ECSEL Research and Innovation actions (RIA)

AMASS

Architecture-driven, Multi-concern and Seamless Assurance and Certification of Cyber-Physical Systems

Dissemination and Training Progress (a)
D8.6

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Abbreviations and Definitions

ACM	Association for Computing Machinery
ARTEMIS	ARTEMIS Industry Association is the association for actors in Embedded Intelligent Systems within Europe
BSc	Bachelor of Science
CA	Consortium Agreement
CACM	Common Certification and Assurance Metamodel
CPS	Cyber-Physical Systems
CS	Case Study
EAB	External Advisory Board
EC	European Commission
ECSEL	Electronic Components and Systems for European Leadership
ESA	European Space Agency
GA	Grant Agreement
IEEE	Institute of Electrical and Electronics Engineers
IoT	Internet of Things
ISO	International Organization for Standardization
JU	Joint Undertaking
MBA	Model-Based design methodology for Assessing performance and safety requirements of critical systems
MDSafeCer	Model Driven Safety Certification
MUS/MSS	Minimal Unsatisfiable Subsets/Maximal Satisfiable Subsets
OEM	Original Equipment Manufacturer
OSLC	Open Services for Lifecycle Collaboration
MSc	Master of Science
PhD	Doctor of Philosophy
R&D	Research & Development
R&I	Research & Innovation
SAE	Society of Automotive Engineers
SME	Small and Medium-sized Enterprise
STPA	System-Theoretic Process Analysis
SysML	System Modelling Language
WP	Work Package

Executive Summary

This document (D8.6) is the first progress report on dissemination and training activities for the AMASS project. These activities, which are essential for the success of the project, allow different stakeholders to gain awareness of the achievements of the project and of how to use its results. D8.6 presents the activities performed until m12 (March 2017) in AMASS.

The progress on dissemination can be divided into internal and external activities. The internal activities performed correspond to the design, configuration, and deployment of the project's wiki, SVN repositories, and mailing lists. For external dissemination, AMASS has a website with a wide range of content, including public deliverables and blog posts about project news. The partners have prepared presentations, a leaflet, and a poster as dissemination material, and have been active in social media through LinkedIn and Twitter, in event organisation (eight events), and event participation (another 18 events). In addition, 17 scientific publications have been submitted and accepted at different journals, conferences, and workshops. Communication activities have also been performed, such as press releases, blog posts, the first project newsletter, and the advertisement of AMASS on the partners' websites.

Most of the training given in AMASS until m12 has been internal training. Three events have been arranged for training on baseline solutions, technologies for seamless interoperability, and results of the project's core prototype (i.e. the first version of the AMASS Tool Platform). Progress has also been made on research training related to BSc and MSc students.

In addition to the progress made, D8.6 presents an update of the dissemination and training plans.

D8.6 relates to the following AMASS deliverables:

- D8.1 (AMASS Website and Project Collaboration Platform) provides details about the e-infrastructure of the project for communication and information exchange among AMASS partners, including the internal reporting of dissemination and training actions and results.

- D8.5 (Dissemination and Training Plan) identifies needs and presents a plan regarding activities for the dissemination of project results and training.

- D8.7 (Dissemination and Training Progress (b)) and D8.8 (Dissemination and Training Progress (c)) report on the dissemination and training activities performed in the second and third years of the project, respectively.

- D9.1 (Project Management Plan and Handbook) presents guidelines and rules about external communications and about how to use the project collaboration platform (e.g. file naming conventions and recommendations on the use of the project's mailing lists).

1.   Introduction

AMASS will create and consolidate a de-facto Europe-wide assurance and certification open tool platform, ecosystem, and self-sustainable community spanning the largest CPS vertical markets. The ultimate aim is to lower certification costs in the face of rapidly changing product features and market needs. This will be achieved by establishing a novel holistic and reuse-oriented approach for architecture-driven assurance, multi-concern assurance (compliance demonstration, impact analysis, and compositional assurance of security and safety aspects), and for seamless interoperability between assurance and engineering activities along with third-party activities (external assessments, supplier assurance).

This document is deliverable D8.6 (Dissemination and Training Progress (a)), released by the AMASS WP8 (Exploitation, Dissemination and Standardization). The document describes the dissemination and training performed on the AMASS project between April 2016 and March 2017. More concretely, D8.6 presents the actions taken by the AMASS consortium to:

- Ensure the dissemination of knowledge gained during the project execution.
- Encourage new research and development in European industry that is intended to exploit results from AMASS.
- Provide training material and courses on AMASS technology and methods to industrial and other users.
- Set up a framework of bidirectional channels for input and recommendations to and from multiple industrial domains and wider research communities.

