



## InfoBrief

# Analysis of Department of Defense Funding for R&D and RDT&E in FY 2022

NSF 25-301 | October 2024

*Christopher V. Pece*

In FY 2022, the federal government's total discretionary budget totaled nearly \$1.8 trillion in budget authority.<sup>1,2</sup> The Department of Defense (DOD) was the single-largest component of the discretionary budget. For instance, the DOD military program alone totaled nearly \$777 billion, or 43% of total discretionary budget authority.<sup>3,4</sup> The second-largest component was the Department of Health and Human Services, with \$130 billion, or 7% of total discretionary budget authority. Within the discretionary budget, federal budget authority for all research and development (R&D) functions totaled \$180.2 billion. The National Center for Science and Engineering Statistics (NCSES) within the U.S. National Science Foundation (NSF) collected data showing that, as part of this amount, the national defense function totaled \$83.9 billion, or 47% of total R&D budget authority in FY 2022.<sup>5</sup> In addition to data on DOD's R&D, NCSES also presents data on DOD's research, development, test, and evaluation (RDT&E), a broader category of defense R&D and related activities.<sup>6</sup> In FY 2022, total budget authority for DOD's RDT&E was \$118.7 billion and total RDT&E obligations were \$115.9 billion.<sup>7,8</sup>

This InfoBrief will provide data users with an understanding of DOD's R&D as a component of the larger defense RDT&E portfolio. In addition, although DOD's R&D data are often presented as a single entity in other NCSES InfoBriefs on federal funding for R&D, treating DOD as a single entity masks the diversity in types of R&D investment. This InfoBrief will also provide data users with information on the diversity of funding activities by DOD's component units. Each of these component units has a different focus and mission and as such differ in the activities that compose their respective RDT&E obligations.<sup>9</sup>

## Department of Defense S&T, R&D, and RDT&E

Defense-related R&D activities are typically ordered into three categories: science and technology (S&T) programs, R&D, and RDT&E ([figure 1](#)). Each of these categories separate R&D activities into predefined budget activity (BA) codes, which are "broad categories reflecting different types of RDT&E efforts."<sup>10</sup> The diverse set of activities in the DOD R&D portfolio are identified using a range of classifications to distinguish them. These activities are classified into the following BA codes:

- Basic research (BA 1)

- Applied research (BA 2)
- Advanced technology development (BA 3)
- Advanced component development and prototypes (BA 4)
- System development and demonstration (BA 5)
- RDT&E management support (BA 6)
- Operational system development (BA 7)<sup>11</sup>

**Figure 1**

**Department of Defense research, development, test, and evaluation categorization in National Center for Science and Engineering Statistics data**

DOD Budget Activity code	Title	NCSES statistical categories		DOD budget categories		
		Type of R&D		S&T	R&D	RDT&E
Budget Activity 1	Basic research	Research		S&T	R&D	RDT&E
Budget Activity 2	Applied research					
Budget Activity 3	Advanced technology development	Advanced technology development	Experimental development	R&D	R&D	RDT&E
Budget Activity 4	Advanced component development and prototypes	Major systems development				
Budget Activity 5	System development and demonstration				R&D	
Budget Activity 6	RDT&E management support					
Budget Activity 7	Operational system development	Preproduction development	Not R&D	RDT&E		

DOD = Department of Defense. NCSES = National Center for Science and Engineering Statistics. RDT&E = research, development, test, and evaluation. S&T = science and technology.

**Source(s):**

National Center for Science and Engineering Statistics.

Although DOD classifies research as both basic research (BA 1) and applied research (BA 2), it uses a more extensive classification for development activities, which span across four distinct categories (BA 3 through BA 7), as noted above.

To differentiate between the part of the federal R&D budget that supports science and key enabling technologies (including technologies for military and nondefense applications) and the part that primarily supports testing and evaluation (mostly of defense-related weapons systems), DOD has, since 1994, reported its experimental development obligations into two separate development categories: advanced technology development (BA 3) and major systems development (BA 4–6) on the NCSES Survey of Federal Funds for Research and Development (Federal Funds for R&D).<sup>12</sup> However, in 2016, the Office of Management and Budget (OMB) updated the definition of R&D for federal agencies in the

July 2016 release of Circular A-11 for the FY 2018 budget formulation process.<sup>13</sup> As part of this update, OMB added additional guidance for agencies to differentiate and exclude “preproduction development” from experimental development, and thus exclude it from the R&D category. OMB specifically cited the preproduction category of DOD’s RDT&E—specifically, BA 7 for operational system development, which had been included in the R&D category previously.<sup>14</sup> Based on these RDT&E budget activities, DOD defines its S&T budget as basic research (BA 1), applied research (BA 2), and advanced technology development (BA 3). DOD has suggested that most other federal agencies’ entire R&D programs are equivalent in nature to DOD’s S&T program.<sup>15</sup> With the reporting of two subcategories of development in advanced technology and major systems development, DOD’s R&D is defined as basic research (BA 1), applied research (BA 2), advanced technology development (BA 3), and major systems development (BA 4–6), whereas the full suite of BA codes (BA 1–7) defines RDT&E. Disaggregating DOD’s funding actions into S&T, R&D, and RDT&E activities provides data users with information on the diversity of DOD’s R&D-related obligations.

