

VALU3S

Verification and Validation of Automated Systems' Safety and Security

Final communication activity report

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Project Overview

Manufacturers of automated systems and the manufacturers of the components used in these systems have been allocating an enormous amount of time and effort in the past years developing and conducting research on automated systems. The effort spent has resulted in the availability of prototypes demonstrating new capabilities as well as the introduction of such systems to the market within different domains. Manufacturers of these systems need to make sure that the systems function in the intended way and according to specifications which is not a trivial task as system complexity rises dramatically the more integrated and interconnected these systems become with the addition of automated functionality and features to them.

With rising complexity, unknown emerging properties of the system may come to the surface making it necessary to conduct thorough verification and validation (V&V) of these systems. Through the V&V of automated systems, the manufacturers of these systems are able to ensure safe, secure and reliable systems for society to use since failures in highly automated systems can be catastrophic.

The high complexity of automated systems incurs an overhead on the V&V process making it time-consuming and costly. VALU3S aims to design, implement and evaluate state-of-the-art V&V methods and tools in order to reduce the time and cost needed to verify and validate automated systems with respect to safety, cybersecurity and privacy (SCP) requirements. This will ensure that European manufacturers of automated systems remain competitive and that they remain world leaders. To this end, a multi-domain framework is designed and evaluated with the aim to create a clear structure around the components and elements needed to conduct V&V process through identification and classification of evaluation methods, tools, environments and concepts that are needed to verify and validate automated systems with respect to SCP requirements.

In VALU3S, 13 use cases with specific safety, security and privacy requirements will be studied in detail. Several state-of-the-art V&V methods will be investigated and further enhanced in addition to implementing new methods aiming for reducing the time and cost needed to conduct V&V of automated systems. The V&V methods investigated are then used to design improved process workflows for V&V of automated systems. Several tools will be implemented supporting the improved processes which are evaluated by qualification and quantification of safety, security and privacy as well as other evaluation criteria using demonstrators. VALU3S will also influence the development of safety, security and privacy standards through an active participation in related standardisation groups. VALU3S will provide guidelines to the testing community including engineers and researchers on how the V&V of automated systems could be improved considering the cost, time and effort of conducting the tests.

VALU3S brings together a consortium with partners from 10 different countries, with a mix of *industrial partners* (25 partners) from automotive, agriculture, railway, healthcare, aerospace and industrial automation and robotics domains as well as leading *research institutes* (6 partners) and *universities* (10 partners) to reach the project goal.

Consortium

RISE RESEARCH INSTITUTES OF SWEDEN AB	RISE	Sweden
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INSTITUTO SUPERIOR DE ENGENHARIA DO PORTO	ISEP	Portugal
UNIVERSITA DEGLI STUDI DI GENOVA	UNIGE	Italy
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IKERLAN S. COOP	IKER	Spain
R G B MEDICAL DEVICES SA	RGB	Spain
UNIVERSIDADE DE COIMBRA	COIMBRA	Portugal
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KUNGLIGA TEKNISKA HOEGSKOLAN	KTH	Sweden
STATENS VAG- OCH TRANSPORTFORSKNINGSINSTITUT	VTI	Sweden
UNIVERSIDAD DE CASTILLA - LA MANCHA	UCLM	Spain
FRAUNHOFER GESELLSCHAFT ZUR FOERDERUNG DER ANGEWANDTEN FORSCHUNG E.V.	FRAUNHOFER	Germany
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LIEBERLIEBER SOFTWARE GMBH	LLSG	Austria
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BOMBARDIER TRANSPORTATION SWEDEN AB	BT	Sweden
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Executive Summary

This document aims to report all the activities carried out within the frame of the Task 6.4 “*External communication including interaction with other, related projects*” during the whole life span of VALU3S Project. The aforementioned activities have been performed according to the Initial Communication Plan drafted in D6.6 [1] at Month 4, which also establish reference KPIs (available also in Chapter 3) for the evaluation of the success of the communication campaign. Moreover, these have been updated in the Final Communication Plan drafted in D6.14 [2] based on the intermediate results evaluated at M12 to understand the adequacy of the target values.

The document shows that the communication activity has been successfully carried out and all the target values of KPIs, defined at the beginning of the project and increased after the first year, have been achieved.

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Acronyms

AI	Artificial Intelligence
D	Deliverable
DIH	Data Input Handler
DML	Data Manipulation Language
DoA	Description of the Action
GDPR	General Data Protection Regulation
IEEE	Institute of Electrical and Electronics Engineers
KPI	Key Performance Indicator
M	Project Month
MBD	Model-Based Design
ML	Machine Learning
Q	Quarter
RADAR	RAdio Detection And Ranging
R&D	Research and Development
SCP	Safety, Cybersecurity, and Privacy
SME	Small and Medium-sized Enterprises
V&V	Verification and Validation

Chapter 1 Introduction

This document is the fifth and last deliverable of Task 6.4 “*External communication including interaction with other, related projects*” and it aims to describe all the communication activities undertaken during the whole life span of the project and, especially, results achieved through them. In particular, achievements of the communication activities are evaluated with regards to Key Performance Indicators (KPIs) defined in the Communication Plan and the related target values.

Following the same structure of Deliverable D6.6 [1], the activities are subdivided according to the different communication channels in which they are undertaken, specifically:

- Website
- Newsletter
- Social medias
- Events

Furthermore, also the activities dedicated to the interaction with other related projects will be reported. In the end, the Communication KPIs set first in D6.6 [1] and then updated in D6.14 [2] are assessed using final results measured for the whole of the project.

The structure of this document is made as following. In Chapter 2, the activities performed in the whole project in order to achieve the Communication objectives are described. In Chapter 3, the effectiveness of the actions already implemented is evaluated according to Key Performance Indicators set in the initial version of the Communication Plan and reviewed in the Final Communication Plan. Finally, Chapter 4 presents the conclusions derived from the analysis of the third year of activities developed.

Chapter 2 Final Communication Activity Report

This chapter aims to describe all the Communication activities carried out in the third and last year of the project, with regards to the Final Communication Plan drafted in D6.6 [2]. The Chapter is subdivided according to the different communication channels set up for the project, and which the VALU3S communication strategy mainly relies on. For each channel, the outputs of the communication activities are reported, highlighting the adherence with the Initial Communication Plan and the strategic pillars defined in that document.

2.1 Web Media

Most of the communication strategy of VALU3S project has been focused on web media. This choice has been taken in light of the target audience of the project, which is supposed to be used to navigate these kinds of channels, but also due to the COVID-19 outbreak [3] and consequent restrictions which have significantly reduced opportunities for live meetings and events for the two first years of the project. As stated in the Initial Communication Plan, the communication strategy on web media is based on four main channels:

- The VALU3S website [4];
- The VALU3S LinkedIn profile [5];
- The VALU3S Twitter profile [6];
- The VALU3S YouTube channel [7].

In the following, activities of each channel are described in detail.

2.1.1 Website

The website is the main channel of the VALU3S project and therefore a large part of the communication activities has concerned the creation and publication of contents on it. The VALU3S website has been designed to give to the visitor a complete overview of project scope, activities, partners, as well as ongoing and future events. The website is managed, updated, and maintained by RISE, but all the partners involved in the dissemination work package has contributed to the improvement of this tool and to the creation and implementation of valuable content.

