element (Number/Name)** PE 0608648D8Z / *Acquisition Visibility - Software Pilot Program*	**Project (Number/Name)** 059 / *Acquisition Visibility*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
•Provide acquisition data analyses and visualizations. •Maintain the Acquisition Information Repository. •Align the Acquisition Visibility Data Framework to reflect evolving AAF data requirements. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2024 increase of $0.188M due fact-of-life contract cost increases.			
Title: Acquisition Visibility RDT&E Efforts	12.375	7.790	13.199
Description: As a BA-08 program, Acquisition Visibility's RDT&E-related investments develop and enhance software capabilities to enhance program and portfolio insight of the Department's acquisition programs for the Defense Acquisition Executive (DAE), Component Acquisition Executives (CAEs), Service Chiefs of Staff, Office of the Secretary of Defense (OSD) senior leaders, and OSD and Component analysts. The Defense Acquisition Visibility Environment (DAVE) is an authoritative source for acquisition data inside the DoD and for the Congress, GAO, and the Inspectors General for multiple Adaptive Acquisition Framework (AAF) Acquisition Pathways including all Acquisition Category (ACAT) I – IV programs, and Middle Tier of Acquisition programs with data for additional AAF pathway data in requirements planning. ***FY 2023 Plans:*** • Manage features and capabilities for additional AAF Pathways. • Continue expansion of a mature DAVE data sharing with existing and new OSD and component acquisition data platforms. ***FY 2024 Plans:*** •Manage features and capabilities for additional AAF Pathways. •Identify, define, and document new acquisition data elements to support integration and interoperability, and sustainment •Deliver additional data analyses and visualizations that enhance integration and interoperability. •Deliver a Digital/ Automated DAES Data Collection & Analysis Capability •Deliver new digital congressional and department wide data to support the DAE and statutory requirements ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The FY 2024 increase supports the investment in additional acquisition data governance and data analytics capabilities developed to enable acquisition integration and interoperability: o Data Transparency ($1.09M): Govern acquisition and sustainment data to manage the timely sharing of data to support NDS and statutory A&S requirements, including the DepSecDef Management Action Group, Interim Program Reviews, Integrated Acquisition Portfolio Reviews, and Department-wide initiatives supported through Advana. o Data Capture & Sharing ($2.36M): Expand existing acquisition data capabilities, tools, data models, and definitions to enhance transparency across all acquisition pathways and Component acquisition and sustainment data activities. o Data Analytics ($0.79M): Respond to strategic questions across OUSD(A&S) to fulfill enterprise data requirements.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 8	**R-1 Program Element (Number/Name)** PE 0608648D8Z / *Acquisition Visibility - Software Pilot Program*	**Project (Number/Name)** 059 / *Acquisition Visibility*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
o Data Analysis ($0.57M): Assess and report on the performance of the acquisition system to inform policy and strategic decision-making including Defense Acquisition Executive Summary Reviews of Major Capabilities, IAPRs, and Services Requirements Review Boards.			
Accomplishments/Planned Programs Subtotals	17.537	15.758	21.355

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

Capability development and sustainment is acquired through a combination of competed small-disadvantaged and small business contracts employing agile software development methodologies.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 8	**R-1 Program Element (Number/Name)** PE 0608648D8Z / *Acquisition Visibility - Software Pilot Program*	**Project (Number/Name)** 059 / *Acquisition Visibility*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Acquisition Visibility Operation & Maintenance Efforts	Option/ FFP	Contractor : Contractor Facility	6.262	5.162	Jun 2022	7.968	Jun 2023	8.156	Jun 2024	-		8.156	Continuing	Continuing	-
Acquisition Visibility RDT&E Efforts	Option/ FFP	Contractor : Contractor Facility	9.958	12.375	Jun 2022	7.790	Jun 2023	13.199	Jun 2024	-		13.199	Continuing	Continuing	-
		Subtotal	16.220	17.537		15.758		21.355		-		21.355	Continuing	Continuing	N/A