Dissemination and training play major roles in ARTEMIS and ECSEL. In ARTEMIS, the open innovation model (Figure 1; [4]) deals with aspects such as external relations, collaborative innovation, and education. The Strategic Research Agenda 2016 [5] emphasises the need to develop and exchange best practices in training and education for CPS, and there is an Education & Training Working Group [6]. The Multi-Annual Strategic Plans [7] in ECSEL explicitly refer to activities such as planning and organisation of dissemination events, the provision of education and training, and university education in close collaboration with the industry as key aspects for delivering the expected programme impact.

This document is organized as follows. Section 2 presents the dissemination progress and Section 3 the training progress. Section 4 presents our main conclusions. Finally, Appendix A and Appendix B summarise the progress of the dissemination and training plans, respectively.
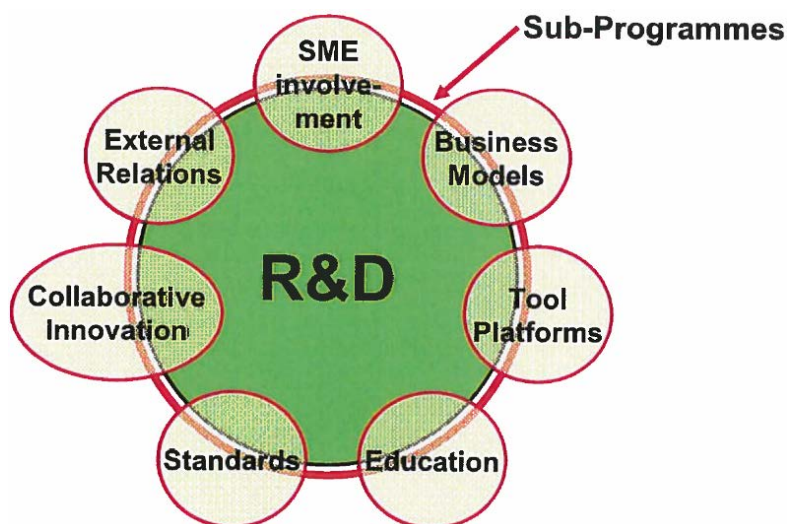

Figure 1. ARTEMIS open innovation model

2. Dissemination Progress

The dissemination activities performed in AMASS are divided into internal and external categories. In addition, communication activities have been performed. This section reports on progress made in these three categories and presents an updated plan for general dissemination.

Table 1 presents the general objectives defined for dissemination in D8.5 and their current result. As can be observed, the results for most metrics are already very close to the objectives for the whole project.

Table 1. General dissemination tools and channels

Dissemination tool/channel	How to measure	Objective for the whole project	Result until March 2017
Website	Monthly visits	100	3500+ in total in 12 months
	Duration of visits	2 min on average	3:25 min on average
	Downloads per year	35 for posters, flyers and newsletters; 50 for public reports	245 downloads in total in 12 months; 26 for the leaflet and 10 for the newsletter
	References from external web pages	15 (excluding partners)	The search "amass" "architecture-driven" on Google returns 773 entries
Publications	Scientific papers at workshops	8	7
	Scientific papers at conferences	8	7
	Scientific articles	8	2
	Articles in industry magazines or stakeholder journals	8	1
Attendance to events	Posters presented at conferences	10	3
	Oral communications at conferences / events	20	15
	Flyers distributed	400	150
	Attended fairs	4	1
Organization of events	Workshops organized	3	8
	Registered people at workshops	>30	30+ on average
	Organized conferences	2	0
	Registered people at the conferences	100-150	N.A.
	Flyers distributed	450	150

2.1   Internal Dissemination

AMASS has used different methods to share information among the project partners to effectively collaborate and reach the project goals. The main methods have been:

- Wiki
- SVN repository
- Mailing lists

These methods have been implemented using a project collaboration platform, which is described in the next section.