Website Structure and Analytics

The website consists of several sections where the project details are presented, and these allow the user to gather as much information as possible about the project. The sections present in the current version of the website are the following:

- *Project*: a section containing subsections in which the user can find a project summary, a description of work packages, domains and use cases descriptions; The section is organized in the following subsections:
 - *About the project*;
 - *Work Packages*;
 - *Domains and use case*;
 - *Partners*.

- *News*: a section devoted to short articles aimed at informing visitors about the progress of the project and its outcomes, e.g., internal and external events, achievements, dissemination and communication actions, etc. This section is further divided in two subsections:
 - *News*: it contains news items;
 - *Newsletters*; this section is dedicated to the latest newsletters issued by the project communicators. The page presents links that direct the user with one click to the past newsletters available, as also requested by the review experts during the first review meeting.
- *Events*: this section contains a virtual calendar reporting all the info on events connected to the project, both internal (e.g., General Assembly) and external (e.g., workshop in which VALU3S representatives make a speech). Two specific sections are dedicated to two main events organized by VALU3S:
 - *VERDI workshop*
 - *VALU3S Summer School 2023*
- *Publications*: this section contains different documents generated as output of VALU3S project, specifically:
 - *Blog*: this section is dedicated to a series of articles inherent to the project topics or to the project itself. The articles have a scientific and industrial approach but, at the same time, they are accessible to a general audience;
 - *Publications*: this section provides access to the scientific papers published by VALU3S partners within the project. To date, more than 30 publications have been submitted and are accessible from the website;
 - *Deliverables*: the section presents the list of currently submitted public deliverables or technical reports. When the user clicks on the deliverable of interest, he/she is redirected to the pdf file for reading.
- *Media*: this section contains all the media made available in the various social channels, as requested by the project's review experts in the first review meeting. Currently all the videos uploaded to the project's YouTube channel can be viewed on the Media page of the website.
- *VALU3S web-based repository*: it redirects to the URL of VALU3S web-based repository containing methods, tools and use-cases developed in the project;
- *Contact*: this section contains contact information for the project coordinator and key information about the coordinating institution, RISE;
- *Cookies & Integrity*: it reports information about privacy policy, cookie policy and personal data processing.

The Google Analytics for WordPress plugin is used for tracking the usage, reference channels and audience of the website. Every quarter a periodical report concerning the activities on the website is produced. The results are analysed to understand the trend of interaction of the audience and the results are evaluated in relation to the VALU3S KPIs.

In order to maximize the number of visitors to the website, social media channels are exploited to redirect users from social profiles to the official website. For this purpose, every new activity on the website (e.g., publication of a new blog article) is promoted with posts on social media profiles (see Figure 2.1).



Lower costs for verification and validation of automated systems and a safer everyday life for the end user

Dec 3, 2020

Highly automated systems are being increasingly used in our day-to-day life. A great number of these system are also safety-critical, meaning that failures in them could result in loss of lives or damage to the environment.

Examples of these systems are cars, airplanes, and health monitoring systems. Is it possible to anticipate possible errors and eliminate them to the extent that we could launch these systems into our everyday lives? The answer is -Yes! RISE is the coordinator of the VALU3S project where state-of-the-art methods and tools are used to verify and validate the safety and security of automated systems.

[read more](#)

Figure 2.1 The first blog article published on the VALU3S website

Result of activities on the Website

The main contents created in Task 6.4 and published on the Website are news articles and blog articles. At the time being, the VALU3S consortium has published:

- 89 news articles;
- 13 blog articles;
- 10 newsletters.

2.1.2 Web Newsletter

To communicate with organizations and individuals who are interested in the project, several newsletters are being produced during the project. These newsletters are sent out to different target groups. Interested individuals and organizations could subscribe to VALU3S newsletters by filling in the subscription form which is placed on the project website as well as on LinkedIn.

Distribution Frequency, Content, and Analysis

The newsletters are being distributed every third month:

- 1st: December 2020 – *From All of Us to All of You – A Merry Christmas and a Happy New year!* [8];
- 2nd: March 2021 – *The first year of the VALU3S project* [9];
- 3rd: June 2021 – *Getting ready for the project's first Annual Review* [10];
- 4th: September 2021 – *Evaluation of the first year of the VALU3S Project is now completed and the project continues its journey in its second year!* [11];
- 5th: December 2021 – *From All of Us to All of You – A Merry Christmas and a Happy New year!* [12].
- 6th: March 2022 – *A summary of the first quarter, 2022* [13].
- 7th: June 2022 – *The VALU3S Team wishes you all a very nice summer*
- 8th: September 2022 – *After a fruitful second year review meeting, the VALU3S project continues its journey in its final year!*
- 9th: December 2022 – *The VALU3S communication team wishes all of you a Merry Christmas and a Happy New Year!*
- 10th: March 2023 – *It's dissemination time!*



The leaders of Task 6.1 - Task 6.4 are responsible for providing the Communication Manager with material to be used for the newsletters. Moreover, all project partners are encouraged to support leaders of Task 6.1 and Task 6.4 by providing useful material.

The newsletter contains a summary of all the new contents published on the website (news and blog articles), as well as a brief update on the progress of the project. It also presents new publications, events, and dissemination of results as well as promoting project videos and use case videos. Subscription to newsletters is monitored together with the analytics of the website.

At the time being, the VALU3S newsletter has 162 subscribers. It is worth notice that, since each newsletter is made available on the website some days after it has been sent out following reviewer comments, visitors are not forced to subscribe to newsletter to read them.

Subscribers' engagement strategy

The newsletter has been, indeed, an essential means of communication because it allows to update VALU3S community on the progress of the project and on the new contents published on the website in a pro-active way. This could significantly increase the number of returning visitors on the website and, consequently, create a strong engagement with a set of organizations and people which can be potential users of the VALU3S platform. To gain more subscribers from the preliminary target groups, the VALU3S communication team has engaged the VALU3S partners to become ambassadors by spreading the newsletter in their networks. To facilitate this process a separate newsletter with a "call-to-action" subscription button has been created and it is sent out to the network. Every second month, VALU3S repeats the message "not a subscriber yet" in social media to invite new members to become subscribers. The subscription form is available online at [14].

In addition to the procedure described above, a dedicated selling email has been created and shared by VALU3S partners together with people belonging to target groups and potentially interested in VALU3S outputs. The selling email contains a link to a web page which describes the VALU3S project and the foreseen results in an easy and fashioned way, in order to attract the visitors and encourage them to visit websites, follow social profiles and subscribe to the newsletter. In fact, the web page has embedded the same "call to action" button which is present in the newsletter page. The web page embedded in the selling email can be found at this link [15], while a preview is showcased in Figure 2.2.



Web version > | Go to our homepage >



Looking for methods and tools that improve safety and cybersecurity of automated systems?

Figure 2.2 Preview of the VALU3S selling email

2.1.3 Social Media Channels

Social media can be an incredibly effective tool for all types of products and communication campaigns. But the actual social networks that you choose can make a big impact on your chances of being successful. There are social media channels that reach nearly half of the earth's population, and there are others with much smaller, but more targeted audiences like Twitter in which there are most important representatives of the industry and tech worlds. Twitter has 321 million users which is not a small quantity but compared to other social media platforms such as Facebook and Instagram, it is. The choice of social media to use to sponsor a product must be made according to the specific needs and the target customers it aims to have.

The main social media channels on which the VALU3S project is sponsored are LinkedIn [5], Twitter [6] and YouTube [7]. As mentioned before, social medias have been exploited to update visitors about new contents available on the website (e.g., blog articles), planned events, main project achievements etc.