	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	16.220	17.537		15.758		21.355		-		21.355	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 8	**R-1 Program Element (Number/Name)** PE 0608648D8Z / *Acquisition Visibility - Software Pilot Program*	**Project (Number/Name)** 059 / *Acquisition Visibility*

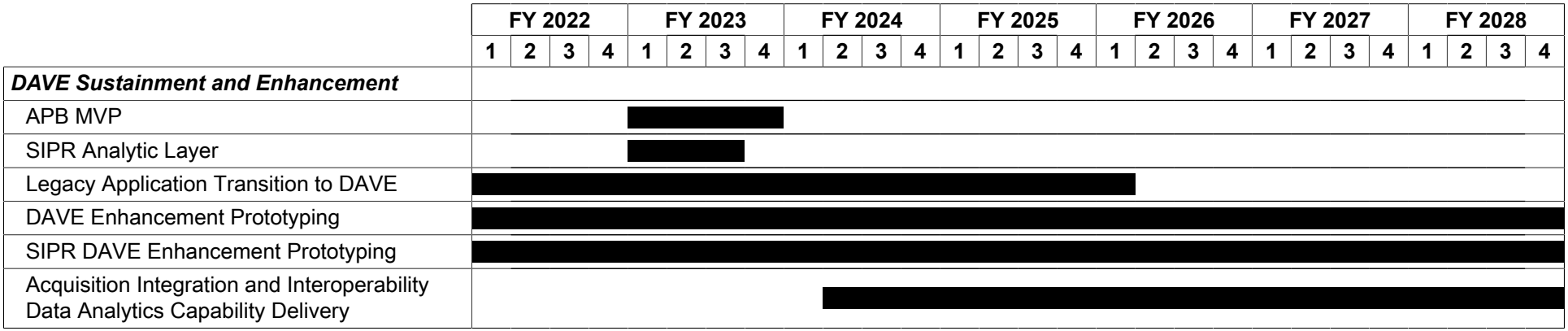

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 8	**R-1 Program Element (Number/Name)** PE 0608648D8Z / *Acquisition Visibility - Software Pilot Program*	**Project (Number/Name)** 059 / *Acquisition Visibility*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
DAVE Sustainment and Enhancement				
APB MVP	1	2023	4	2023
SIPR Analytic Layer	1	2023	3	2023
Legacy Application Transition to DAVE	1	2022	1	2026
DAVE Enhancement Prototyping	1	2022	4	2028
SIPR DAVE Enhancement Prototyping	1	2022	4	2028
Acquisition Integration and Interoperability Data Analytics Capability Delivery	2	2024	4	2028

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 8: *Software and Digital Technology Pilot Programs*	**R-1 Program Element (Number/Name)** PE 0308588D8Z / *Algorithmic Warfare Cross Functional Teams - Software Pilot Program*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	229.930	336.352	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-
925: *Algorithmic Warfare Cross Functional Teams - Software Pilot Program*	229.930	336.352	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-

Note

New Start (Y/N): No

The Algorithmic Warfare Cross Functional Team (AWCFT) program was transferred to various classified mission partners in FY 2023.