2.1.1   Project Collaboration Platform

The AMASS **wiki** (Figure 2) has been used to provide a space where the project partners can easily find and share information fast. The partners have used it, for example, to organise tasks by gathering input from partners and specifying action plans. In addition, the ticket system in the wiki is being used to report on improvements to the AMASS Tool Platform.
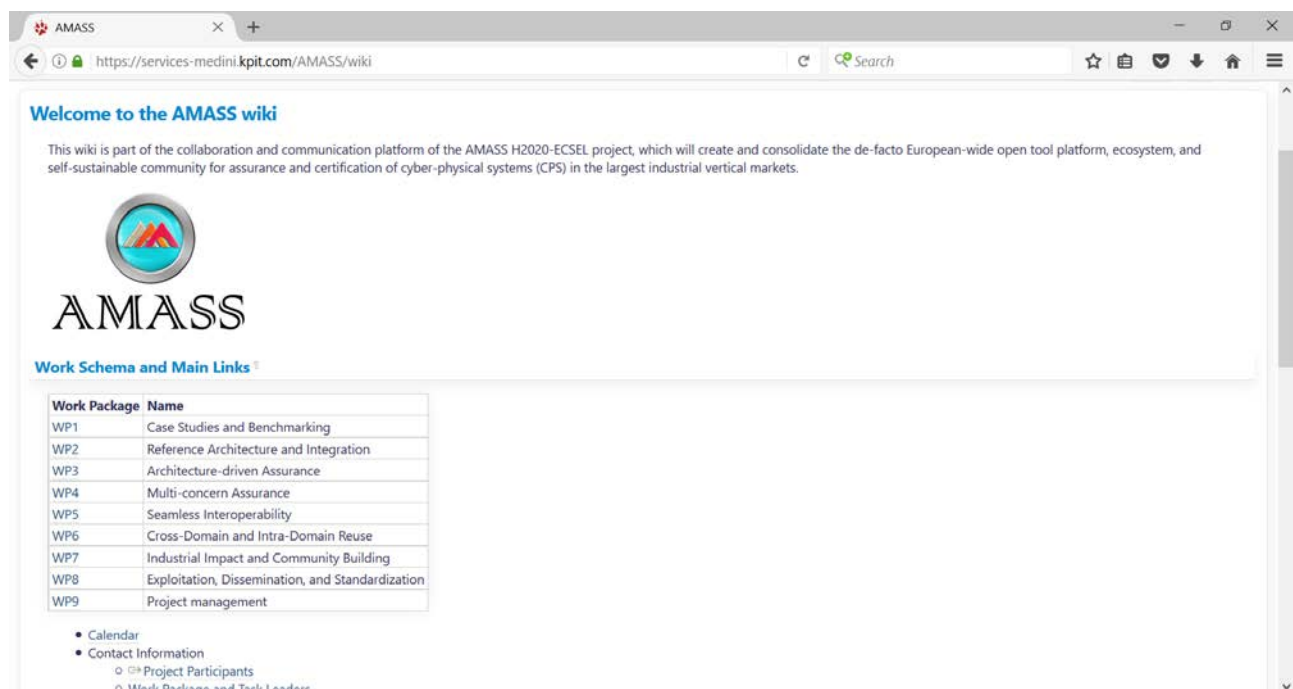
Figure 2. AMASS wiki

The **SVN repository** is the main tool that the AMASS partners use to share files. Figure 3 shows the repository structure. It contained over 750 folders and 3,500 files as of February 27, 2017. Another repository has been created for the AMASS Tool Platform source code.

The consortium uses 14 **mailing lists**. These are the main method used for internal communication. There is a general mailing list that all participants are subscribed to. This list aims to communicate project-wide information e.g. the organisation of general meetings. The other 13 mailing lists target specific topics e.g. specific WPs or AMASS bodies (Technical Committee, EAB, etc.). D8.1 provides details about the lists. As of February 27, 2017, the AMASS consortium has exchanged over 1,000 emails through the lists.
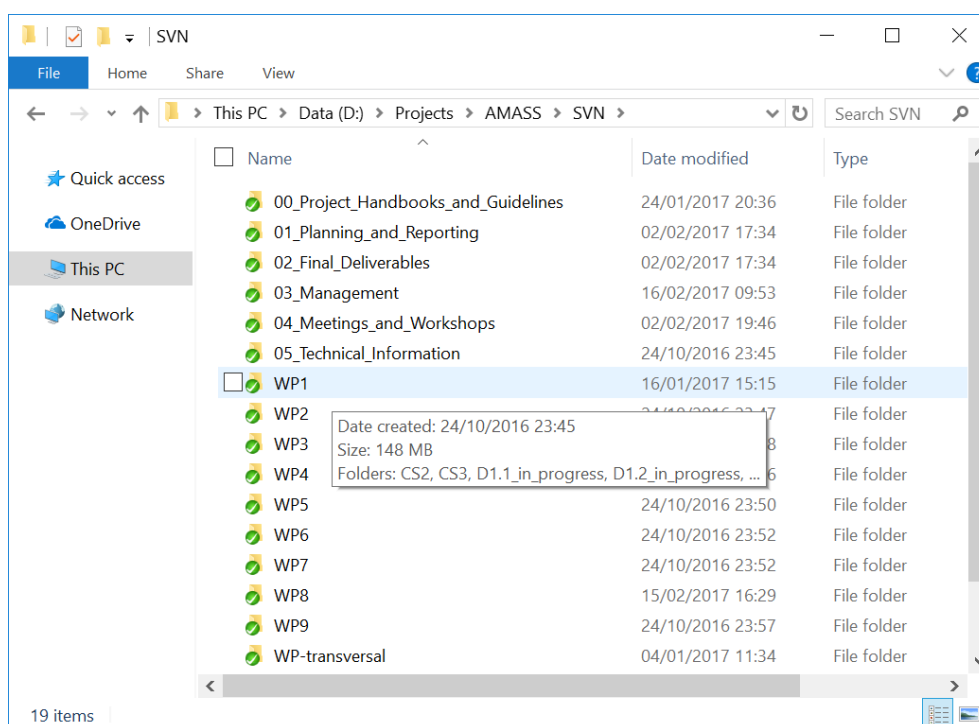
Figure 3. AMASS SVN repository