Contents published

In the third year, VALU3S Communication Team has been focused on the production of videos to disseminate project achievements for what concerns use cases, methods and tools. Furthermore, videos and photos have been recorded during events to report VALU3S representative presence.

The main contents produced are indeed:

- Video-interviews to use case owners: live meetings have been exploited to record video-interview with use case owners. They explain needs to be addressed in the project and how VALU3S solved them through methods and tools applied to the use case. Thirteen videos (one for each use-case) are published on YouTube;

- Demonstrator session during 7th GA: a video has been produced to report the demonstrator session undertaken during the 7th GA in Gothenburg at RISE premises;
- Video record of the Press Conference to announce the launch of the VALU3S web-based repository.

In Figure 2.3 and Figure 2.4 screens from the video are shown.



Figure 2.3 A screen from a use-case video-interview



Figure 2.4 A screen from the video of the Demonstrator session

2.1.3.1 Analysis of Social Media Channels Statistics

The results achieved during the third and last year of the project are very important since final outputs of the project must be shared with the community. In this section, the data obtained from web analytics in the quarters 9-12 of the project are reported and analysed. For each quarter and each social media channel, the values recorded and the variation between these and those relating to the previous quarter

are illustrated. The variations related to Q9 refer also to the values reported in the previous deliverable for Q8.

Analysis of Social Media Channels Statistics for the Q9 (M25-27)

The results of the website analysis in the ninth quarter are presented in Table 2.1. All the indicators are positive, indeed it means that the traffic on the website has grown.

Table 2.1 Website analytics for Q9 (M25-M27)

M25-27	Website (valu3s.eu)		
	Statistics	Q9	Variation compared to previous Quarter
	Number of Sessions	2310	+630
	Number of pageviews	4585	+1131
	Bounce rate	46,15%	-2,2%
	New Visitors	1568	+350
	Returning visitors	425	+201

Moreover, the feedback received from the project's LinkedIn (Table 2.2) account is significantly growing. In particular, both visitors, followers and engagement have been increased compared to previous quarter.

Table 2.2 LinkedIn analytics for Q9 (M25-M27)

M25-27	LinkedIn		
	Statistics	Q9	Variation compared to previous Quarter
	Number of posts published	23	+11
	Number of new followers	47	+38
	Number of total followers	323	+47
	New updates (reactions, comments, share)	848	+723
	Engagement rate, calculated as: (Clicks + Likes + Comments + Shares + Follows) / Impressions	8%	+2,8%
	Total number of visitors	212	+153

Also traffic on Twitter (Table 2.3) is increasing, even if at a slower pace. The account has acquired new followers and more reactions.

Table 2.3 Twitter analytics for Q9 (M25-M27)

M25-27	Twitter		
	Statistics	Q9	Variation compared to previous Quarter
	Number of Tweets	26	+17
	Number of new followers	12	+12
	Number of total followers	82	+12
	Number of Retweets	44	+21
	Number of Likes	92	+68
	Number of Impressions	4036	+1554

As can be seen in Table 2.4, in the ninth quarter a good number of videos have been published, highly viewed, and the number of subscribers has increased.

Table 2.4 YouTube analytics for Q9 (M25-M27)

M25-27	YouTube		
	Statistics	Q5	Variation compared to previous Quarter
	Number of videos uploaded	10	+10
	Number of Subscribers	71	+17
	Number of likes	16	+16
	Number of Dislikes	0	+0
	Number of Shares	0	+0
Number of views for all uploaded videos	711	+141	

Analysis of Social Media Channels Statistics for Q10 (M28-30)

The values recorded on the website (Table 2.5) are lower in this quarter than the previous one. Such fluctuation of the data is acceptable, considering that absolute number of visitors is still high compared with expectations defined in the Communication KPIs and given that this quarter is including summer.

Table 2.5 Website analytics for Q10 (M28-M30)

	Website (<i>valu3s.eu</i>)		
	Statistics	Q10	Variation compared to previous Quarter
M28-30	Number of Sessions	1217	-1093
	Number of pageviews	2115	-2470
	Bounce rate (%)	72,31%	+26%
	New Visitors	887	-681
	Returning visitors	151	-274

Also the LinkedIn analytics (Table 2.6) reports a general decrease which can be due to summer holidays. Overall, numbers are in line with objectives and higher than one year ago.

Table 2.6 LinkedIn analytics for Q10 (M28-30)

	LinkedIn		
	Statistics	Q10	Variation compared to previous Quarter
M28-30	Number of posts published	8	-15
	Number of new followers	13	-34
	Number of total followers	336	+13
	New updates (reactions, comments, share)	167	-681
	Engagement rate, calculated as: (Clicks + Likes + Comments + Shares + Follows) / Impressions	7%	-1,4%
	Total number of visitors	37	-175

The same applies also to Twitter (Table 2.7). In fact, almost all indicators are good but lower than the previous quarter.

Table 2.7 Twitter analytics for Q10 (M28-30)

M28-30	Twitter		
	Statistics	Q10	Variation compared to previous Quarter
	Number of Tweets	12	-14
	Number of new followers	3	-9
	Number of total followers	85	3
	Number of Retweets	8	-36
	Number of Likes	13	-79
	Number of Impressions	1085	-2951

Finally, YouTube numbers (Table 2.8) indicate that very low new videos have been uploaded. This explains the decrease in viewing of all videos since the lack of new videos did not capture user attention on the VALU3S channel. This is due by the fact that in the considered quarter communication strategy was focused on other issues (e.g., attendance to events). The number of subscribers has in fact increased.

Table 2.8 YouTube analytics for Q10 (M28-30)

M28-30	YouTube		
	Statistics	Q10	Variation compared to previous Quarter
	Number of videos uploaded	1	-9
	Number of Subscribers	75	+4
	Number of likes	4	-12
	Number of Dislikes	0	+0
	Number of Shares	0	+0
	Number of views for all uploaded videos	745	+34

Analysis of Social Media Channels Statistics for Q11 (M31-33)

The interactions recorded on the website (Table 2.9) have increased in this quarter, recording very high number of session and pageviews.

Table 2.9 Website analytics for Q11 (M31-M33)

M31-33	Website (<i>valu3s.eu</i>)		
	Statistics	Q11	Variation compared to previous Quarter
	Number of Sessions	3111	+1894
	Number of pageviews	3984	+1869
	Bounce rate (%)	88,59%	+16%
	New Visitors	2661	+1774
	Returning visitors	150	-1

The activities on LinkedIn (Table 2.10) show a positive trend: a high number of posts have been published and several new followers have been achieved also during this quarter. This is the result of a good number of new contents published. Furthermore, this is the period when VALU3S repository was made public and promoted on communication channels, indeed this could have had a significant impact.

Table 2.10 LinkedIn analytics for Q11 (M31-33)

M31-33	LinkedIn		
	Statistics	Q11	Variation compared to previous Quarter
	Number of post published	20	+12
	Number of new followers	24	+11
	Number of total followers	360	+24
	New updates (reactions, comments, share)	437	+270
	Engagement rate, calculated as: (Clicks + Likes + Comments + Shares + Follows) / Impressions	8%	+1,5%
	Total number of visitors	88	+51

In this quarter, Twitter (Table 2.11) shows slight positive variations. The number of impressions is very high, so it is a strength of this social media channel.