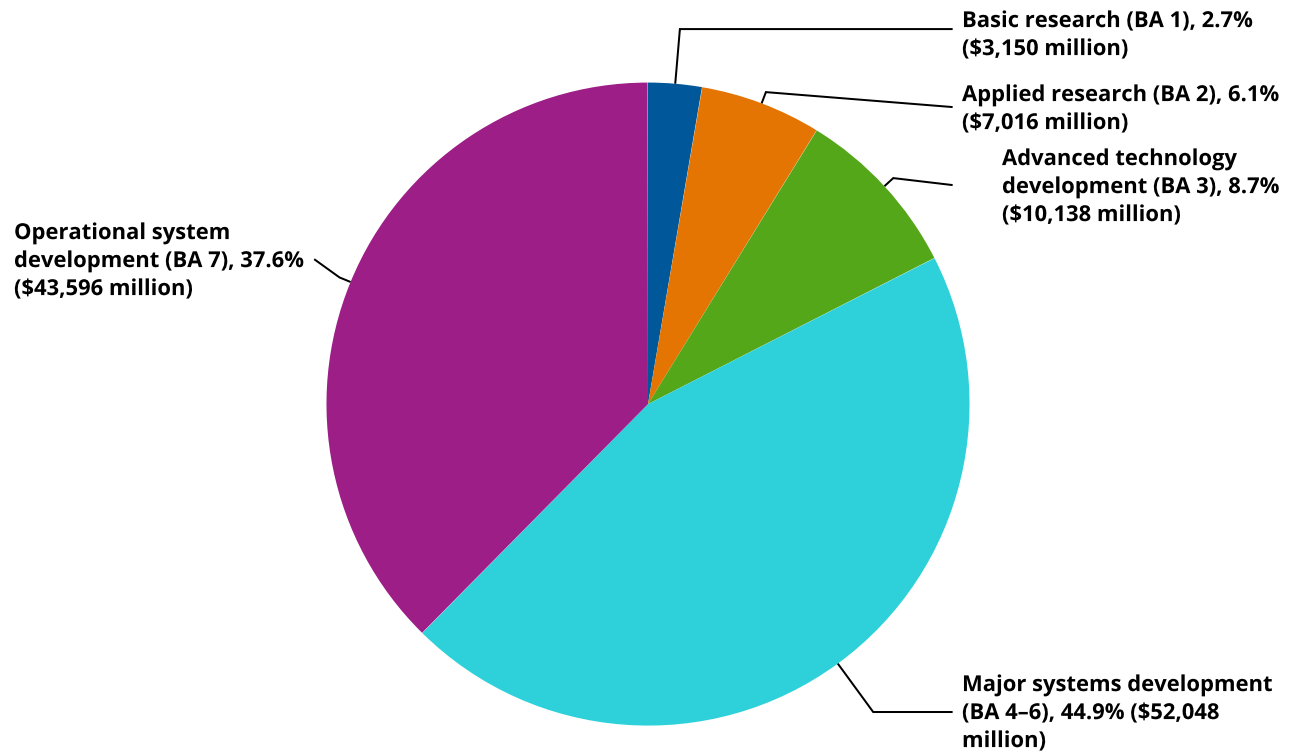
## Defense-Wide RDT&E

Although operational system development activities (BA 7) are no longer considered part of the R&D category, they are the immediate result of previous investment in R&D activities prior to the full-scale production of DOD technologies. Examining these operational system development activities shows why it is important to measure RDT&E as well as R&D. Operational system development is described as the following:

[D]evelopment efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year. All items are major line item projects that appear as RDT&E Costs of Weapons System Elements in other programs. Programs in this category involve systems that have received approval for Low Rate Initial Production.<sup>16</sup>

So, RDT&E provides data users with an understanding of R&D and of the full suite of activities, programs, and projects as they enter full-scale production and implementation.

In FY 2022, DOD RDT&E obligations totaled \$115.9 billion (**figure 2**). Of this amount, R&D totaled \$72.4 billion, with \$3.2 billion (3%) for basic research, \$7.0 billion (6%) for applied research, \$10.1 billion (9%) for advanced technology development, and \$52.0 billion (45%) for major systems development. Operational system development, which is outside the scope of R&D, totaled \$43.6 billion, or 38% of total RDT&E. This shows that a substantial portion of RDT&E obligations are in the later stages of R&D in the form of major systems development. In addition, a considerable percentage of RDT&E are beyond the scope of R&D, in the form of operational system development resulting from previous FY R&D investments. However, breaking down the ratios of RDT&E categories across the major DOD component units presents a different picture of RDT&E funding priorities.<sup>17</sup>

**Figure 2****Department of Defense obligations for research, development, test, and evaluation: FY 2022**

BA = budget activity.

**Note(s):**

Because of rounding, detail may not add to total. Department of Defense (DOD) development obligations have been reported in two categories, advanced technology and major systems, since volume 44 (FYs 1994–96). As of volume 66 (FYs 2016–17), the definition of major systems development was changed to represent DOD Budget Activities 4 through 6 instead of Budget Activities 4 through 7. Funding for DOD's Operational System Development (Budget Activity 7) was first reported as a separate category for volume 66. FY 2022 obligations include additional funding provided by supplemental COVID-19 pandemic-related appropriations (e.g., Coronavirus Aid, Relief, and Economic Security [CARES] Act).

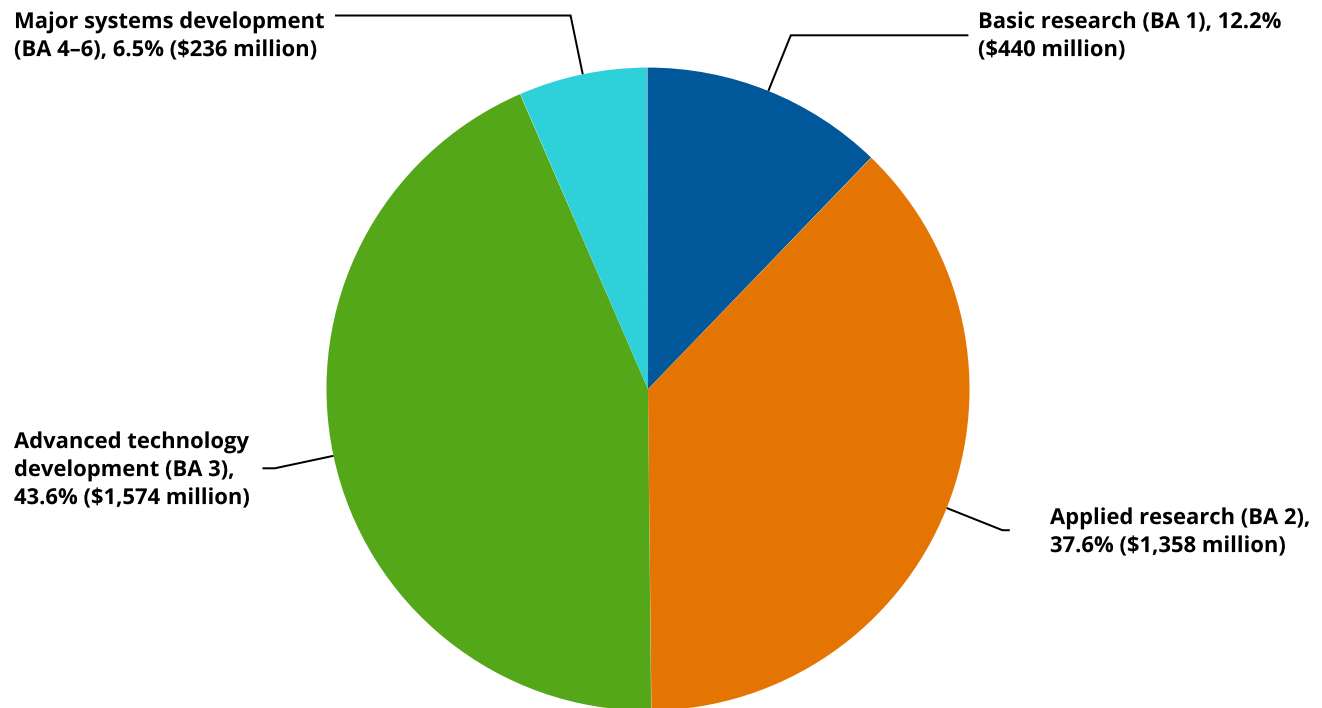
**Source(s):**

National Center for Science and Engineering Statistics, Survey of Federal Funds for Research and Development, FYs 2022–23.

## Defense Advanced Research Projects Agency

The Defense Advanced Research Projects Agency's (DARPA) mission is "to make pivotal investments in breakthrough technologies for national security."<sup>18</sup> As such, DARPA is concerned with "transforming revolutionary concepts and seeming impossibilities into practical capabilities."<sup>19</sup> For example, DARPA research was responsible for the early development of the Internet and the global positioning system. DARPA's focus on initiating strategic technologies can be seen in the distribution of budget activities within its RDT&E portfolio.