2.2   External Dissemination

External dissemination corresponds to activities that aim to reach specific third-party audiences, e.g. the research communities related to AMASS. The different methods used for external dissemination are presented in the following subsections. They include the preparation of materials for different dissemination channels (e.g. publications) as well as the participation in and organisation of events.

2.2.1   AMASS Website

During the first year of AMASS, we set up the project website (http://amass-ecsel.eu/) to provide access to a project presentation, publicly downloadable documents (project reports and dissemination papers), links to related projects, demonstration material, a blog section, etc. The website was designed to be a channel for dissemination, training, and discussion. The AMASS logo and website graphics promote the project in a unified graphical layout.

The homepage of the AMASS website is shown in Figure 4. The website comprises the following sections:
- Home
- Objectives
- Organization
- Partners
- Library (Deliverables, Dissemination, and Publications)
- Blog
- Events
- Contact Us

Figure 4. AMASS website

The AMASS website is an efficient tool used to report progress made during the project. The number of visits to the AMASS website during its first 10 months (from April 25, 2016 to February 23, 2017) was close to 3,500. Further statistics are shown in Figure 5.

Figure 5. Statistics for AMASS website

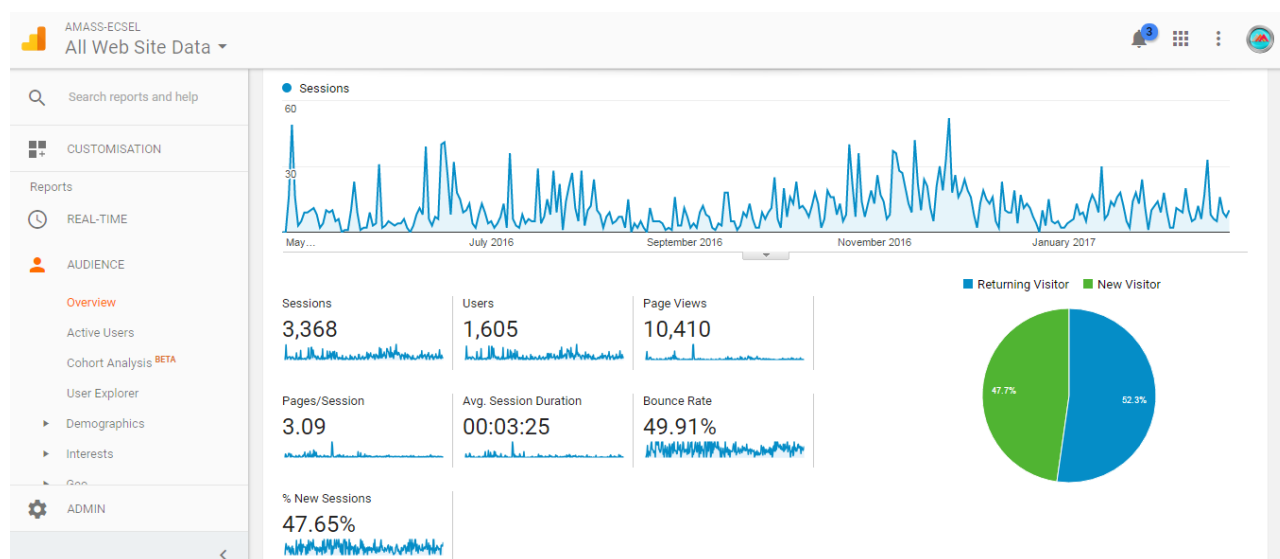**Sixteen blog posts** have been published since the beginning of the project [1]:

- The AMASS Consortium: 29 cutting-edge European organisations from 8 countries
- The work for creating the AMASS tool ecosystem has started!
- AMASS meeting in Vienna
- AMASS is already present at international conferences!
- SASSUR 2016 has been successfully held
- AMASS presence at SAFECOMP 2016
- AMASS status at month 6
- 2nd AMASS General Meeting
- The AMASS baseline deliverables have been published
- AMASS at industry-targeted events
- AMASS case studies
- Alstom joins AMASS
- OpenCert, the base tool in AMASS for management of assurance and compliance
- The role of EPF in AMASS
- AMASS at the MODELSWARD 2017 conference
- System modelling in AMASS with Papyrus

