IVVES
Industrial-grade Verification and Validation of Evolving Systems
Labeled in ITEA3, a EUREKA cluster, Call 5

ITEA3 Project Number 18022

D6.3 – Dissemination & standardisation report

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V0.2	23/12/2022	Updated partner input	Concept	Consortium
V1.0	30/12/2022	Approved by PMT, to be submitted to ITEA3	Final	Portal

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Glossary

AI	Artificial Intelligence
CAGR	Compound Annual Growth Rate
CI	Continuous Integration
DevOps	Development and IT Operations
ES	Evolving Systems
GDPR	General Data Protection Regulation (EU)
IoT	Internet of Things
IT	Information Technology
IVVES	Industrial-grade Validation and Verification of Evolving Systems
KPI	Key Performance Indicator
MDR	Medical Device Regulation (EU)
ML	Machine Learning
MLFP	Machine Learning-enabled Fault Prediction
MLMI	Machine Learning-enabled Model Inference
MLTA	Machine Learning-enabled Test Analytics
MLOI	Machine Learning-enabled Test Oracle Identification
MLTS	Machine Learning-enabled Test Selection and Test Data Generation
QA	Quality Assurance
RTO	Research and Technology Organisation
SUT	System Under Test
SME	Small to Medium Sized Enterprise
TRL	Technical Readiness Level
VV	Verification & Validation
XAI	eXplainablee Artificial Intelligence

Executive Summary

This document reports on the dissemination and standardisation activities in the IVVES project. Dissemination was done via internal and external channels. Internal dissemination was facilitated by the e-mail lists and Teams environment hosted by RISE. Biannual consortium meetings further facilitated dissemination between partners. External dissemination mostly focussed on scientific publications and the website. During the project, the website was moved to a more versatile platform also hosting the experimentation platform showcasing project outcomes. In an early stage of the project, a “advent calendar” further helped to disseminate the objectives of the project. When physical meeting became possible again after the Covid-19 lockdown, IVVES results were presented in a public poster session in Helsinki and the EFECS 2022 symposium in Amsterdam. A number of results have been made publicly available via git.

The standardisation focus in the IVVES project has been mostly on the monitoring of standardisation activities. A project internal survey in the project indicated that most partners are aware of standardisation activities but did not see the need to actively influence the standardisation process.

This document does not describe the online experimentation and training platform, because WP5 is fully dedicated to this important dissemination topic.

1. Introduction

This report lists the activities of the consortium to disseminate the results of the project (outcome of the T6.1 task) as well as the standardization activities (T6.3). The deliverable is organized in two sections. The first section reports the internal and external dissemination activities, including means to facilitate consortium internal communication and realized publications and events to communicate the results outside of the consortium. This section can be seen as the realization of the plans outlined in D6.1. The second section is a brief statement reiterating the standardization activities, which were already mostly reported in D6.2.

2. Dissemination

Dissemination in the project consists of internal and external dissemination. The dissemination activities took place throughout the project and were maintained in an excel file in the common Teams environment. This report contains information extracted from that common reporting tool as well as additional information on general dissemination activities. It is clear that the Covid pandemic affected both the type and frequency of dissemination opportunities, but the consortium has actively looked for ways to cope with the situation and find alternative dissemination channels.

2.1 Internal dissemination

2.1.1 Project meetings

As detailed in the IVVES FPP CR#3, there are several types of project meetings. Due to the Covid pandemic, most of the meetings were held as online meetings Below is an overview of the meetings in the project:

General Assembly meetings taking place at least three times a year	Consortium meetings took place on: November 29, 2019; March 24, 2020; September 14-15, 2020; March 16+18, 2021; October 20, 2021; November 8, 2021; March 22-23, 2022; September 12, 2022; December 12, 2022
Regular project management team meetings;	PMT meetings were held monthly except during vacation periods.
Regular work package meetings;	The content work packages (WP1-5) organised meetings regularly, approximately once a month.
Technical workshops;	No consortium-wide technical workshops were organised during the project.
Exploitation workshop	An internal exploitation workshop was organised on 13. December 2022 in conjunction with the final project review.
Additional telco's when needed for day-to-day coordination of the project.	As needed

2.1.2 Information sharing

IVVES consortium members uses a Teams file sharing and storage system to safely share project information, presentations and even photos. The Documents section contains a.o. the current project plan and approved deliverables. Within the Workspace section different work packages (WPs) each have their own space. The Teams environment was hosted by RISE.