In FY 2022, DARPA's RDT&E obligations totaled \$3.6 billion (figure 3). DARPA is focused on funding innovative technologies and does not fund any operational system development (BA 7). As such, DARPA's RDT&E is equal to its R&D. Advanced technology development (BA 3) is the largest component of DARPA's portfolio, with \$1.6 billion, or 44% of the total DARPA RDT&E obligations. Applied research is the second-largest category, with \$1.4 billion, or 38% of DARPA's RDT&E portfolio. Basic research and major systems development account for \$440 million (12%) and \$236 million (7%), respectively.

**Figure 3****Defense Advanced Research Projects Agency obligations for research, development, test, and evaluation: FY 2022**

BA = budget activity.

**Note(s):**

Because of rounding, detail may not add to total. Department of Defense (DOD) development obligations have been reported in two categories, advanced technology and major systems, since volume 44 (FYs 1994–96). As of volume 66 (FYs 2016–17), the definition of major systems development was changed to represent DOD Budget Activities 4 through 6 instead of Budget Activities 4 through 7. Funding for DOD's Operational System Development (Budget Activity 7) was first reported as a separate category for volume 66. FY 2022 obligations include additional funding provided by supplemental COVID-19 pandemic-related appropriations (e.g., Coronavirus Aid, Relief, and Economic Security [CARES] Act).

**Source(s):**

National Center for Science and Engineering Statistics, Survey of Federal Funds for Research and Development, FYs 2022–23.

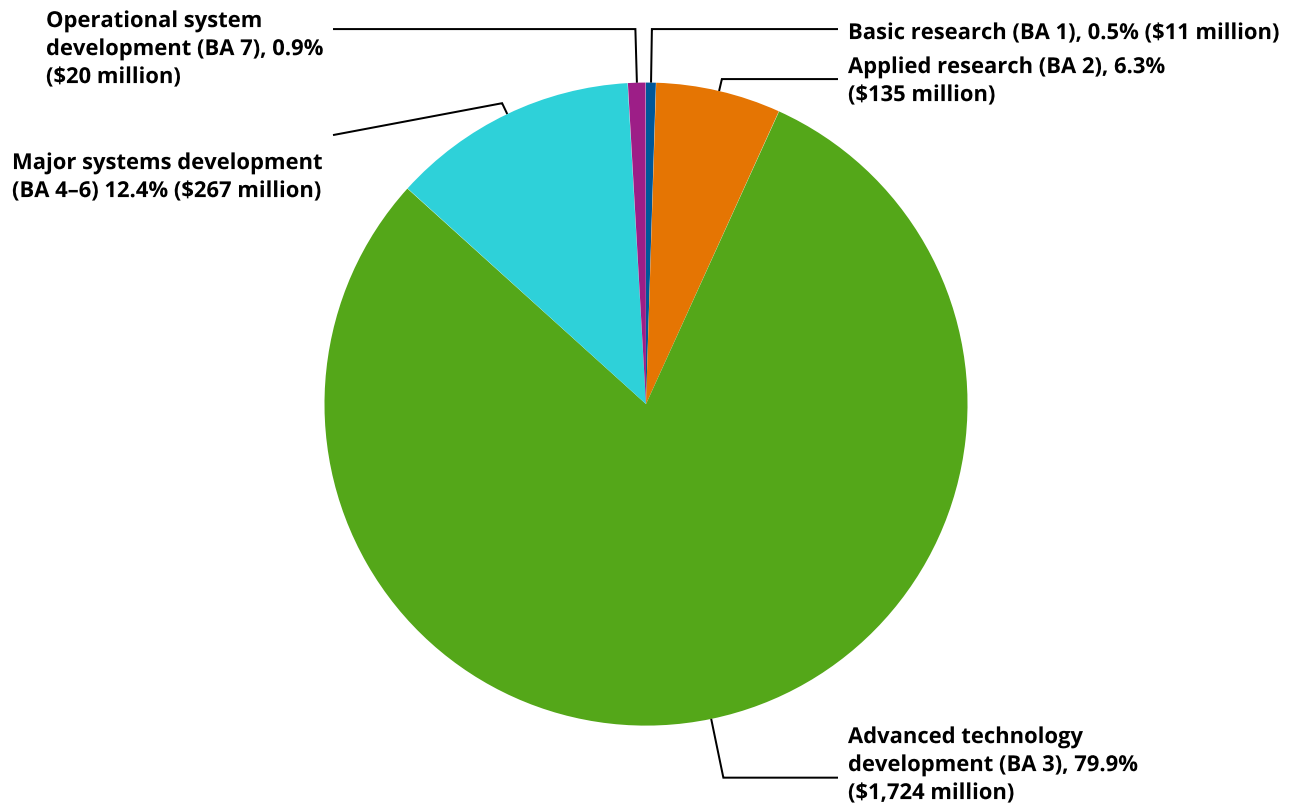
## Defense Health Agency

The Defense Health Agency (DHA) was created on 1 October 2013 as a joint, integrated support agency to enable medical services across the armed services, namely the Air Force, Army, Navy, and Space Force. DHA is part of the Military Health System's mission "to enable the Department of Defense to provide medically ready and ready medical forces by improving the health of all those entrusted to our care."<sup>20</sup> DHA's mission is to "[i]mplement best practices to responsibly design, prioritize and integrate medical research, development and acquisition programs across the continuum of care. By fostering strategic partnerships and transitioning medical discoveries to deployable products, Research, Development, and Acquisition (RDA) will enhance the readiness and resilience of the military community."<sup>21</sup> As such, most of DHA's RDT&E is organized around advanced technology development. Similar to DARPA, DHA's RDT&E portfolio is largely focused on advanced technology development rather than major systems development or operational system development. However, for DHA, BA 3 is a much larger share of the total RDT&E. In FY 2022, DHA's RDT&E obligations

totalled \$2.2 billion (figure 4). Of this amount, advanced technology development totalled \$1.7 billion, or 80% of DHA's total RDT&E portfolio. The second-largest category was for major systems development, with \$267 million, or 12% of DHA's total RDT&E. Applied research accounted for \$135 million (6%), whereas operational system development and basic research totalled \$20 million (1%) and \$11 million (0.5%), respectively.

**Figure 4**

**Defense Health Agency obligations for research, development, test, and evaluation: FY 2022**



BA = budget activity.

**Note(s):**

Because of rounding, detail may not add to total. Department of Defense (DOD) development obligations have been reported in two categories, advanced technology and major systems, since volume 44 (FYs 1994–96). As of volume 66 (FYs 2016–17), the definition of major systems development was changed to represent DOD Budget Activities 4 through 6 instead of Budget Activities 4 through 7. Funding for DOD's Operational System Development (Budget Activity 7) was first reported as a separate category for volume 66. FY 2022 obligations include additional funding provided by supplemental COVID-19 pandemic-related appropriations (e.g., Coronavirus Aid, Relief, and Economic Security [CARES] Act).

**Source(s):**

National Center for Science and Engineering Statistics, Survey of Federal Funds for Research and Development, FYs 2022–23.