16 public deliverables have been published [2] aside from this document:
- D1.1 - Case studies description and business impact
- D2.1 - Business cases and high-level requirements
- D2.6 - Integrated AMASS platform
- D3.1 - Baseline and requirements for architecture-driven assurance
- D3.4 - Prototype for architecture-driven assurance (a)
- D4.1 - Baseline and requirements for multiconcern assurance
- D4.4 - Prototype for multiconcern assurance (a)
- D5.1 - Baseline requirements for seamless interoperability
- D5.4 - Prototype for seamless interoperability (a)
- D6.1 - Baseline and requirements for cross/intra-domain reuse
- D6.4 - Prototype for cross/intra-domain reuse (a)
- D7.1 - External advisory board and industrial adoption program roadmap
- D7.3 - AMASS open source platform project proposal
- D8.2 - Exploitation plans and initial market megatrends analysis
- D8.5 - Dissemination and training plan
- D8.9 - Standardization survey

2.2.2 Dissemination Material

During the first year of the project, the AMASS consortium has prepared several types of dissemination materials. In line with the plan in D8.5, the main materials that have been prepared are:

- Project logo (see document front page)
- Project press releases and newsletter (see Section 2.3 for more details)
- Project presentations (Figure 6), a short (10-15 min.) and long version (around 30 min.)