Table 2.11 Twitter analytics for Q11 (M31-33)

M31-33	Twitter		
	Statistics	Q11	Variation compared to previous Quarter
	Number of Tweets	17	+5
	Number of new followers	4	+1
	Number of total followers	89	+4
	Number of Retweets	12	+4
	Number of Likes	231	+18
	Number of Impressions	2773	+1688

Finally, in this quarter six new videos have been uploaded on YouTube (Table 2.12), generating some new subscribers and a very high number of views.

Table 2.12 YouTube analytics for Q11 (M31-33)

M31-33	YouTube		
	Statistics	Q11	Variation compared to previous Quarter
	Number of videos uploaded	6	+5
	Number of Subscribers	03	+18
	Number of likes	0	-4
	Number of Dislikes	0	+0
	Number of Shares	0	+0
	Number of views for all uploaded videos	1114	+369

Analysis of Social Media Channels Statistics for Q12 (M34-M36)

The values associated to the activities on the website (Table 2.13) show a little decrease in the number of sessions, pageviews and new visitors. It could be a consequence of few news and blog articles published. In fact, in this quarter most of the communication strategy has been focused on creation of videos.

Table 2.13 Website analytics for Q12 (M34-M36)

M34- M36	Website (<i>valu3s.eu</i>)		
	Statistics	Q12	Variation compared to previous Quarter
	Number of Sessions	1614	-1497
	Number of pageviews	2365	-1619
	Bounce rate (%)	74.47%	-14.4%
	New Visitors	1170	-1491
Returning visitors	162	12	

The number shown by the analysis of the exploitation of the LinkedIn channel to disseminate the project (depicted in Table 2.14) represent a slight decrease on the number of new post and visitors, but in general the number of total followers has slightly increased. Decrease in visitors can be explained by the fact that less posts have been published compared to previous quarter.

Table 2.14 LinkedIn analytics for Q12 (M34-36)

M34-36	LinkedIn		
	Statistics	Q12	Variation compared to previous Quarter
	Number of post published	12	-8
	Number of new followers	9	-15
	Number of total followers	369	9
	New updates (reactions, comments, share)	234	-203
	Engagement rate, calculated as: (Clicks + Likes + Comments + Shares + Follows) / Impressions	16%	+0,08
Total number of visitors	45	-43	

Consistently with the data obtained for LinkedIn, also figures related to Twitter are slightly decreased (see Table 2.15). However, the total number of followers has increased.

Table 2.15 Twitter analytics for Q12 (M34-36)

M34-36	Twitter		
	Statistics	Q12	Variation compared to previous Quarter
	Number of Tweets	11	-6
	Number of new followers	1	-3
	Number of total followers	90	1
	Number of Retweets	13	1
	Number of Likes	20	-11
	Number of Impressions	1041	-1732
Number of total reactions (likes + comments + retweets + shares)	1074	-1742	

Finally, YouTube (Table 2.16) reports an increase in terms of followers and likes. This has been achieved despite a decrease in the number of videos published. A set of new videos concerning use-case has been not published yet and they will be uploaded on YouTube in the remaining three months.

Table 2.16 YouTube analytics for Q12 (M34-36)

M34-36	YouTube		
	Statistics	Q12	Variation compared to previous Quarter
	Number of videos uploaded	3	-3
	Number of Subscribers	97	+4
	Number of likes	2	+2
	Number of Dislikes	0	0
	Number of Shares	0	0
Number of views for all uploaded videos	1057	-57	

2.2 Participation in Events

One of the pillars of VALU3S Communication strategy has been the undertaking of communication activities during events, both arranging them to present project outcomes and also participation in fairs, conferences, etc.

Unfortunately, the parallel outbreak of the COVID-19 pandemics [3], which has heavily affected the whole first and second year of the project, has significantly limited the possibility to arrange and/or participate in live events. As a backup plan, VALU3S consortium has participated in several online events, even if the engagement is quite far from that of face-to-face presentation and speeches. On the other hand, online events have also been an opportunity to create dedicated communication materials to spread VALU3S project awareness among stakeholders and people of both industrial and scientific

communities. Note that, these contents have been created for the first year of the project, then refined periodically.

2.2.1 Creation of Communication Materials for Events

With the goal of building typical communication materials that are suited to events, two posters and two flyers were prepared containing the fundamental information necessary to effectively convey the importance of the research, innovation, and developments that are being targeted by the VALU3S consortium, and how that can bring considerable impact to highly automated systems.

For the case of the posters, a roll-out and a typical A0 sized poster, the following information is present:

- **Identification:** name and acronym of the project.
- **Ambition:** identifies the overarching problem being addressed by the project, and provides a short text highlighting how the project will indeed address the problem.
- **Envisioned V&V framework:** an image identifying the dimensions and layers of the envisioned V&V framework, and their validation on use cases.
- **Application domains:** identification of the several application domains targeted by VALU3S use cases.
- **Consortium:** identification of the countries involved in the project, the logos of the members of the consortium, and a depiction of the geographical distribution along European territory.
- **Acknowledgments:** the legal text acknowledging the project's funding entities

The project is presented in its roll-out version in Appendix A.1.

Regarding the produced leaflet, the information present is the following:

- **Identification:** name and acronym of the project, the links for the project's pages in the three social networks considered by the project, which are LinkedIn, Twitter, and YouTube, and finally the link for the project's website.
- **Contacts:** the contact of the project coordinator and of the institution.
- **Ambition (about the project):** identifies the overarching problem being addressed by the project, and provides a diagram and short text highlighting how the project will indeed address the problem.
- **Envisioned V&V framework:** an image identifying the dimensions and layers of the envisioned V&V framework, and their validation on use cases.
- **Application domains:** identification of the several application domains targeted by VALU3S use cases.
- **Consortium:** identification of the countries involved in the project, the logos of the members of the consortium, and a depiction of the geographical distribution along European territory.
- **Acknowledgments:** the legal text acknowledging the project's funding entities

The current leaflet is presented in Appendix A.2 and in Appendix A.3.

2.2.2 Events attended in the third year of the project

In this section, a brief report for each of events attended by VALU3S partners during the third year is given.

CSP-IOT 2022 Summer School

Thomas Bauer from FHG participated in the 3rd Summer School on Cyber Physical Systems and Internet of Things (SS-CPS&IoT'2022) [16], organized by Mediterranean Embedded Computing Resources. In

this event, the VALU3S project representative has given a lesson entitled “How to design and tailor a perfect fitting verification and validation process for your CPS&IoT project”.

Red Hat Research Day 2022

On 15th September 2023, Ales Smrcka from Brno University of Technology was invited to talk about findings of VALU3S project at Red Hat Research Day [17]. Ales presented the method of parametric runtime verification together with the results given by their tool which were developed under VALU3S.

AIDOaRT Workshop 2022

VALU3S Consortium has been invited to have a speech in the AIDOaRT Workshop which was held on 18th November 2022. The AIDOaRT project (“I-augmented automation supporting modeling, coding, testing, monitoring, and continuous development in Cyber-Physical Systems”) is one of the projects that has established a liaison with VALU3S (see Section 2.3). Within this workshop, Kristen Erwin from AIT presented goals and results of VALU3S project.

EF ECS2022

On 24th and 25th November 2022, a team representing VALU3S project has participated physically to EF ECS2022 [18], an international fair concerning electronic systems and components. The edition of 2022 has been held in Amsterdam, specifically in the beautiful location of Beurs Van Berlage, and it was a mixed event including both conferences and exposition.