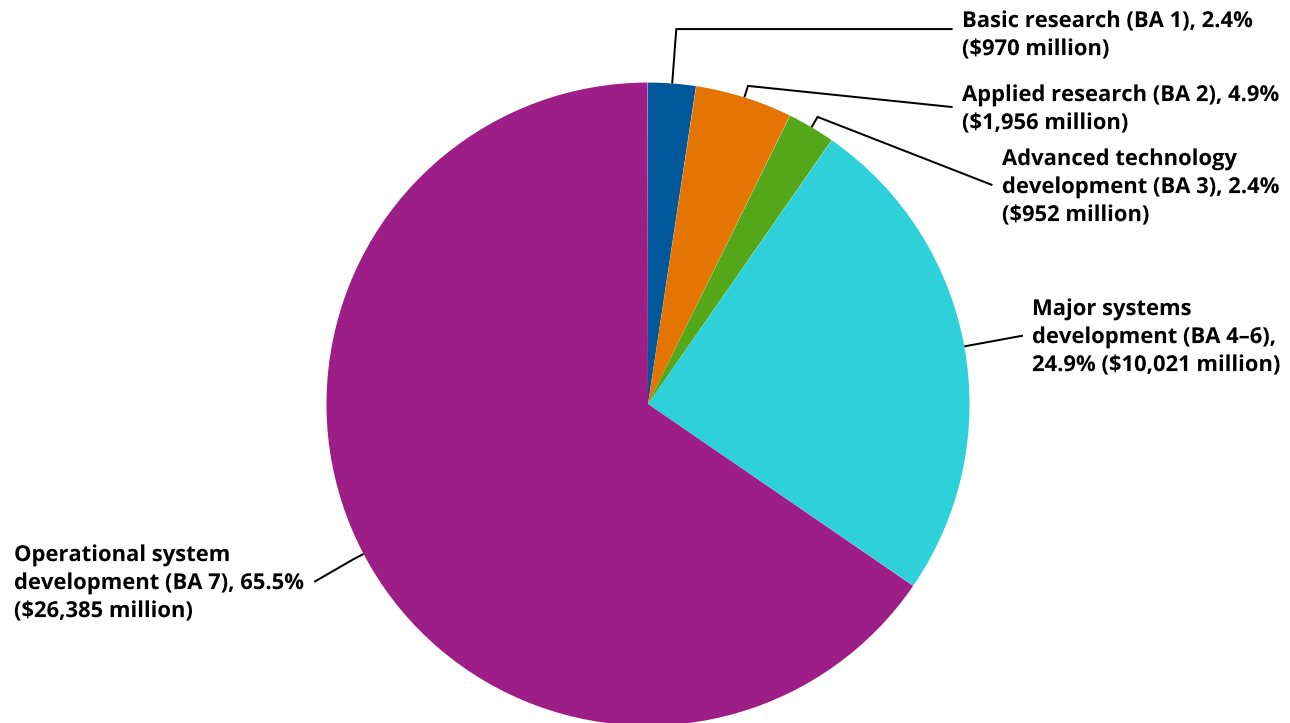
## Department of the Air Force

Among the armed services, the Department of the Air Force is the largest funder of RDT&E. In FY 2022, the Department of the Air Force's RDT&E obligation totalled \$40.3 billion, of which R&D (BA 1–6) totalled \$13.9 billion (figure 5). Operational system development (BA 7) is the largest component of the Department of the Air Force's RDT&E portfolio, with \$26.4 billion, or 65% of all of the Department of the Air Force's RDT&E. Operational system development is for weapons systems that have approved low-rate initial production. The programmatic needs of the Department of the Air Force's RDT&E

budget reflect a need for functional weapons systems and preproduction development of airframes. Major systems development accounts for the second-largest category of the Department of the Air Force's RDT&E obligations, with \$10.0 billion, or 25% of total Department of the Air Force's RDT&E. Applied research, basic research, and advanced technology development each account for \$2.0 billion (5%), \$970 million (2%), and \$952 million (2%), respectively.

**Figure 5**

**Department of the Air Force obligations for research, development, test, and evaluation: FY 2022**



BA = budget activity.

**Note(s):**

Because of rounding, detail may not add to total. Department of Defense (DOD) development obligations have been reported in two categories, advanced technology and major systems, since volume 44 (FYs 1994–96). As of volume 66 (FYs 2016–17), the definition of major systems development was changed to represent DOD Budget Activities 4 through 6 instead of Budget Activities 4 through 7. Funding for DOD's Operational System Development (Budget Activity 7) was first reported as a separate category for volume 66. FY 2022 obligations include additional funding provided by supplemental COVID-19 pandemic-related appropriations (e.g., Coronavirus Aid, Relief, and Economic Security [CARES] Act).

**Source(s):**

National Center for Science and Engineering Statistics, Survey of Federal Funds for Research and Development, FYs 2022–23.