ECSEL is preparing the official AMASS leaflet and poster. In addition, the consortium has prepared an initial project leaflet (Figure 7 and Figure 8), which has been distributed at several events (e.g. SASSUR 2016, see section 2.2.4.3). A poster has also been prepared for presentation at the MODELSWARD 2017 conference (Figure 9).
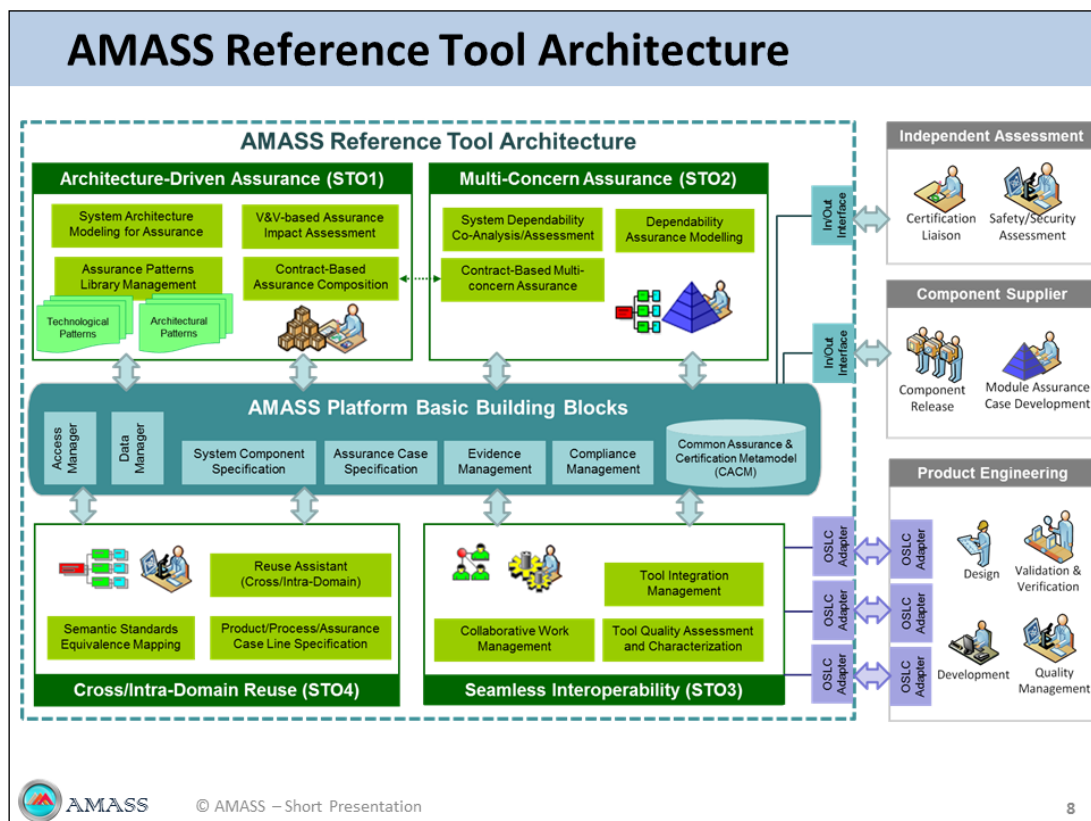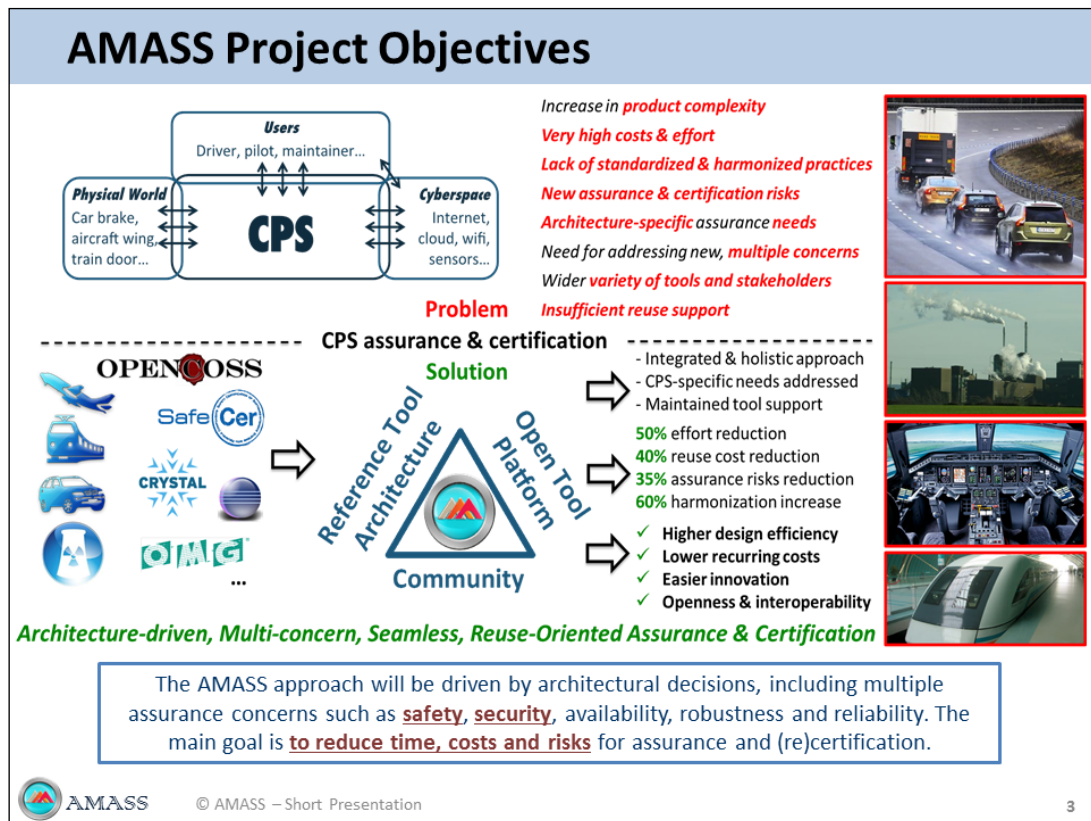