2.1.3 Workshops

In addition to the general assemblies smaller workshops have been and will be held on either National level, use cases or specific topics. Below is a list of the workshops:

- The Finnish consortium held meetings twice a year in conjunction with the national steering group meetings. The meetings consisted of presentations of results by the partners and launching of new “challenges” to tackle during the next period.
- The Swedish consortium held meetings once a year. Hosted at RISE and Bombardier. The meetings discussed multiple topics like use case alignments, tools usage. Sharing of results and ideas and focus areas for the upcoming period.

2.1.4 Other Tools

Other internal communication tools include mailing lists (participant, WP and at the consortium levels), internal staff meeting and meeting minutes, web conferencing etc. The mailing lists were maintained by Philips (one for the whole consortium, and one for the PMT members), and telcos were facilitated by Zoom and Microsoft Teams.

2.2 External dissemination

2.2.1 Project Public Website

The IVVES public website presents general project information, participant information, downloadable publications and deliverables. The website informs viewers about previous and forthcoming events and activities of the project as well as of other relevant projects and collaborations.

Philips Healthcare (NLD) designed and maintained the website of IVVES. The referring address was originally arranged by ING (NLD) and hosted at Weebly. During the project, it was decided to move to a more versatile content management system hosted by Marviq, including a better look and feel. This platform also contains the experimentation platform (https://learn.ivves.eu), which is a major channel for disseminating the IVVES results.