VALU3S team has exploited the possibility to have a booth hosted in the exposition. The booth has been enriched with the roll-up of VALU3S project and some leaflets, as well as some introduction videos has been shown on the screen of the booth. Furthermore, invitation to the press conference about VALU3S web-based repository launch (that took place some days later) were distributed.



Figure 2.5 VALU3S booth and crew at EF ECS2022

More than 60 people have visited the booth; they were belonging to industry, academia and lobbies. The VALU3S booth and the representative of project consortium are shown in Figure 2.5 and Figure 2.6.



Figure 2.6 VALU3S booth materials

AutoSec Final Conference 2023

VALU3S project has been represented at the AutoSec Final Conference 2023 [19], which has been held on 29th March 2023 both online and physically. AutoSec is a project funded by the Strategic Vehicle Research and Innovation programme (FFI) in Sweden which address main forefront technologies concerning automotive. In this event, the Coordinator of VALU3S project had a speech talking about project activities and achievements.

2.2.3 Events organized by the Consortium

As one of the Dissemination objectives for the third and last year of the project, VALU3S Consortium has organized public events to share significant achievements obtained as output of project activities. Indeed, in the following the main events organized are reported.

Press Conference to promote the launch of VALU3S web-based repository

On 30th November 2022, during the 8th General Assembly of VALU3S project held in Hamburg, the Consortium has arranged a virtual press conference to announce the public launch of VALU3S web-based repository [20]. The press conference has been recorded and can be watched on YouTube [21].

Other events

The VALU3S consortium has also been active in organisation of a scientific workshop in connection with DSN2023 [22]. The workshop is called VERDI (Verification & Validation of Dependable Cyber-Physical Systems) [23]. The consortium is also organization a summer school in July in Genoa, Italy which focuses on verification and validation of dependable cyber-physical systems [24]. Both events are presented in detail in *D6.19 - Final dissemination and training activity report*. A demonstration session showcasing the project demonstrators is also planned to be held in connection with DSN 2023 in Porto. More information about this event could be found in *D5.8 - Final Demo*.

2.3 Liaisons with Other Related Projects (ORP)

The establishment of liaisons with other related projects has been included into VALU3S Communication activities in order to build fruitful relationships with other R&D projects concerning the topics faced in VALU3S, as well as to maximise the impact of the dissemination actions by reaching the widest audience possible.

VALU3S project has reached the establishment of 16 liaisons with other R&D projects and initiatives. Most of them have been favoured by the fact that partners are included in both the projects connected by the liaison.

In detail, for each project some information will be reported such as the partner coordinating the project, its duration and one or more points of contact with VALU3S project (e.g., topics, activities, etc.).

Table 2.17 SAFETY4RAILS project

Acronym of the project	SAFETY4RAILS
Complete title of the project	Data-based analysis for safety and security protection, for detection, prevention, mitigation and response in trans-modal metro and railway networks
Type of project	H2020: SU-INFRA01-2018-2019-2020, Prevention, detection, response and mitigation of combined physical and cyber threats to critical infrastructure in Europe; Innovation Action
Coordinator	Fraunhofer-Gesellschaft, Ernst-Mach-Institut
Duration	24 months (October 2020 – September 2022)
Description	Railways and Metros are safe, efficient, reliable and environmentally friendly mass carriers, and they are becoming even more important means

	<p>of transportation given the need to address climate change. However, being such critical infrastructures turns metro and railway operators as well as related intermodal transport operators into attractive targets for cyber and/or physical attacks. The SAFETY4RAILS project will deliver methods and systems to increase the safety and recovery of track-based inter-city railway and intra-city metro transportation. It addresses both cyber-only attacks (such as impact from WannaCry infections), physical-only attacks (such as the Madrid commuter trains bombing in 2014) and combined cyber-physical attacks, which an important emerging scenario are given increasing IoT infrastructure integration.</p>
Common aspects with VALU3S	<ul style="list-style-type: none"> • Vulnerability analysis of digitised infrastructures • Cyber-physical security and safety threat modelling • Verification and validation of automated systems in critical infrastructures <p>Shared partners: ERARGE, STAM</p>

Table 2.18 SECREDAS project

Acronym of the project	SECREDAS
Complete title of the project	Product Security for Cross Domain Reliable Dependable Automated Systems
Type of project	ECSEL
Coordinator	NXP Semiconductors (NL)
Duration	36 months (May 2018 – April 2021)
Description	The SECREDAS project consortium will build a reference architecture for Secure and Safe Automated systems compliant with the new GDPR Regulation. SECREDAS strives to increase trust into cyber-physical systems by establishing new design and development methodologies to integrate cross-domain cybersecurity and safety related technologies.
Common aspects with VALU3S	<p>SECREDAS is one of the first funded ECSEL Joint Undertaking projects that looks at security, safety and privacy across multiple application domains: Road, Rail and Health. VALU3S follows up on this, sharing the aspects of security, safety and privacy in an even larger group of domains (including industrial control), but with a focus on validation and verification instead of design and development.</p> <p>Shared partners are: AIT, BUT, FRAUNHOFER, RISE</p>

Table 2.19 SHAREWORK project

Acronym of the project	SHAREWORK
Complete title of the project	Safe and effective human-Robot cooperation towards a better competitiveness on current automation lack manufacturing processes.

Type of project	H2020
Coordinator	EURECAT, Centre Tecnologic de Catalunya
Duration	48 months (November 2018 - October 2022)
Description	SHAREWORK project develops a Europe-wide smart modular solution integrated by different software and hardware modules to allow robots to physically interact with humans within a collaborative production environment without the need for physical protection barriers. The project boosts process productivity and improves the ergonomics and safety of those workstations where it is implemented.
Common aspects with VALU3S	<ul style="list-style-type: none"> • SHAREWORK is totally focused on automated systems, especially collaborative robots • One of SHAREWORK topic is safety of the robotic system • Validation and verification methods are exploited to ensure safety of automated systems Shared Partners: STAM, FRAUNHOFER

Table 2.20 CyReV project

Acronym of the project	CyReV (phase I and II)
Complete title of the project	Cyber Resilience for Vehicles
Type of project	Swedish national project funded by Vinnova FFI
Coordinator	Volvo Technology AB (RISE is a partner in the consortium)
Duration	57 months (April 2019 – December 2023)
Description	The introduction of autonomous and connected vehicles has brought new cybersecurity challenges to the automotive industry and put requirements on the dependability of vehicles in the presence of cyber-attacks. CyReV focuses on cybersecurity for automotive in-vehicle systems in a changing environment.
Common aspects with VALU3S	Verification and validation, fault and attack injection, safety and cybersecurity analysis, interplay between safety and cybersecurity. Shared partners: RISE

Table 2.21 Critical-chains project

Acronym of the project	Critical-Chains
Complete title of the project	IOT- & Blockchain-Enabled Security Framework for New Generation Critical Cyber-Physical Systems In Finance Sector
Type of project	H2020- SU-DS05-2018-2019 - Digital security, privacy, data protection and accountability in critical sectors