Figure 6. Examples of slides in AMASS presentations
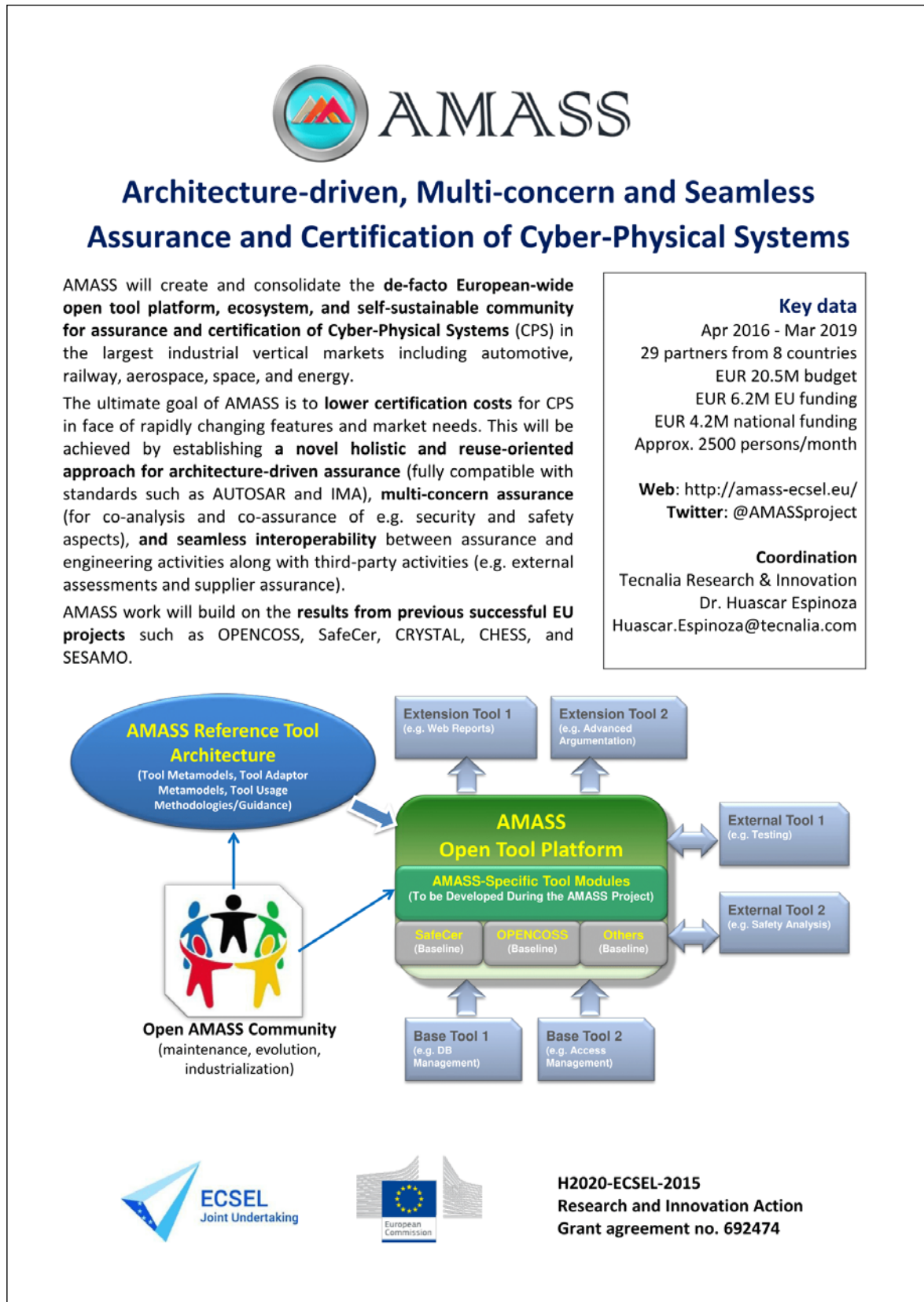
Figure 7. Front of the project leaflet prepared by the AMASS consortium
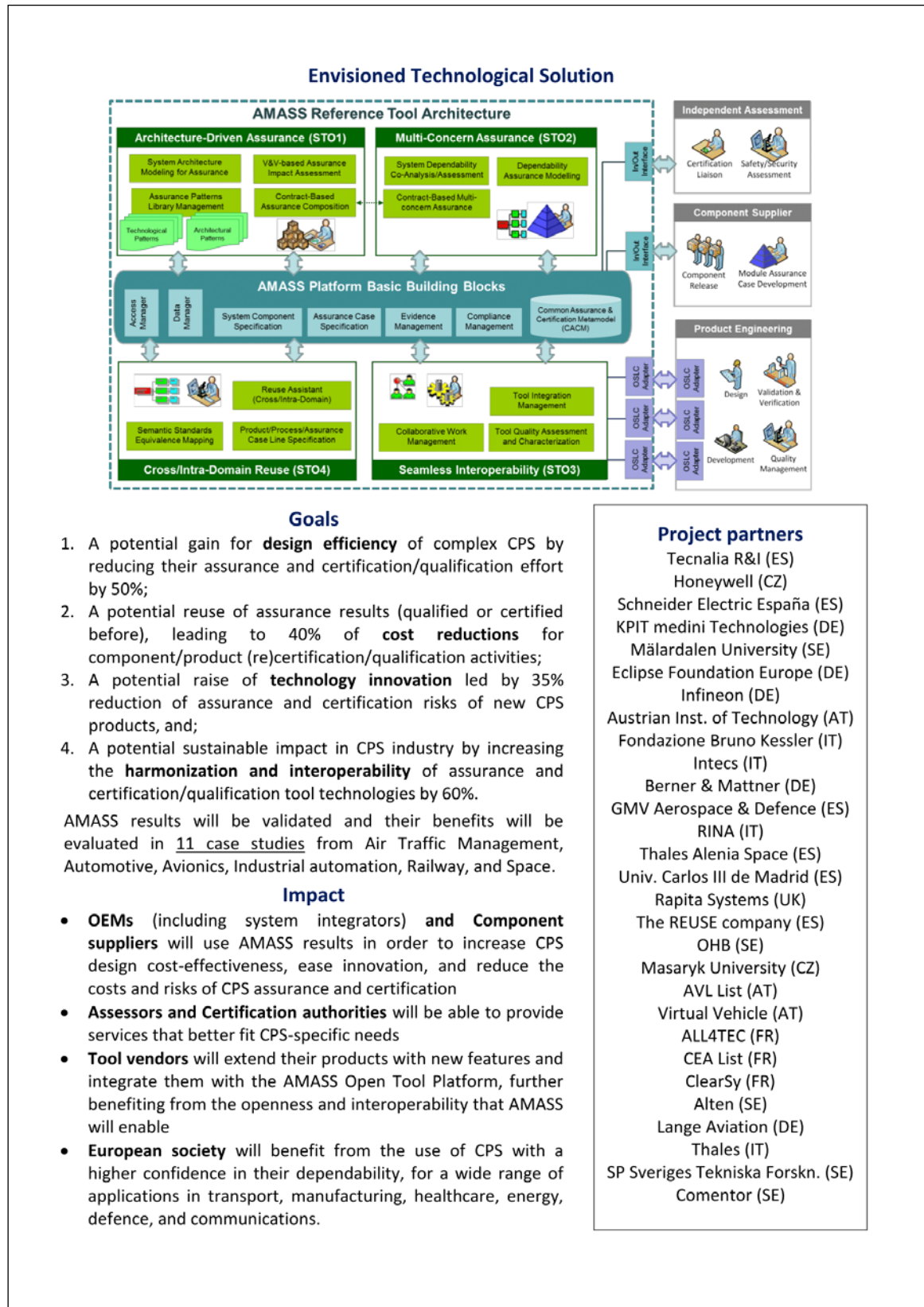
Figure 8. Back of the project leaflet prepared by the AMASS consortium
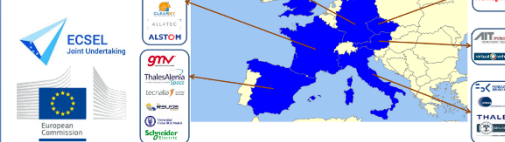
Figure 9. AMASS poster at MODELSWARD 2017