Link to the IVVES public website: https://ivves.eu/

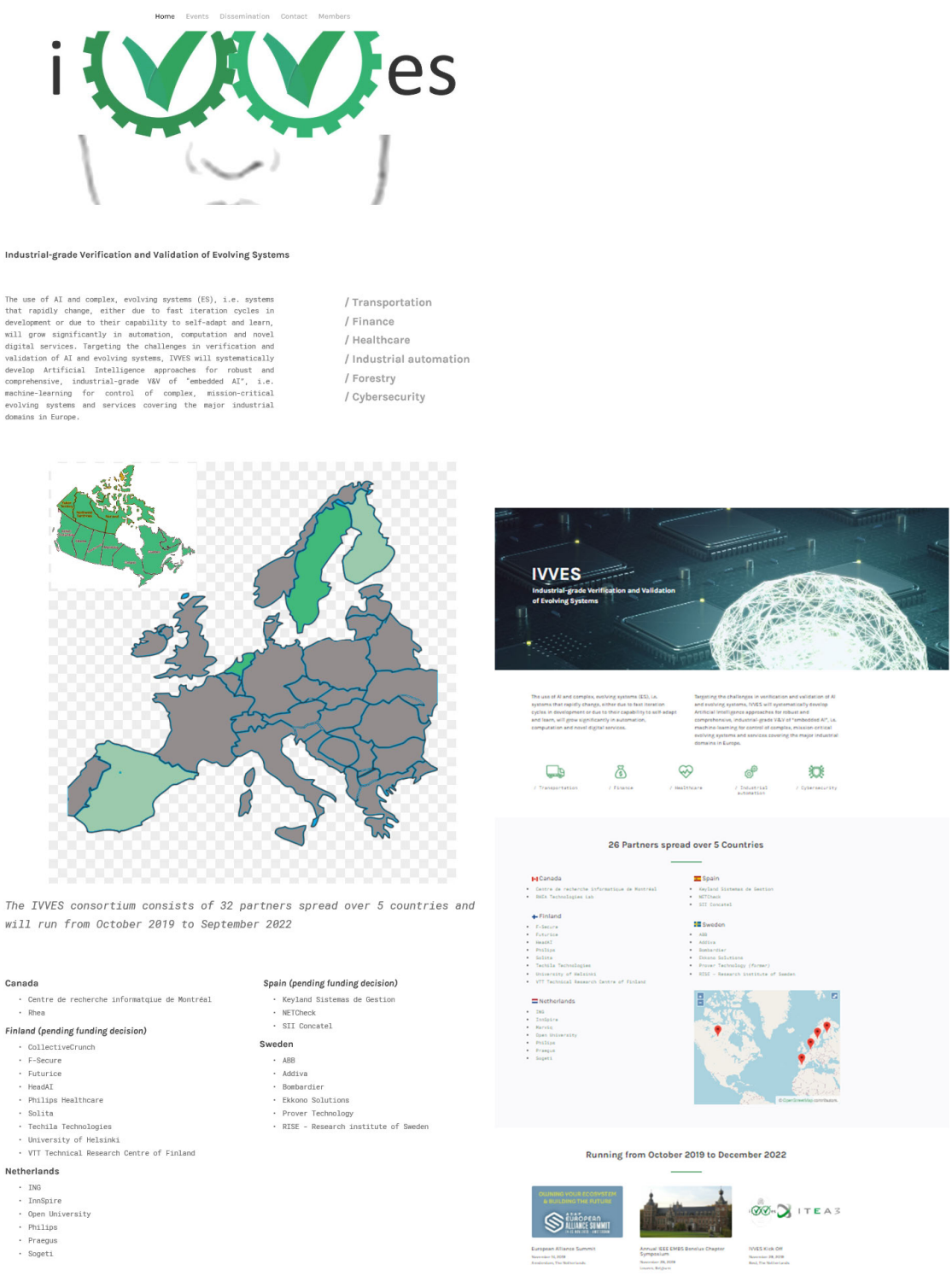

Figure 1: IVVES public website [(a) First website; (b) Final website]

2.2.2 Publications and presentations

IVVES project results have been and will be submitted for publication in scientific journals, conferences, and workshops. Below is the list of currently published or in-review publications.

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Please add your publications only to the Excel file!

Author(s)	Title	Type	Name of Conference / Workshop / Event	Place/Country	Date	Published in	Publisher	Publication Date	Link
Helvoort, M. van	18022 IVVES	website					ITEA3		https://itea3.org/project/ivves.html
Helvoort, M. van	IVVES: Industrial-grade Verification and Validation of Evolving Systems	website					weebly.com		ivves.eu
Helvoort, M. van	Resonating Public Private Partnerships	conference	European Alliance Summit	Amsterdam/The Netherlands	marras.19		ASAP		
Helvoort, M. van, J. van	Industrial-grade Verification	symposium	Annual IEEE EMBS Benelux	Leuven/Belgium	marras.19		IEEE		

den Brink, P. Derckx	and Validation of Evolving Systems in Healthcare		Chapter Symposium						
Nurminen, J.K., Halvari, T., Harviainen, J., Mylläri, J., Röyskö, A.,Silvennoinen, J., and Mikkonen, T.	Software Framework for Data Error Injection to Test Machine Learning Systems	conference	Proceedings of 4th International Workshop on Reliability and Security Data Analysis, IEEE Computer Society, 2019				IEEE		https://ieeexplore.ieee.org/document/8990189
Open University, ING	IVVES in Finance	symposium	6th Dutch national symposium on software engineering (SEN)	Amsterdam/The Netherlands	31. Jan 2020		VERSEN (the Dutch National Association for Software Engineering)		
Mark Pijnenburg	Test automation Framework	internal	Knowledge sharing session	Best/The Netherlands	syys.20		Philips internal		
Lalli Myllyaho, Mikko Raatikainen, Tomi Männistö, Tommi Mikkonen, Jukka K Nurminen	Methodologies for the validation of AI systems	symposium	FCAI Day: Finnish Center for Artificial Intelligence annual symposium	Finland	November, 2020				

Teemu Pulkkinen, Jukka K Nurminen, Petteri Nurmi	Understanding wifi cross-technology interference detection in the real world	conference	2020 IEEE 40th International Conference on Distributed Computing Systems (ICDCS)	virtual	November, 2020		IEEE		https://tuhat.helsinki.fi/ws/portalfiles/portal/133827574/Comparing_AI_Systems_2.pdf
Francesco Concas, Jukka K Nurminen, Tommi Mikkonen, Sasu Tarkoma	Validation Frameworks for Self-Driving Vehicles: A Survey	book chapter	Smart Cities: A Data Analytics Perspective		December, 2020		Springer		https://arxiv.org/pdf/2007.11347
Tommi Mikkonen, Jukka K Nurminen, Mikko Raatikainen, Ilenia Fronza, Niko Mäkitalo, Tomi Männistö	Is machine learning software just software: A maintainability view	conference	International Conference on Software Quality	virtual	January, 2021				https://helda.helsinki.fi/bitstream/handle/10138/327982/sqd21_ai_se.pdf?sequence=1
Robbert van Dalen, Yaping Luo, Pekka Aho, Fernando Ricos Pastor, Olivia Rodriguez	Scriptless GUI test automation at ING (A demo)	conference demo	ICT.OPEN 2021	The Netherlands, online due to corona	helmi.21				