	Research & Innovation Action
Coordinator	University of Reading
Duration	36 Months (July 2019-June-2022)
Description	Cyber-physical systems refer to systems requiring interaction between computers, communication channels and physical devices. These are used in numerous transactions including banking processes, insurance infrastructures, financial procedures and others. Designed to make things easier, they also face many threats. The EU-funded Critical-Chains project aims to offer a triangular accountability solution bringing a novel integrated security model and framework to effectively support privacy and protect from illegal transactions, money trafficking and internet fraud. Fast and client-friendly, thanks to innovative cloud-based “X-as-a Service”, it will be tested for social, ethical, legal and reliability values and validated for banking, insurance and financial markets.
Common aspects with VALU3S	<ul style="list-style-type: none"> • Both projects cover the topics related to the protection of critical infrastructures which are defined in the NIS Directive • ENISA threat taxonomy and cyber-physical protection in IoT-enabled smart financial systems are parallel to the SCP notion in VALU3S • Use of AI for flow modelling and anomaly detection similar to the V&V notion in VALU3S • Hardware- and software-based cyber resilience solutions are being developed in both projects. <p>Shared Partners: ERARGE</p>

Table 2.22 DCE3C Programme

Acronym of the project	DCE3C Programme
Complete title of the project	Dependability Co-Engineering Programme
Type of project	Project in preparation (ECSEL KDT (Key Digital Technologies) or H2020/Horizon Europe)
Coordinator	Thales France
Duration	Continuous Activity
Link	<u>LinkedIn group:</u> https://www.linkedin.com/groups/13935472/
Description	SIEMENS and AIT were part of the predecessor project AQUAS, where Dependability Co-engineering (DCE) was in focus. Since Dependability attributes like Safety, Security and Reliability are at the heart of VALU3S there is a very strong link to DCE. Even AQUAS is over now there are ongoing activities to foster DCE and establish a sustainable community. SIEMENS and AIT are part of the coordination comity of the “DCE Programme” founded by Thales. This informal initiative is a good hub to interlink VALU3S with other ongoing and upcoming projects.

Common aspects with VALU3S	<p>Six of the VALU3S partners were already involved in AQUAS: RGB, BUT, INTECS, SIEMENS, UNIVAQ and AIT</p> <p>AQUAS Methodology includes Combined Safety/Security analysis methods as enhancement of standard V&V processes.</p> <p>There is as strong link to Industrial Drives for Motion Control use case, which build up on results of AQUAS.</p>
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Table 2.23 Treasure project

Acronym of the project	Treasure
Complete title of the project	Improved Automated Traceability for Assurance of Safety-Critical Systems
Type of project	Regional
Coordinator	UCLM,
Duration	39 months (Jan 2020 – Mar 2023)
Description	Treasure aims to increase the cost-effectiveness of automated traceability for SCS assurance by developing a model-driven and ontology-based approach.
Common aspects with VALU3S	<p>Both VALU3S and Treasure deal with the improvement of traceability management by means of techniques that exploit ontologies. Traceability information quality is another area of interest in common.</p> <p>Shared partner: UCLM</p>

Table 2.24 iRel40 project

Acronym of the project	iRel40
Complete title of the project	Intelligent Reliability 4.0
Type of project	ECSEL
Coordinator	Infineon (TRC and UCLM are partners)
Duration	36 months (May 2020 – Apr 2023)
Description	iRel40 has the ultimate goal of improving reliability of electronic components and systems by reducing failure rates along the entire value chain.
Common aspects with VALU3S	<p>Quality of automated systems is an area on which both projects will work. The use of model-based techniques and of ontology-based ones to this end is another point in common.</p> <p>Shared partners: TRC, UCLM</p>

Table 2.25 Arrowhead Tools project

Acronym of the project	Arrowhead Tools
Complete title of the project	Arrowhead Tools for Engineering of Digitalisation Solutions
Type of project	ECSEL
Coordinator	Luleå Tekniska Universitet
Duration	39 months (May 2019 – Jul 2022)
Description	The Arrowhead Tools project aims for digitalisation and automation solutions for the European industry, which will close the gaps that hinder the IT/OT integration by introducing new technologies in an open-source platform for the design and run-time engineering of IoT and System of Systems. The project will provide engineering processes, integration platform, tools and tool chains for the cost-efficient development of digitalisation, connectivity and automation system solutions in various fields of application.
Common aspects with VALU3S	The engineering processes, integration platform, tools and tool chains that Arrowhead Tools is considering includes V&V aspects. Shared partners: TRC

Table 2.26 NewControl project

Acronym of the project	NewControl
Complete title of the project	Integrated, Fail-Operational, Cognitive Perception, Planning and Control Systems for Highly Automated Vehicles
Type of project	ECSEL
Coordinator	AVL List
Duration	45 months (Apr 2019 – Dec 2022)
Description	NewControl will develop and deliver virtualized platforms for each vehicular sub-system essential to autonomous operation at SAE Level 3+. Each of these unifies the critical components required to realize a specific function – perception, cognition, control – through vertical integration within an adaptive (not rigid) architectural framework. The resulting virtual platforms effectively deliver specific functionalities as services to the vehicular platform, abstracting internal implementation, enabling portability to different application domains, and facilitating modular development of automation that is guaranteed as safe by design.
Common aspects with VALU3S	NewControl also deals with V&V of automated systems; more concretely, of autonomous vehicle features. Solutions that consider system artefact quality management and compliance with standards will be developed in NewControl and in VALU3S.

	Shared partners: TRC
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Table 2.27 IoD project

Acronym of the project	IoD
Complete title of the project	Internet of DevOps
Type of project	Celtic-Plus
Coordinator	KTH
Duration	36 months (Jan 2019 – Dec 2021)
Description	IoD is developing a methodology on how to apply DevOps principles in large organizations, taking into account typical constraints from classical Telecom & CPS industries, e.g., related to the integration of legacy systems, or the need to perform quality assurance of processes. Basic integration services deployed on Internet and Cloud technologies will be provided for supporting lifecycle traceability across data silos, and for enhancing process automation, i.e., paving the way towards Future Internet for integrated development and operational environments for software-intensive applications.
Common aspects with VALU3S	Method integration, tool integration, and traceability are areas that both IoD and VALU3S address. Shared partners: TRC, KTH

Table 2.28 HUBCAP project

Acronym of the project	HUBCAP
Complete title of the project	Digital Innovation HUBs and Collaborative Platform for Cyber-Physical Systems
Type of project	H2020
Coordinator	Aarhus University
Duration	36 months (Jan 2020 – Dec 2022)
Description	The HUBCAP project aims at establishing a cloud-based center of innovation and collaboration among companies, research institutes and competence centers to help SMEs try and adopt Model-Based Design (MBD) technology. It builds on seven established Digital Innovation Hubs (DIHs) in seven European countries, each embedded in its regional innovation ecosystem, offering complementary technical expertise, experimental capabilities, and specialist knowledge in Cyber-Physical Systems (CPS) application domains. From this base, HUBCAP will create a growing and sustainable European network offering SMEs opportunity to

	<p>undertake experiments, seek investment, access expertise and training, and form new business links.</p> <p>HUBCAP will lower barriers for SMEs to realize the potential of growing autonomy in CPS by accessing advanced MBD technology, providing training and guidance, and acting as a gateway to the full network of all registered DIHs specializing in CPS. Half the project funding will go to supporting SMEs, including open call funding for SMEs join the ecosystem and experiment with MBD technology. HUBCAP will extend an existing open collaboration platform to enable SMEs to co-create, analyse and validate new CPS products in a virtual setting, by accessing CPS assets (models, tools, services) and experimenting with new solutions, de-risking investments in skills or resources.</p>
Common aspects with VALU3S	<p>Model-based design techniques for V&V</p> <p>Shared partner: FBK</p>