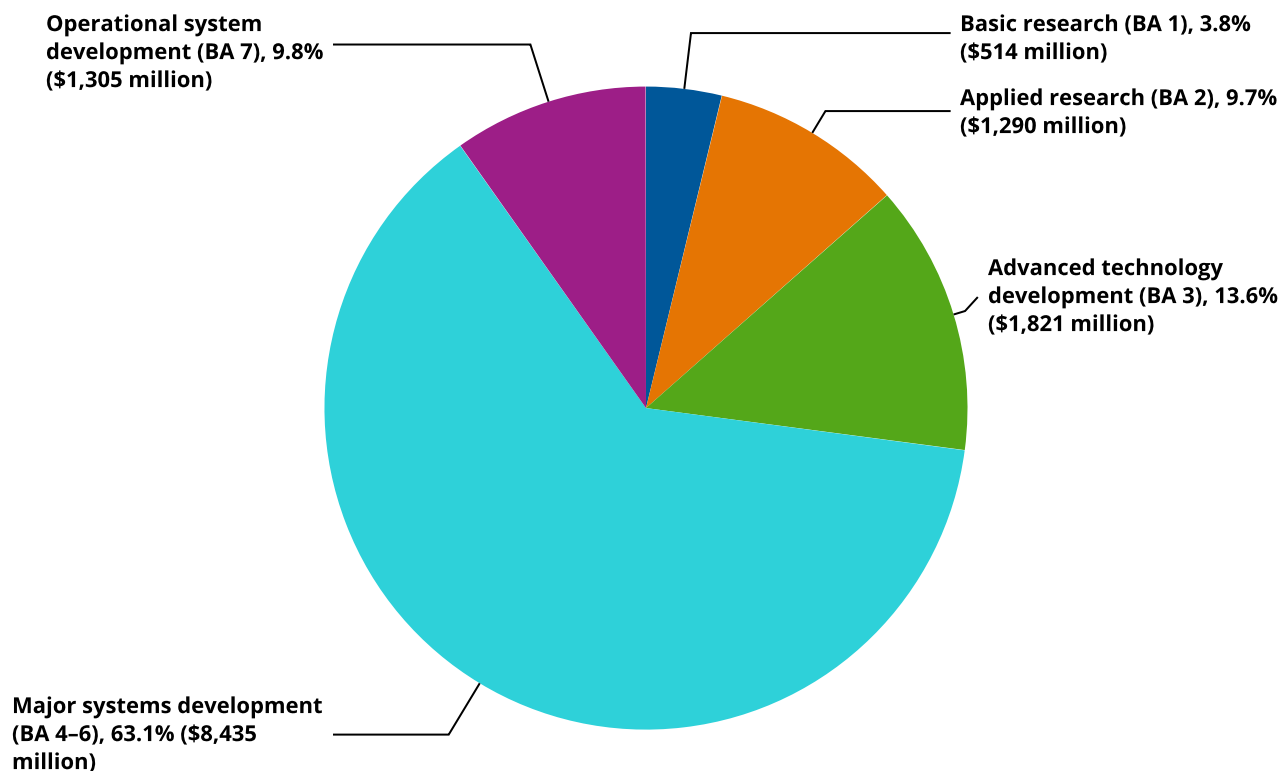
## Department of the Army

In FY 2022, the Department of the Army's RDT&E obligations totaled \$13.4 billion, of which R&D totaled \$12.1 billion, or 90% of the Department of the Army's RDT&E portfolio ([figure 6](#)). Major systems development (BA 4–6) is the largest component of the Department of the Army's RDT&E portfolio, with \$8.4 billion, or 63% of all of the Department of the Army's RDT&E. Major systems development includes advanced component development and prototypes (BA 4), system development and demonstration (BA 5), and RDT&E management support (BA 6). BA 4 is defined as "efforts necessary to evaluate integrated technologies, representative modes, or prototype systems in a high fidelity and realistic operating environment...[this] phase includes system specific efforts that help expedite technology transition from the laboratory to operational use."<sup>22</sup> BA 5 is defined as "system development and demonstration programs [that] have passed Milestone B

approval and are conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production.”<sup>23</sup> BA 6 is defined as “management support for research, development, test, and evaluation efforts and funds to sustain and/or modernize the installations or operations required for general research, development, test, and evaluation....Test ranges, military construction, maintenance support of laboratories, operation and maintenance of test aircraft and ships, and studies and analysis in support of RDT&E program are funded in this budget activity.”<sup>24</sup> Major systems development activities that support the development of technology prototypes and proving capabilities prior to preproduction development improve the Department of the Army’s ability to test and evaluate technologies and systems prior to full-scale procurement and fielding in combat.

**Figure 6**

**Department of the Army obligations for research, development, test, and evaluation: FY 2022**



BA = budget activity.

**Note(s):**

Because of rounding, detail may not add to total. Department of Defense (DOD) development obligations have been reported in two categories, advanced technology and major systems, since volume 44 (FYs 1994–96). As of volume 66 (FYs 2016–17), the definition of major systems development was changed to represent DOD Budget Activities 4 through 6 instead of Budget Activities 4 through 7. Funding for DOD’s Operational System Development (Budget Activity 7) was first reported as a separate category for volume 66. FY 2022 obligations include additional funding provided by supplemental COVID-19 pandemic-related appropriations (e.g., Coronavirus Aid, Relief, and Economic Security [CARES] Act).

**Source(s):**

National Center for Science and Engineering Statistics, Survey of Federal Funds for Research and Development, FYs 2022–23.

The Department of the Army’s obligations for advanced technology development, operational system development, and applied research account for \$1.8 billion (14%), \$1.3 billion (10%), and \$1.3 billion (10%), respectively. Basic research obligations totaled \$514 million, or 4% of the Department of the Army’s RDT&E.

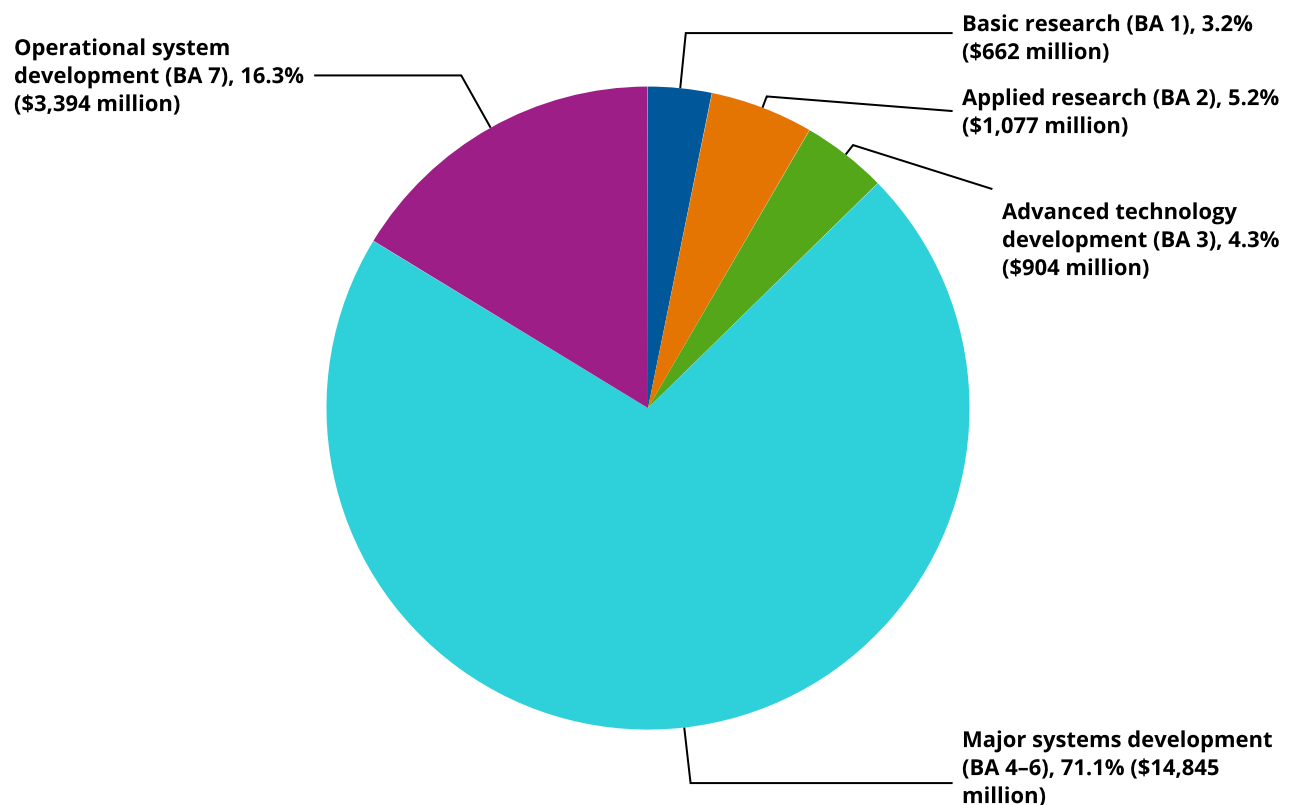


## Department of the Navy

The Department of the Navy is the second-largest funder of RDT&E, behind the Department of the Air Force, with \$20.9 billion of RDT&E obligations in FY 2022 (figure 7). Overall R&D totaled \$17.5 billion, or 84% of Department of the Navy's RDT&E portfolio. The Department of the Navy's RDT&E portfolio prioritizes major systems development, with obligations of \$14.8 billion, or 71% of the Department of the Navy's total RDT&E. Operational system development was the second-largest category within the Department of the Navy's RDT&E, with \$3.4 billion (16%). Applied research obligations totaled \$1.1 billion (5%), followed by advanced technology development and by basic research with \$904 million (4%) and \$662 million (3%), respectively. The Department of the Navy's support for major systems development—the development of technology prototypes, proving capabilities, and the like—supports the ability to improve capabilities and operations for testing and evaluation before they go into preproduction development.