A. Mission Description and Budget Item Justification

The AWCFT (Project Maven) is the pathfinder artificial intelligence (AI) initiative for the DoD that accelerates the integration of AI into DoD systems to improve warfighting speed and lethality for the Joint Force. Maven deploys capabilities that complement human cognition by automating key tasks of object identification, characterization and tracking, and by deriving insights from large-scale data sets to create immediately actionable intelligence. Maven's AI architecture initially automated and augmented Processing, Exploitation and Dissemination (PED) of Full Motion Video (FMV) from Tactical Unmanned Aerial Vehicles (TUAVs). Maven additionally developed algorithms to Medium Altitude, High Altitude, and Wide Area Motion Imagery (WAMI) Intelligence and multiple other Surveillance, and Reconnaissance (ISR) platforms to support the National Defense Strategy (NDS). Maven includes AI tools used on Captured Enemy Material (CEM), Maritime, and Public Available Information (PAI) exploitation. Most military intelligence exploitation systems were designed pre-AI and require specialized integration and multiple individuals to control and then enable the insertion of algorithms into their software baseline. Maven developed a path forward to eliminate substantial costs and coordination among myriad legacy projects to instead use a single screen with multiple AI-enabled layers and tools. Maven increases the value of ISR, reduces human processing so analysts can multi-task and produce more intel, and it now detects, classifies, and tracks objects exponentially faster than a human. With FMV intel, for example, Maven detects/tracks persons, vehicles, and weapon systems. By combining AI detections, tracks, and insights onto a single screen, Maven created tools for deployment to help mission commanders, operations personnel, and intel analysts to unite their increased productivity in conducting military operations in every domain of warfare – air, land, sea, space, and cyberspace.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 8: *Software and Digital Technology Pilot Programs*	**R-1 Program Element (Number/Name)** PE 0308588D8Z *I Algorithmic Warfare Cross Functional Teams - Software Pilot Program*

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	275.352	0.000	0.000	0.000	0.000
Current President's Budget	336.352	0.000	0.000	0.000	0.000
Total Adjustments	61.000	0.000	0.000	0.000	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	61.000	-	-	-	-