Table 2.29 SMILE III project

Acronym of the project	SMILE III
Complete title of the project	Safety analysis and verification/validation of ML based systems
Type of project	National
Coordinator	RISE
Duration	24 months (April 2020 – March 2022)
Description	The SMILE program develops method(s) that allow DML-based functions to be included into safety critical vehicular applications. The SMILE III project further develops the Safety Cage concept developed within SMILE I/II, into a reference system architecture and prototype(s), while facilitating compliance with the evolving safety standards.
Common aspects with VALU3S	<p>V&V for safety critical ML-based system</p> <p>Shared partner: RISE</p>

Table 2.30 MIDAS project

Acronym of the project	MIDAS
Complete title of the project	Anonymising data collection for traffic Safety
Type of project	National
Coordinator	RISE
Duration	36 months (April 2020 – March 2023)

Description	MIDAS aims to solve the problem of anonymity regarding video data collected in real traffic environments. MIDAS develops machine learning algorithms to replace sensitive information in images, so that they can be saved for future use while complying with the GDPR.
Common aspects with VALU3S	Machine learning, privacy protection Shared partner: RISE

Table 2.31 AIDOaRT project

Acronym of the project	AIDOaRT
Complete title of the project	AI-augmented automation supporting modeling, coding, testing, monitoring, and continuous development in Cyber-Physical Systems
Type of project	ECSEL
Coordinator	Mälardalen University, Sweden
Duration	36 months
Description	The project aims at using AIOps to automate decisions and process and complete system development tasks. AI technological innovations have to ensure that systems are designed responsibly contributes to our trust in their behavior, and requires both accountabilities, i.e. being able to explain and justify decisions, and explainability, i.e., internal mechanics can be trusted and easily understood by humans).
Common aspects with VALU3S	Automation, modelling, cybersecurity, Artificial Intelligence, Machine Learning, Model-driven engineering Shared partner: AIT, CAMEA, INTECS, ALSTOM, RISE

Table 2.32 ArchitectECA2030 project

Acronym of the project	ArchitectECA2030
Complete title of the project	Trustable architectures with acceptable residual risk for the electric, connected and automated cars
Type of project	ECSEL JU
Coordinator	Infineon Technologies AG
Duration	36 months (May 2020 – April 2023)
Description	The goal of the project is to establish robust mission-validated traceable design of ECS, the quantification of an accepted residual risk of ECS for electric vehicles and increased end-user acceptance.
Common aspects with VALU3S	Verification and validation

Shared partner: NXP, BUT

These 16 liaisons have been exploited by the consortium and in particular by the Communication Team to amplify the impact of dissemination.

Chapter 3 Evaluation of Interim Communication Plan Effectiveness

This chapter aims to give the final evaluation of the effectiveness of activities defined in the Initial Communication Plan (and refined in the final version). Indeed, the progress status of Communication KPIs set in D6.6 [1] and further enhanced in D6.14 [2] are assessed and analysed to depict a final overall judgement about communication results achieved.

3.1 Assessment of Communication KPIs

Table 3.1 contains the KPIs set in D6.6 [1] and those that have been added in D6.14 [2]; for each of them, the target value is specified as well as the current status at M36. Based on feedback collected during the first year of the project, the KPIs have been updated: two new KPIs have been added (Comm-KPI-8 is introduced to monitor the activities concerning the establishment of liaisons with other related projects, while Comm-KPI-9 is introduced to monitor the regular publishment of the newsletter). Moreover, the target value of some existing KPIs have been increased: Comm-KPI-1 has been increased from at least 2000 to at least 3000 since the analysis of the first year of the project has shown that this KPI has been successfully achieved. The target value of Comm-KPI-4 has been increased from at least 40 to at least 60, since the analysis of the first year of the project has shown that 57 posts have been published even if the project was just at its beginning. Comm-KPI-5 is foreseen to grow and indeed the target value has been changed from at least 800 to at least 1000 reactions to published posts. The target value of Comm-KPI-7 has been increased from at least 3 to at least 5 speeches in public events per year. The KPI has been barely achieved in the first year, but the end of the COVID-19 crisis [5] and the restart of live events have favoured a better result in the second and an even better result is expected for the third year of the project.

It is worth noting that some KPIs are expressed “per year”, therefore it is possible to clearly define if they are achieved or not, while others are expressed as total at the end of the project. In Table 3.1, final KPI values are reported.

Table 3.1 Communication KPIs progress status at Month 36

KPI	Description	Target Value	Current state (M36)	Variation target value – current state	Status (achieved, in progress, missed)
Comm-KPI-1	Number of accesses to the VALU3S website per year	≥ 3000	6638	+3638	Achieved
Comm-KPI-2	Average Number of new recipients of newsletters per year	≥ 100	54	-46	Missed

KPI	Description	Target Value	Current state (M36)	Variation target value – current state	Status (achieved, in progress, missed)
Comm-KPI-3	Number of followers on VALU3S social media pages (LinkedIn + Twitter + YouTube)	≥ 500	542	+42	Achieved
Comm-KPI-4	Number of posts published on VALU3S social media pages per year (LinkedIn + Twitter + YouTube)	≥ 60	123	+63	Achieved
Comm-KPI-5	Number of reactions to published posts (likes, comments, shares, retweets) on social media pages per year	≥ 1000	1672	+672	Achieved
Comm-KPI-6	Participation in fairs and exhibitions per years	≥ 3	8	+5	Achieved
Comm-KPI-7	Number of speeches (and/or presentations) in public events per year	≥ 5	6	+1	Achieved
Comm-KPI-8	Number of established liaisons with other related projects	≥ 10	15	+5	Achieved
Comm-KPI-9	Number of newsletters sent out	≥ 8	10	+2	Achieved

The KPIs are briefly discussed below.

Even if the target value has been increased from 2000 to 3000, KPI-1 has been easily achieved thanks to the constant dissemination done through social media pages with posts which can redirect the visitor to the website. In the third year, even more contents have been published on website, indeed accesses have been higher.

KPI-2 has not been achieved, since new recipients of newsletter in the third year have been fewer than expected. Overall, the VALU3S newsletter has 162 subscribers, therefore the average number of recipients per year is 54, which is significantly below the goal set in the Communication Plan. It is worth to notice, however, that now past newsletters are available on the website as requested by the project's review experts in the first review meeting, indeed no subscription is now required for visitors to read the content of the newsletters. This could reduce the number of subscribers in a not negligible way. However, having the newsletters published on the project's website contributes significantly to the dissemination of the project results. Anyway, 162 subscribers are a good result considering newsletters just one of the means used for project disseminations.

KPI-3 has been finally achieved and significantly surpassed. This is a great result obtained thanks to strategy of publications on social medias, which creates the right engagement with followers. Furthermore, events attended by project consortium was exploited to sponsor social medias (e.g., at the end of presentation).

KPI-4 has been successfully achieved and this is a crucial result, since it means that the activity on social media has been sufficiently intensive and continuous.

KPI-5 has been largely achieved on the basis of the target value set previously. In general, this is an indication that contents published have been appreciated by audience.

KPI-6 and KPI-7 have been achieved, even if with some residual difficulty because of the COVID-19 outbreak and consequent restrictions which have significantly penalized the arrangement/participation of/to events. However, the third year shows better results than the previous and this is a good achievement.