**Figure 7**

**Department of the Navy obligations for research, development, test, and evaluation: FY 2022**



BA = budget activity.

**Note(s):**

Because of rounding, detail may not add to total. Department of Defense (DOD) development obligations have been reported in two categories, advanced technology and major systems, since volume 44 (FYs 1994–96). As of volume 66 (FYs 2016–17), the definition of major systems development was changed to represent DOD Budget Activities 4 through 6 instead of Budget Activities 4 through 7. Funding for DOD's Operational System Development (Budget Activity 7) was first reported as a separate category for volume 66. FY 2022 obligations include additional funding provided by supplemental COVID-19 pandemic-related appropriations (e.g., Coronavirus Aid, Relief, and Economic Security [CARES] Act).

**Source(s):**

National Center for Science and Engineering Statistics, Survey of Federal Funds for Research and Development, FYs 2022–23.

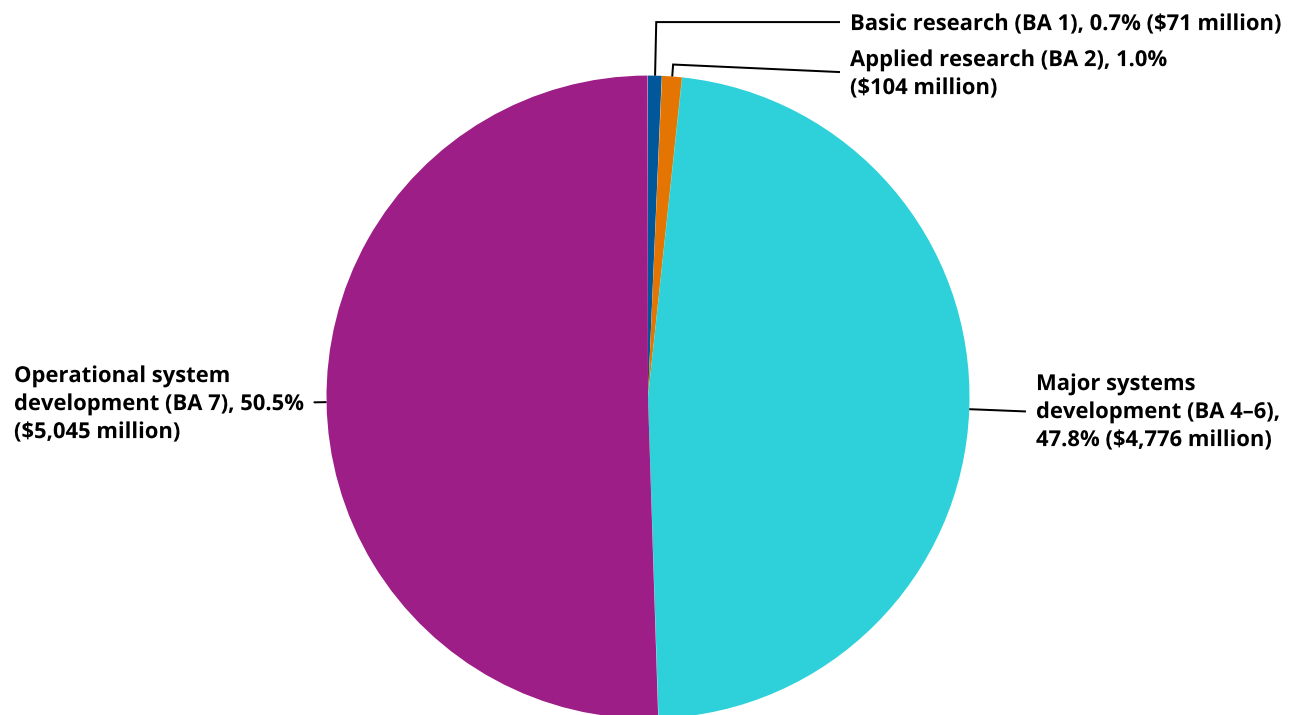
## Space Force

The newest branch of the armed services, the Space Force, was established on 20 December 2019, when the National Defense Authorization Act for FY 2020 was signed into law.<sup>25</sup> The mission of the Space Force is to secure the nation's interests in, from, and to space.<sup>26</sup> In other words, the Space Force organizes, trains, and equips personnel to protect the United States and allied interests in space and to provide space capabilities to the joint forces.<sup>27</sup> To this end, Space Force research seeks to solve complex problems associated with operating in space by developing and delivering technology from satellites to rocket fuels to meet the functional needs of the organization.

The Space Force's RDT&E portfolio, like the other armed services, prioritizes the later stages of development, although the distribution of these categories are split nearly in half between major systems development and operational system development (figure 8). In FY 2022, the Space Force's RDT&E totaled nearly \$10.0 billion, of which R&D totaled about half, or \$5.0 billion. Operational system development was the largest component of the Space Force's RDT&E portfolio, with obligations of \$5.0 billion, closely followed by major systems development, with obligations of \$4.8 billion. Meanwhile, obligations for applied research and basic research accounted for \$104 million (1%) and \$71 million (1%) of the Space Force's RDT&E portfolio. The Space Force did not have any obligations for advanced technology development.

**Figure 8**

**Space Force obligations for research, development, test, and evaluation: FY 2022**



BA = budget activity.

**Note(s):**

Because of rounding, detail may not add to total. Department of Defense (DOD) development obligations have been reported in two categories, advanced technology and major systems, since volume 44 (FYs 1994–96). As of volume 66 (FYs 2016–17), the definition of major systems development was changed to represent DOD Budget Activities 4 through 6 instead of Budget Activities 4 through 7. Funding for DOD's Operational System Development (Budget Activity 7) was first reported as a separate category for volume 66. FY 2022 obligations include additional funding provided by supplemental COVID-19 pandemic-related appropriations (e.g., Coronavirus Aid, Relief, and Economic Security [CARES] Act).