Change Summary Explanation

The Algorithmic Warfare Cross Functional Team (AWCFT) transferred to various classified mission partners in FY 2023.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0400 / 8	R-1 Program Element (Number/Name) PE 0308588D8Z / *Algorithmic Warfare Cross Functional Teams - Software Pilot Program*	Project (Number/Name) 925 / *Algorithmic Warfare Cross Functional Teams - Software Pilot Program*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
925: *Algorithmic Warfare Cross Functional Teams - Software Pilot Program*	229.930	336.352	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Project Maven rapidly fields AI to programs and systems that augment and automate PED for FMV of TUAVs, Medium Altitude, High Altitude, WAMI ISR, commercial and military satellite imagery in support of the NDS peer/near peer competitor strategy. Aside from imagery, Maven also uses AI to exploit CEM, Maritime, and PAI. Maven's AI, deep learning, and computer vision algorithms and insights are developed for use in theater to detect, classify, and track objects within images (e.g., persons, vehicles, and weapons) as well as provide other insights, such as with CEM, text-based, and other projects. Maven algorithms are still in development in all its lines of effort. While Maven's algorithms advance to increase the intelligence value of ISR and reduce the human burden on analysts, Maven develops complementary software that both analysts and operations personnel use to rapidly react, effectively plan, and clearly communicate. Project Maven's development process requires continuous feedback and substantial changes to mature user interfaces, build AI harnesses to run algorithms, and build labeled data sets. As the underlying Maven systems continue to develop new tools for mission operations, Project Maven must constantly manage a shifting R&D budget in critical AI architecture that supports the rapid expansion of AI. These developments are expected to resolve into licensing or other COTS-based solutions. Currently agility is required to turn R&D mission successes into production for procurement and sustainment by Services, SOCOM and CCMDs. While Maven's applications are developing, near-term and future requirements become more identifiable. However, certain nascent lines of effort will continue to require modification and advancement. Maven plans for the process to create a more robust and refined set of requirements, albeit with substantial room to continue to invest in better AI training data and better algorithms for years to come. Budgeting flexibility is important to Maven because Maven applies R&D to integrate news tools with legacy systems. Most military intelligence exploitation systems were designed pre-AI and therefore require specialized integration to enable the insertion of algorithms into the software baseline. Maven funds multiple approaches for bridging these technology hurdles which provides for multiple pathways. Critical is testing and evaluation and user feedback. Maven's successes, however, have already been deemed mission critical and have transitioned to procurement efforts. Maven will transition the Project Maven AI Training Foundry (AITF) to a mission owner, and to transition Project Maven's AI-enabled mission command investments to Title 10 MIP Procurement paths in FY 2023.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Algorithmic Warfare Cross Functional Teams - Software Pilot Program	336.352	0.000	0.000
Description: Project Maven rapidly fields AI to programs and systems that augment and automate PED for FMV of TUAVs, Medium Altitude, High Altitude, WAMI ISR, commercial and military satellite imagery in support of the NDS peer/near peer competitor strategy. Aside from imagery, Maven also uses AI to exploit CEM, Maritime, and PAI. Maven's AI, deep learning, and computer vision algorithms and insights are developed for use in theater to detect, classify, and track objects within images (e.g., persons, vehicles, and weapons) as well as provide other insights, such as with CEM, text-based, and other projects.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 8	**R-1 Program Element (Number/Name)** PE 0308588D8Z / *Algorithmic Warfare Cross Functional Teams - Software Pilot Program*	**Project (Number/Name)** 925 / *Algorithmic Warfare Cross Functional Teams - Software Pilot Program*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Maven algorithms are still in development in all its lines of effort. While Maven's algorithms advance to increase the intelligence value of ISR and reduce the human burden on analysts, Maven develops complementary software that both analysts and operations personnel use to rapidly react, effectively plan, and clearly communicate. Project Maven's development process requires continuous feedback and substantial changes to mature user interfaces, build AI harnesses to run algorithms, and build labeled data sets. As the underlying Maven systems continue to develop new tools for mission operations, Project Maven must constantly manage a shifting R&D budget in critical AI architecture that supports the rapid expansion of AI. In the future, these developments are expected to resolve into licensing or other COTS-based solutions. For now, agility is required to turn R&D mission successes into production for procurement and sustainment by Services, SOCOM and CCMDs. While Maven's applications are developing, near-term and future requirements become more identifiable. However, certain nascent lines of effort will continue to require modification and advancement. Maven plans for the process to create a more robust and refined set of requirements, albeit with substantial room to continue to invest in better AI training data and better algorithms for years to come. Separately, budgeting flexibility is important to Maven because Maven applies R&D to integrate news tools with legacy systems. Most military intelligence exploitation systems were designed pre-AI and therefore require specialized integration to enable the insertion of algorithms into the software baseline. Maven funds multiple approaches for bridging these technology hurdles which provides for multiple pathways. Critical is testing and evaluation and user feedback. Maven's successes, however, have already been deemed mission critical and have transitioned to procurement efforts. At this time, lines of effort continue to mature. Appropriation flexibility is critical to transitioning the current RDT&E funding of complex systems into licenses and requirements, purchasable by Services and COCOMs. To continue to deliver outstanding capability, ***FY 2023 Plans:*** N/A ***FY 2024 Plans:*** N/A ***FY 2023 to FY 2024 Increase/Decrease Statement:*** No change in FY 2024. Funding was transferred to mission partners in FY 2023.			
Accomplishments/Planned Programs Subtotals	336.352	0.000	0.000

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
• 0307588D8Z: *AWCFT O&M*	44.537	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	44.537

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0400 / 8	**R-1 Program Element (Number/Name)** PE 0308588D8Z / *Algorithmic Warfare Cross Functional Teams - Software Pilot Program*	**Project (Number/Name)** 925 / *Algorithmic Warfare Cross Functional Teams - Software Pilot Program*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost

Remarks

D. Acquisition Strategy

AWCFT's contracting strategy follows guidance outlined in the DoD 5000 series directives, Federal Acquisition Regulation (FAR), Defense Federal Acquisition Regulation (DFAR), and rapid prototyping policies and procedures available to cross-functional teams. Management uses project management tools, executive steering group and working group meetings to ensure that stated capabilities and performance criteria are delivered.

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