Valdes, and Tanja E.J. Vos									
Olivia Rodriguez Valdes	What to do next? Action selection for intelligent scriptless testing (Lightning talk)	symposium presentation	SEN symposium	The Netherlands, online due to corona	helmi.21				https://www.sen-symposium.nl/program/
E Kauhanen, JK Nurminen, T Mikkonen, M Pashkovskiy	Regression Test Selection Tool for Python in Continuous Integration Process	conference	2021 IEEE International Conference on Software Analysis, Evolution and Reengineering (SANER)	virtual	March, 2021		IEEE		https://helda.helsinki.fi/bitstream/handle/10138/333461/Smart_test_selection_VTS_2021_2_.pdf?sequence=1 https://ieeexplore.ieee.org/document/9425967
Vos, T.E.J., Aho, P., Pastor Ricos, F., Rodriguez-Valdes, O., and Mulders, A.	TESTAR - Scriptless Testing through Graphical User Interface	journal	Software Testing, Verification & Reliability (STVR)		21.huhti		Wiley	25.huhti.21	https://onlinelibrary.wiley.com/doi/full/10.1002/stvr.1771

Sedaghatbaf A., Moghadam, M. H., Saadatmand, M.	Automated Performance Testing Based on Active Deep Learning	conference	2nd ACM/IEEE conference on automation of software test	Madrid/Spain	touko.21		IEEE		https://www.computer.org/csdl/proceedings-article/ast/2021/356700a011/1tB7rrBw532
Halvari, T., Nurminen, J.K., Mikkonen, T.	Robustness of AutoML for Time Series Forecasting in Sensor Networks	conference	IFIP Networking conference	virtual	June, 2021		IEEE		https://helda.helsinki.fi/bitstream/handle/10138/333459/Robustness_of_AutoML_in_Sensor_Networks_poster_.pdf?sequence=1
Myllyaho, L. S., Raatikainen, M., Männistö, T., Mikkonen, T., Nurminen, J. K.	Systematic literature review of validation methods for AI systems	journal	The Journal of Systems and Software		July, 2021		Elsevier	November, 2021	https://www.sciencedirect.com/science/article/pii/S0164121221001473
Hussain, Z., Nurminen, J.K., Mikkonen, T., Kowiel, M.	Command Similarity Measurement Using NLP	conference	SLATE 2021 - Symposium on Languages, Applications and Technologies	virtual	July, 2021		Schloss Dagstuhl -- Leibniz-Zentrum für Informatik	August, 2021	https://drops.dagstuhl.de/opus/volltexte/2021/14430/pdf/OASIcs-SLATE-2021-13.pdf
Olivia Rodriguez Valdes	Towards a testing tool that learns to test	symposium paper	ICSE 2021 doctoral symposium	online due to COVID	touko.21				https://www.dropbox.com/s/3q2jp9m1ib1nvws/ICSE2021-DS_paper_18.pdf?dl=0

Olivia Rodriguez Valdes, Tanja E. J. Vos, Pekka Aho and Beatriz Marín	30 years of automated GUI testing: a bibliometric analysis	conference	14th International Conference on the Quality of Information and Communications Technology (QUATIC 2021)	online due to COVID	syys.21				https://2021.quatic.org/
Aaron van der Brugge, Fernando Pastor Ricos, Pekka Aho, Beatriz Marın,and Tanja E.J. Vos	Evaluating TESTAR's effectiveness through code coverage	conference	XXV Jornadas de Ingeniería del Software y Bases de Datos (JISBD 2021)	Malaga, Spain	syys.21				https://sistedes2021.spilab.es/jisbd/
Pekka Aho, Govert Buijs, Abdurrahman Akın, Serafettin Senturk, Fernando Pastor Ricos, Stijn de Gouw, and Tanja E.J. Vos	Applying Scriptless Test Automation on Web Applications from the Financial Sector	conference	XXV Jornadas de Ingeniería del Software y Bases de Datos (JISBD 2021)	Malaga, Spain	syys.21				https://sistedes2021.spilab.es/jisbd/
Myllyaho, L. S., Raatikainen, M., Männistö, T., Nurminen,	On Misbehaviour and Fault Tolerance in Machine	journal	The Journal of Systems and Software		September, 2021		Elsevier	January, 2022	https://doi.org/10.1016/j.jss.2021.111096