Comm-KPI-8 has been successfully achieved, since 16 liaisons have been established compared to the 10 planned.

Comm-KPI-9 has been introduced to monitor the regular publishment of the newsletter. It is expected to send out at least 8 newsletters. To date, 10 newsletters have been sent out but, so the KPI is already achieved.

Chapter 4 Conclusion

The document has reported in detail all the activities undertaken in the third and last year of project within Task 6.4 “*External communication including interaction with other, related projects*”, as well as the results achieved. The report highlights that the activities promised within the Initial Communication Plan have been duly performed with remarkable results. In fact, communication channels promised in the DoA [25] have been established and contents delivered through them have been frequent and appropriate for the target audience already identified. The Communication KPIs set up in the Final Communication Plan to measure communication effectiveness have been successfully achieved (apart from one), even if the target values have been increased compared to the Initial Plan. It should be noted that the project will run for further three months, and within them the VALU3S final event and the Summer School will take place. Thus, communication activities are expected to continue until July 2023 to promote such events and to distribute other contents created by the consortium. Therefore, communication figures are expected to further increase, and this could mean an even higher impact of the project on the community.

Communication activities have indeed played an important role within the dissemination of VALU3S project, contributing to create a community of followers and engage them through recurrent and frequent publication of interesting contents for all the targets.

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Appendix A Communication Templates

A.1 VALU3S Roll-Out Poster

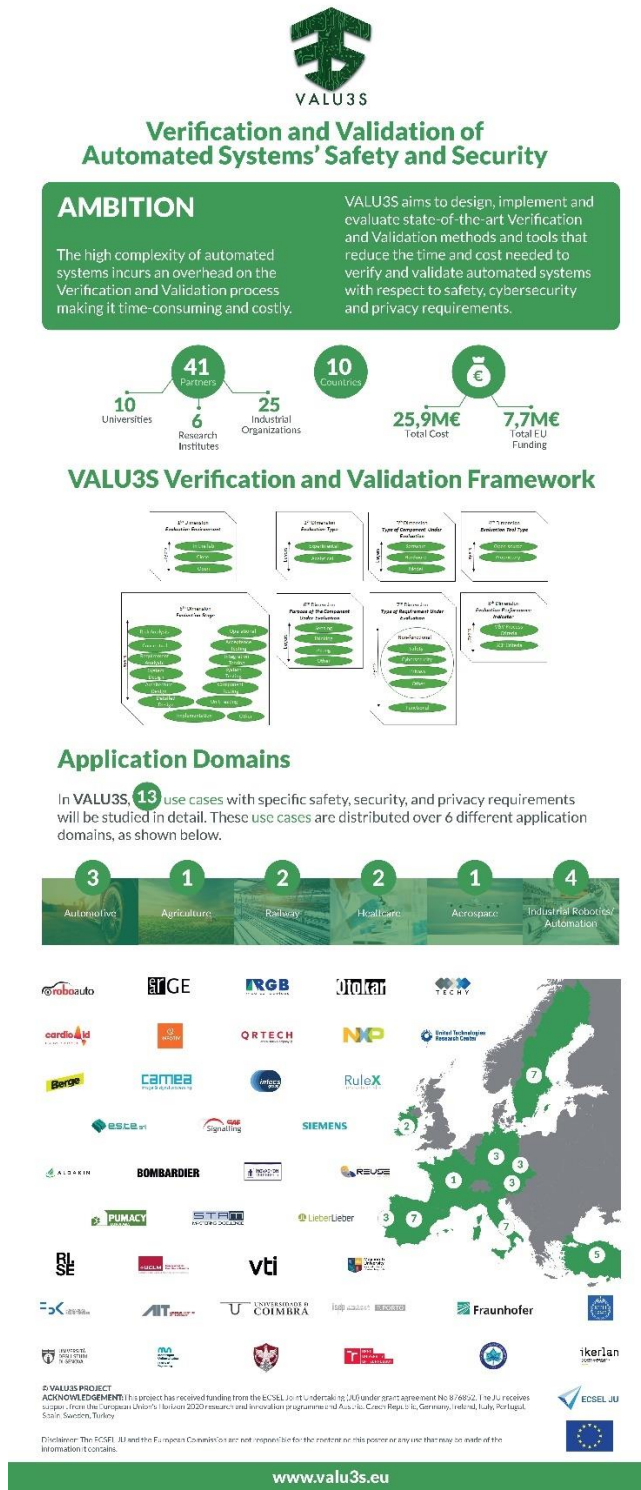


Figure A.1 VALU3S roll-out poster.

A.3 VALU3S Leaflet (Back)

About the Project

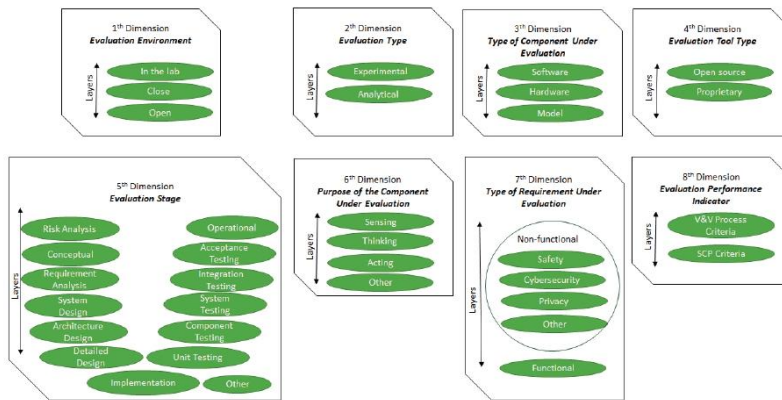
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The high complexity of automated systems incurs an overhead on the Verification and Validation process making it time-consuming and costly.

VALU3S aims to design, implement and evaluate state-of-the-art Verification and Validation methods and tools that reduce the time and cost needed to verify and validate automated systems with respect to safety, cybersecurity and privacy requirements.

VALU3S focus on improving the Verification and Validation process

VALU3S Verification and Validation Framework

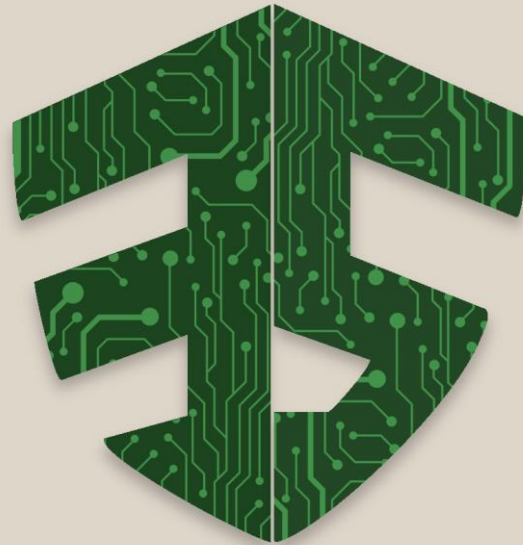


Domains and Use Cases

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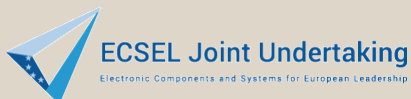
In **VALU3S**, **13** use cases with specific safety, security, and privacy requirements will be studied in detail. These use cases are distributed over 6 different application domains, as shown below.

Figure A.3 VALU3S leaflet (back).



VALU3S

www.valu3s.eu



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