**Source(s):**

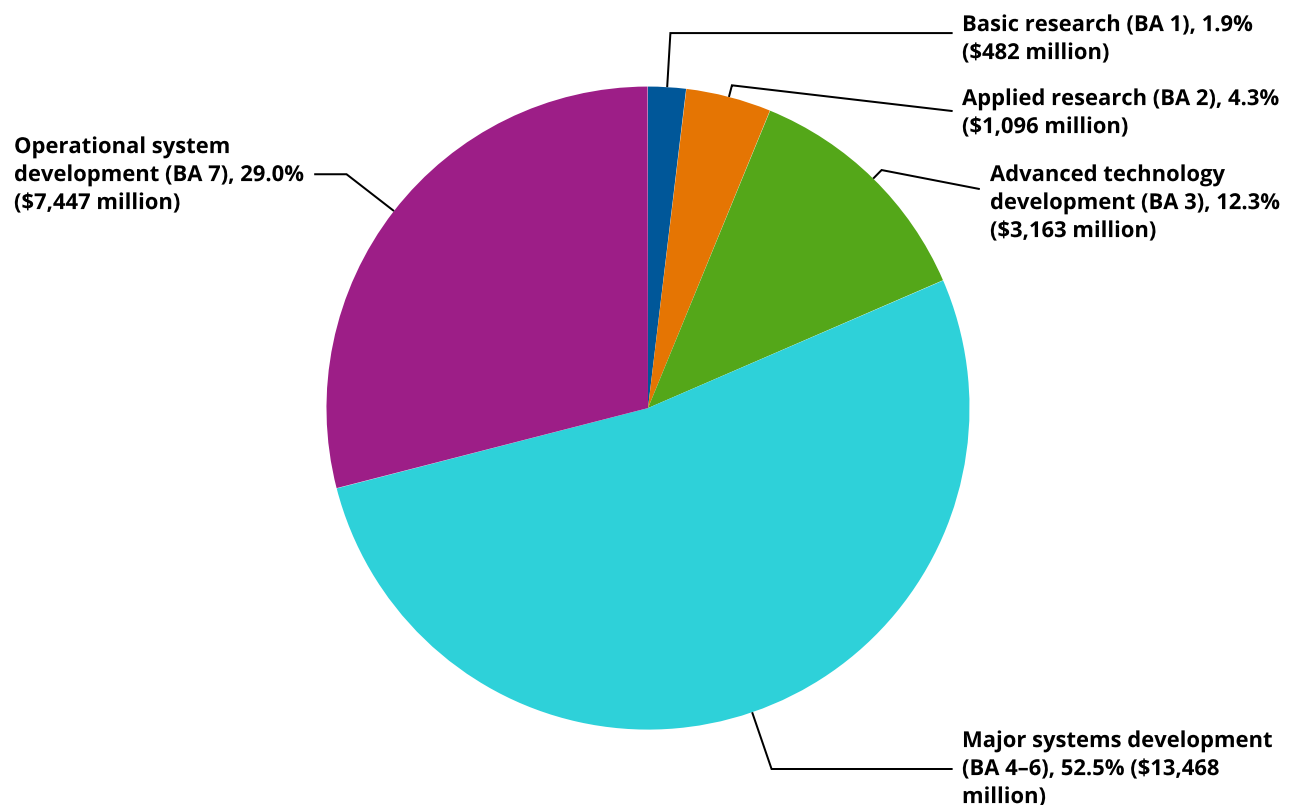
National Center for Science and Engineering Statistics, Survey of Federal Funds for Research and Development, FYs 2022–23.

## All other defense agencies

In addition to the armed services, NCSES collects RDT&E data from other defense agencies that support the mission of the DOD overall and those of the armed services. Some of these agencies include the Defense Information Systems Agency, the Missile Defense Agency, the Defense Threat Reduction Agency, the Defense Logistics Agency, and the Joint Staff. NCSES presents data for these agencies combined as other defense agencies in the Federal Funds for R&D data tables (<https://ncses.nsf.gov/surveys/federal-funds-research-development/>). In FY 2022, all other defense agencies' obligations for RDT&E totaled \$25.7 billion. Of this amount, R&D totaled \$18.2 billion, or 71% of their total RDT&E portfolio (figure 9). Major systems development totaled \$13.5 billion, or 52% of total RDT&E. Operational system development was the second-largest category of funding, with \$7.4 billion, or 29% of RDT&E. Advanced technology development, applied research, and basic research accounted for \$3.2 billion (12%), \$1.1 billion (4%), and \$482 million (2%), respectively.

**Figure 9**

**Other defense agencies' obligations for research, development, test, and evaluation: FY 2022**



BA = budget activity.

**Note(s):**

Because of rounding, detail may not add to total. Department of Defense (DOD) development obligations have been reported in two categories, advanced technology and major systems, since volume 44 (FYs 1994–96). As of volume 66 (FYs 2016–17), the definition of major systems development was changed to represent DOD Budget Activities 4 through 6 instead of Budget Activities 4 through 7. Funding for DOD's Operational System Development (Budget Activity 7) was first reported as a separate category for volume 66. FY 2022 obligations include additional funding provided by supplemental COVID-19 pandemic-related appropriations (e.g., Coronavirus Aid, Relief, and Economic Security [CARES] Act).

**Source(s):**

National Center for Science and Engineering Statistics, Survey of Federal Funds for Research and Development, FYs 2022–23.

## Conclusion

In aggregate, DOD's obligations for the research component of RDT&E funding (BA 1 and BA 2) totaled \$10.2 billion in FY 2022, whereas funding for development activities was \$105.8 billion, with \$10.1 billion for advanced technology development (BA 3), \$52.0 billion for major systems development (BA 4–6), and \$43.6 billion for operational system development (BA 7). In addition to DOD's R&D activities, the NCSSES Survey of Federal Funds for R&D provides information on RDT&E operational system development activities, which highlight the immediate result of previous investments in R&D prior to the full-scale production of systems and technologies. Treating DOD as a single entity masks the diversity in types of R&D investment. A review of the many agency components that make up DOD shows that agency obligations for RDT&E are often directed by the various mission and programmatic needs of the various component agencies.

## Data Sources, Limitations, and Availability

Federal Funds for R&D is a census of all federal agencies that fund R&D programs, as identified from information in the president's budget submission to Congress, excluding the Central Intelligence Agency. Federal agencies that fund R&D are identified in *Analytical Perspectives, Budget of the United States Government, Fiscal Year 2023*. Data were obtained from 32 federal agencies (14 federal departments and 18 independent agencies) that had obligations for R&D during FY 2022 or FY 2023. Because multiple subdivisions of some federal departments completed the survey, there were agency-level responses from 6 federal departments, 48 agencies (within another 8 federal departments), and 18 independent agencies. However, lower offices could also be authorized to enter data. In Federal Funds for R&D nomenclature, agency-level offices could authorize program offices, program offices could authorize field offices, and field offices could authorize branch offices. When these suboffices are included, there were 725 total respondents: 72 agencies, 95 program offices, 178 field offices, and 380 branch offices.

Although this survey is a census of federal agencies that fund R&D and there is no sampling error, survey data are still subject to some degree of unmeasured nonsampling error, which may include errors in classification or measurement of certain aspects of an agency's R&D. For additional information, see the section "Survey Quality Measures" within the Technical Notes of the survey. The full set of data tables for FY 2022 are available at <https://ncses.nsf.gov/surveys/federal-funds-research-development/>.

NCSSES has reviewed this product for unauthorized disclosure of confidential information and approved its release (NCSSES-DRN24-019).

## Notes

- 1 See President's Budget for Fiscal Year 2025, historical tables 5.4, Discretionary Budget Authority by Agency: 1976–2029, and 5.5, Percentage Distribution of Discretionary Budget Authority by Agency: 1976–2029. Available at <https://www.whitehouse.gov/omb/budget/historical-tables/>.
- 2 Budget authority means the authority provided by law to incur financial obligations that will result in outlays. Thus, budget authority sets a limit on new obligations an agency may incur each fiscal year. See Office of Management and Budget, Executive Office of the President. 2016. Circular A-11: Preparation, Submission, and Execution of the Budget, Section 20.4, page 12 of Section 20. Washington, DC. [https://www.whitehouse.gov/wp-content/uploads/2018/06/a11\\_web\\_toc.pdf](https://www.whitehouse.gov/wp-content/uploads/2018/06/a11_web_toc.pdf).
- 3 See President's Budget for Fiscal Year 2025, historical tables 5.4, Discretionary Budget Authority by Agency: 1976–2029, and 5.5, Percentage Distributions of Discretionary Budget Authority by Agency: 1976–2029. Available at <https://www.whitehouse.gov/omb/budget/historical-tables/>.
- 4 Data users should note DOD civil programs, distinct from military programs, include the authorities for pension, health, education, and other programs.