J. K. & Mikkonen, T.	Learning Systems								
Fernando Pastor Ricós, Pekka Aho, Tanja Vos, Ismael Torres Boigues, Ernesto Calás Blasco, and Héctor Martínez Martínez	Deploying TESTAR to Enable Remote Testing in an Industrial CI Pipeline: A Case-Based Evaluation	conference	International Symposium on Leveraging Applications of Formal Methods (ISoLA 2020)		loka.21	Lecture Notes in Computer Science book series (LNCS, volume 12476)	Springer		https://link.springer.com/chapter/10.1007/978-3-030-61362-4_31
					marras.21	FCAI AI Days			https://fcai.fi/ai-day-2021-scientific-presentations
Muiruri, D., Lwakatare, L.E., Nurminen, J.K., and Mikkonen. T.	Practices and Infrastructures for ML Systems -- An Interview Study in Finnish Organizations	journal	Computer		March, 2022		IEEE		
Hussain, Z., Nurminen, J.K., Mikkonen, T., Kowiel, M.	Combining Rule-based System and Machine Learning to Classify Semi-Natural	conference	Intelligent Systems Conference (IntelliSys)	Amsterdam/The Netherlands	September, 2022	Springer series "Lecture Notes in Networks and Systems"	Springer	September, 2022	https://link.springer.com/chapter/10.1007/978-3-031-16072-1_32

	Language Data								
Ad Mulders, Olivia Rodriguez Valdes, Fernando Pastor Ricos, Pekka Aho, Beatriz Marın, and Tanja E.J. Vos	State model inference through the GUI using run-time test generation	conference	16th International Conference on Research Challenges in Information Science (RCIS 2022)	Barcelona, Spain	touko.22				
Pekka Aho, Olivia Rodriguez Valdes, Lianne V. Hufkens, and Tanja E.J. Vos	IVVES (Industrial-grade Verification and Validation of Evolving Systems)	conference	16th International Conference on Research Challenges in Information Science (RCIS 2022)	Barcelona, Spain	touko.22				
Lianne V. Hufkens	Evolutionary Scriptless Testing	conference	16th International Conference on Research Challenges in Information Science (RCIS 2022)	Barcelona, Spain	touko.22				

Lalli Myllyaho, Jukka K. Nurminen, and Tommi Mikkonen	Node co-activations as a means of error detection—Towards fault-tolerant neural networks	journal	Array		September, 2022		Elsevier		https://doi.org/10.1016/j.array.2022.100201
Sasu Mäkinen	Designing an open-source cloud-native MLOps pipeline	MSc thesis	University of Helsinki		March, 2021				https://helda.helsinki.fi/handle/10138/328526
Juha Mylläri	Augmenting the Student-Teacher Feature Pyramid Matching Method for Better Unsupervised Anomaly Localization	MSc thesis	University of Helsinki	Helsinki, Finland	Septermber, 2022				
Vladimir Kramar	Tool for grouping test log failures using	MSc thesis	University of Helsinki	Helsinki, Finland	June, 2022				-
Almira Pillay, Tijana Nikolic	Quality engineering applied to artificial	White paper				State of AI applied to Quality	Capgemini	February, 2022	https://www.sogeti.com/ai-for-qe/section-9-trust-ai/chapter-1/

	intelligence string similarity algorithms					Engineering 2021-22			
Tijana Nikolic	Sogeti's Data Quality Wrapper	blog				Medium	Sogeti	February 25, 2022	https://medium.com/sogetiblogsnl/sogetis-data-quality-wrapper-4854c165f44d
Almira Pillay, Tijana Nikolic	Accelerate testing and development with machine learning tools	conference	QX Day	Utrecht, The Netherlands	September, 2021				https://www.youtube.com/watch?v=-XMF1BurSdo&list=PLBwAI6Qi09CeYoupDN5KNwdb6KxDkMaQu&index=7
Vladimir T. Kramar, Jukka K. Nurminen, Tatu Aalto	Tool for grouping test log failures using string similarity algorithms	conference	Proceedings of the ICR'22 International Conference on Innovations in Computing Research (pp.214-224)	Utrecht, The Netherlands	September, 2021				https://www.youtube.com/watch?v=-XMF1BurSdo&list=PLBwAI6Qi09CeYoupDN5KNwdb6KxDkMaQu&index=7
Kauhanen, E., Nurminen, J. K., Mikkonen, T., & Pashkovskiy, M.	(2021, March). Regression test selection tool for python in continuous integration process. In *2021 IEEE*	conference	2021 IEEE International Conference on Software Analysis, Evolution and Reengineering (SANER) (pp. 618-621). IEEE.						