- 5 National Center for Science and Engineering Statistics (NCSES). 2024. *Federal R&D Funding, by Budget Function: Fiscal Years 2022–24*. NSF 24-310. Alexandria, VA: U.S. National Science Foundation. Available at <https://ncses.nsf.gov/data-collections/federal-budget-function/2022-2024#data>. See the full set of data tables: table 1 and table 2.
- 6 For additional information on DOD’s RDT&E appropriation structure, see Congressional Research Service, Gallo ME. 2024. *InFocus: Defense Primer: RDT&E*. February 27. Available at <https://crsreports.congress.gov/product/pdf/IF/IF10553>.
- 7 See *Budget Function*: table 6. Available at <https://ncses.nsf.gov/pubs/nsf24310/table/6>.
- 8 See Survey of Federal Funds for R&D: table 10. Available at <https://ncses.nsf.gov/pubs/nsf24321/table/10>.
- 9 Obligations represent the amount for orders placed, contracts awarded, services received, and similar transactions during a given period, regardless of when the funds were appropriated or when future payment of money is required.
- 10 See DOD, Financial Management Regulation, Volume 2B, Chapter 5, Section 1.5, RDT&E Budget Activities. [https://comptroller.defense.gov/portals/45/documents/fmr/current/02b/02b\\_05.pdf](https://comptroller.defense.gov/portals/45/documents/fmr/current/02b/02b_05.pdf).
- 11 In the September 2022 edition of the DOD, Financial Management Regulation, Volume 2B, Chapter 5, DOD formalized an additional BA 8 category, Software and Digital Technology Pilot Programs. Although this new BA 8 is outside the definition of R&D, it is within the scope of RDT&E. However, NCSES did not collect BA 8 data from DOD agencies until Volume 73 (FYs 2023–24), Federal Funds for R&D. As such, DOD’s BA 8 is not discussed in this InfoBrief since data presented are from the FY 2022 survey. The effect of the addition of BA 8 will be available in the forthcoming Volume 73 (FYs 2023–24), Federal Funds for R&D.
- 12 Changes to DOD reporting were requested by Robert V. Tuohy, Office of the Director of Defense Research and Engineering in a memorandum to John E. Jankowski, R&D Statistics Program Director, National Center for Science and Engineering Statistics. 2 February 1995.
- 13 The 2016 edition of OMB Circular A-11 is used to inform agencies on the budget formulation process for the FY 2018 proposal for the president’s budget submission to Congress, which was issued in 2017. OMB and the federal agencies began work on the FY 2018 budget before FY 2016 has closed and before the full appropriations processes were completed for FY 2017. Therefore, the FY 2017 budget authority in the 2018 proposed budget are based on the previous budget, and any revisions to the FY 2017 budget to account for definitional changes in experimental development do not present themselves until the issuance of the FY 2019 president’s budget proposal.
- 14 For more information on the reclassification of operational system development and its effect on R&D statistical data, see Pece C, Jankowski J; National Center for Science and Engineering Statistics (NCSES). 2021. *Statistical Definition of Development Clarified: Effect on Reported Federal R&D Totals*. NSF 21-326. Alexandria, VA: U.S. National Science Foundation. Available at <https://ncses.nsf.gov/pubs/nsf21326/>.
- 15 Per memorandum from Robert V. Tuohy, Office of the Director of Defense Research and Engineering to John E. Jankowski, R&D Statistics Program Director, National Center for Science and Engineering Statistics, 2 February 1995.
- 16 See BA 7, Operational System Development, in the DOD Financial Management Regulation, Volume 2B, Chapter 5, at [https://comptroller.defense.gov/portals/45/documents/fmr/current/02b/02b\\_05.pdf](https://comptroller.defense.gov/portals/45/documents/fmr/current/02b/02b_05.pdf).
- 17 The Office of the Under Secretary of Defense (Comptroller) annual RDT&E Programs (R-1) report provides details for each DOD component unit for types of RDT&E, by individual program element. For FY 2022 data, see [https://comptroller.defense.gov/Portals/45/Documents/defbudget/FY2024/FY2024\\_r1.pdf](https://comptroller.defense.gov/Portals/45/Documents/defbudget/FY2024/FY2024_r1.pdf).
- 18 See <https://www.darpa.mil/about-us/mission>.
- 19 See <https://www.darpa.mil/about-us/mission>.
- 20 See <https://www.health.mil/About-MHS/Our-Strategy>.
- 21 See <https://www.health.mil/Military-Health-Topics/Research-and-Innovation/Medical-Research-and-Development?type=Spotlights>.

22 See DOD, Financial Management Regulation, Volume 2B, Chapter 5, Section 1.5.4. at [https://comptroller.defense.gov/portals/45/documents/fmr/current/02b/02b\\_05.pdf](https://comptroller.defense.gov/portals/45/documents/fmr/current/02b/02b_05.pdf).

23 See DOD, Financial Management Regulation, Volume 2B, Chapter 5, Section 1.5.5. at [https://comptroller.defense.gov/portals/45/documents/fmr/current/02b/02b\\_05.pdf](https://comptroller.defense.gov/portals/45/documents/fmr/current/02b/02b_05.pdf).

24 See DOD, Financial Management Regulation, Volume 2B, Chapter 5, Section 1.5.6. at [https://comptroller.defense.gov/portals/45/documents/fmr/current/02b/02b\\_05.pdf](https://comptroller.defense.gov/portals/45/documents/fmr/current/02b/02b_05.pdf).

25 See Public Law 116-92 at <https://www.congress.gov/116/plaws/publ92/PLAW-116publ92.pdf>.

26 See <https://www.spaceforce.mil/News/Article-Display/Article/3517324/space-force-announces-new-mission-statement/>.

27 See <https://www.spaceforce.mil/About-Us/About-Space-Force/Space-Capabilities/#:~:text=The%20Space%20Force%20organizes%2C%20trains,West%20Cost%20Space%20Launch%20Deltas.>

## Suggested Citation

Pece CV; National Center for Science and Engineering Statistics (NCSES). 2024. *Analysis of Department of Defense Funding for R&D and RDT&E in FY 2022*. NSF 25-301. Alexandria, VA: U.S. National Science Foundation. Available at <https://nces.nsf.gov/pubs/nsf25301>.

## Contact Us

### Report Author

Christopher V. Pece  
Survey Manager  
NCSES  
Tel: 703-292-7788  
E-mail: [cpece@nsf.gov](mailto:cpece@nsf.gov)

### NCSES

National Center for Science and Engineering Statistics  
Directorate for Social, Behavioral and Economic Sciences  
U.S. National Science Foundation  
2415 Eisenhower Avenue, Suite W14200  
Alexandria, VA 22314  
Tel: (703) 292-8780  
FIRS: (800) 877-8339  
TDD: (800) 281-8749  
E-mail: [ncesweb@nsf.gov](mailto:ncesweb@nsf.gov)