	International Conference on Software Analysis, Evolution and Reengineering (SANER) (pp. 618-621). IEEE.								
Tatu Aalto	In "Tests are talking, are you ready to listen? " presentation Falky test detection tool was showed.	conference	RoboCon 2022	Helsinki, Finland	May 2022				https://www.youtube.com/watch?v=sm2XQ-kM2GA&t=1s
Henrik Linusson	Conformal Prediction	conference	COPA2020 conference. University of Verona	Verona, Italy	September, 2020				https://www.ekkono.ai/conformal-prediction/
Rikard König	Enabling machine learning for safety critical systems	conference	Embedded World conference	online due to COVID	May 2021				https://youtu.be/_ZhrPS7POlo
Rikard König	Edge machine learning for IoT	conference	Stockholm Tech Live	Stockholm, Sweden	May 2022				
Rikard König	Edge Machine	conference	QT World Summit	online due to COVID	marras.21				

	Learning for safety critical systems								
Rikard König and Eva Garcia Martin	Edge Machine Learning	presentation	Presented to 20+ partners and customers	Online and in person	January - December 2022				
Rikard König	Edge machine learning	conference	Wonderland AI Summit	online due to COVID	October 2021				
Lalli Myllyaho, Jukka K. Nurminen, and Tommi Mikkonen	Presentation on Node co-activations as a means of error detection—Towards fault-tolerant neural networks	conference	AI Day 2022	Helsinki, Finland	16th Nov. 2022				
IVVES	18 posters with IVVES achievements	special event	IVVES Public Poster Dissemination	Helsinki, Finland	13.syys.22				
Mark van Helvoort & IVVES	18 LinkedIn post with pitches	online	LInkedIn		sep/nov 2022				
Mark van Helvoort	IVVES	conference	EFECS	Amsterdam/The Netherlands	Nov 24&25, 2022				
Mark van Helvoort	IVVES shares project results in	online	ITEA Newsletter		January 2023				

	public dissemination session and short videos								
Paul Derckx	How AI boosts verification efficiency and effectiveness	conference	QA&Test	Bilbao/Spain	October 20th, 2022				https://embedded.qatest.org/?lang=en
Rikard König, Eva Garcia Martin, Henrik Linussion, Pablo de Moral	Partial Rule Extraction using Genetic Programming	conference	Learning and Intelligent Optimization 2023	Nice/France	4-8 June, 2023	Lecture Notes in Computer Science (LNCS)	Springer		

2.2.3 Press releases and social media

Press released and social media use was done in the project as follows:

- ITEA Project Profile through ITEA website, 2020
- IVVES Advent Calendar, 2020 (website, LinkedIn)
- IVVES Public Poster Dissemination Pitches, 2022 (YouTube, LinkedIn)
- LinkedIn post related to meetings, intermediate results and tools
- ITEA online news, Dec 2022
- ITEA Newsletter, Jan 2023
- ITEA Project Result Sheet, expected February 2023

2.2.4 Alignment with other European Projects

IVVES exploits the result of FP7 project FITTEST and ITEA3 project TESTOMAT which delivered and extended the open source test tool TESTAR which will be enhanced by IVVES. IVVES will complement the objectives of CELTIC-PLUS IoD which is focused on increasing the automation of software integration, testing, deployment and operation. IVVES also builds on the results ITEA3 REFLEXION project. Close contacts are maintained with the ITEA3 DayTiME which collects system data for predictive maintenance. Contacts with ECSEL SECREDAS “Product Security for Cross Domain Reliable Dependable Automated Systems” will be established.

The PENTA project pAvIs (Patient and environmentally aware intelligent sensor systems for improved diagnosis & treatment) and the ITEA project Signet (Sensing and Image-Guided Neurological therapies, cardiac Electrophysiology and Tumour treatments) are enabled by the IVVES results, because they depend on reliable verification of systems with AI components. Successor projects are under discussion.Signet may also benefit from the synthetic MRI image generation developed in IVVES.

The results of IVVES where shared with the XECS and KDT communities at EFECS 2022 (project booth).

Partners additionally reported on the following collaborations with other projects:

- VTT has collaborated with the Privasa and StrokeData projects (both nationally funded projects) for the development and testing of its DSI classifier algorithm and visualization tool. Privasa helped to understand privacy preservation within the model, and StrokeData provided test data.
- ING collaborated with Eindhoven University

2.2.5 Education and Innovation

Educating young scientists and involving them in innovation is an important aspect of the IVVES project. IVVES is actively involved in graduation assignments for M.Sc. and Ph.D. students which (partially) take place at industrial partner premises. In addition, some industrial researchers have also a university position. The project resulted in 5 PhD, 13 MSc and 6 BSc theses.

Several partners also employ company internal means to educate colleagues in the activities and results of the IVVES project (see Figure 2).

Figure 2: Impression of partner internal dissemination activities (Philips Healthcare, October 2019)

2.2.6 Events and other dissemination activities

IVVES was presented as some events and exhibitions, as well as via alternative dissemination channels. The list below gives an overview:

- Advent calendar – The project created an on-line advent calendar during its first year to disseminate within and outside the consortium the objectives and early results of the project in a playful manner. Adjusted to the season, key project concepts were explained by means of presentations, videos, animations, and interactive tools, each displayed in turn when the year approached the Christmas period.

- Public poster session 13/9/2022 – A public poster session showing the project's results was held in conjunction with the first face-to-face project meeting in Helsinki. The poster session was hosted by the University of Helsinki and also coincided with the ITEA brokerage event held in walking distance from the location.
- EFECS 2022 – The project has not been able to present itself in face-to-face events in 2020 and 2021 due to the Covid period. IVVES presented itself by means of posters at a stand in the EFECS conference on 24 and 25th of November 2022 in Amsterdam.

3. Standardisation

3.1 Standardisation activities

The standardisation focus in the IVVES project has been mostly on the monitoring of standardisation activities. A project internal survey in the project indicated that most partners are aware of standardisation activities but did not see the need to actively influence the standardisation process.

3.2 Partner specific report on standardisation

Several partners actively followed or participated in standardisation activities during the project. Below is a list of reported activities:

- VTT – During the first two years of the project, VTT actively participated in the ISO/IEC JTC1 SC42 working groups, and familiarized itself with the procedures and the topics discussed at the meetings. Furthermore VTT organized a project internal questionnaire on the use of standards by the project members (this was reported in D6.2).
- Philips – Many developments have been on-going during the course of this project, in connection to ISO/IEC JTC1 SC42, and beyond. Philips has been actively participating through a special focus group on AI organized by the Dutch Ministry of Health and coordinated by the Dutch standards organization NEN. We have contributed through comments to a zoo of standards related to (AI specific) quality management systems, risk management, data quality, testing and validation, generalizability, transparancy and trustworthiness, and more. Many of these standards will be considered as harmonized standards under the (planned for) EU AI Act, and in connection to the (planned for) EU Data Act. In the context of the latter, we are influencing the regulation concerning the European Health Data Space, and NEN submitted extensive comments. Philips is involved through COCIR to ensure that these regulations and acts have a good coverage and do not require double work for certification. As a final topic, Philips and NEN were involved in the Dutch Ministry of Health's legal document that would regulate AI for Predictive Algorithms in medical applications. This document would have been the most restrictive, globally, and through our efforts we have been able to mitigate that concern for now.

4. Concluding remarks

The project was very active in dissemination of the results, albeit mostly in on-line fora and through scientific publications. Physical presence at events only became possible after the Covid-19 period and there was only a limited time left. Nevertheless, IVVES managed to organise a public poster dissemination event in Helsinki and was present on the EFECS exhibition in Amsterdam, both in the autumn of 2022.

The following list gives some statistics of the dissemination activities:

- Journal: 5
- Conference & Symposium: 36
- Book chapter: 1
- Theses: PhD: 5, MSc: 13, BSc: 6
- Web/internal: 5

IVVES consortium members also duly noted the importance of ongoing standardisation on AI. While actively following the standardisation activities, no need to influence the process arose from the activities or needs of the partners, as assessed by means of a questionnaire.

The activities in the project have produced tools and data, some of which are publicly available on the experimentation platform maintained by the project. It is therefore likely, that the dissemination of the results will not stop at the end of the project, but instead results are likely to be utilised in future research and published also after the project.