2.2.3 Social Media Activity

AMASS has been active on two social media platforms: Twitter (Figure 10) and LinkedIn (Figure 11). As of March 1, 2017, the Twitter account has 82 followers and the LinkedIn group has 255 members. AMASS has published 35 project-specific tweets and started 11 discussions on the group.
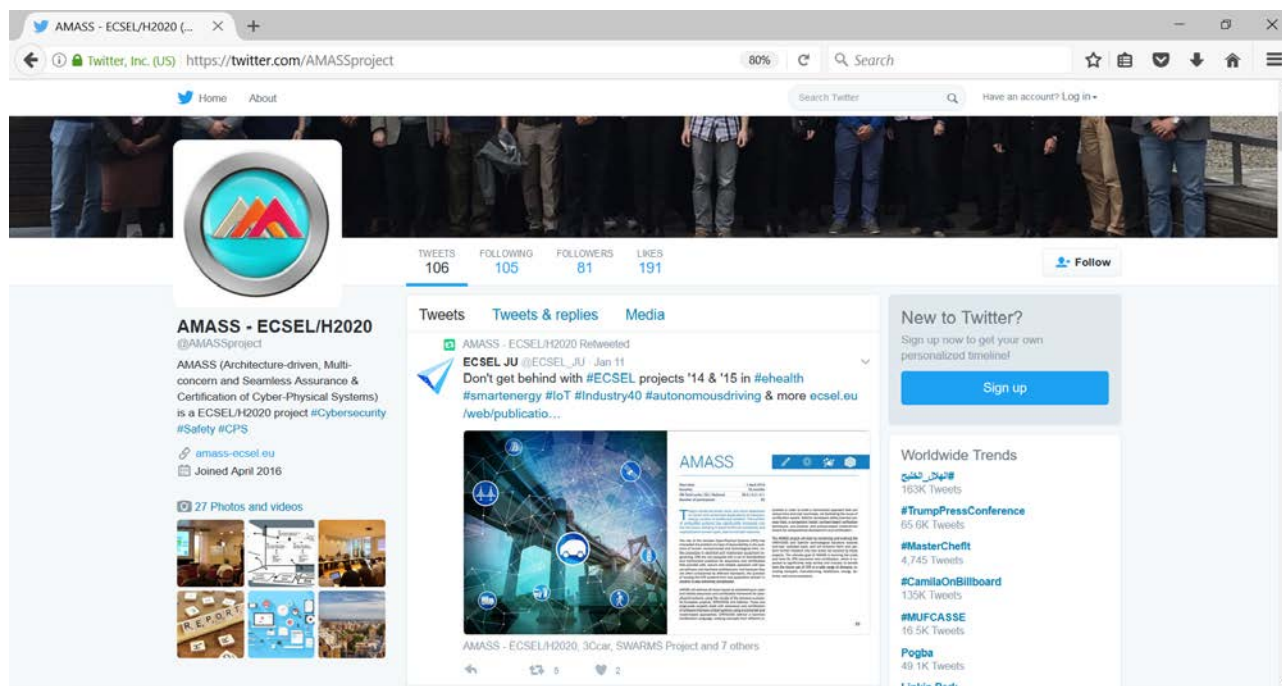
Figure 10. AMASS Twitter account
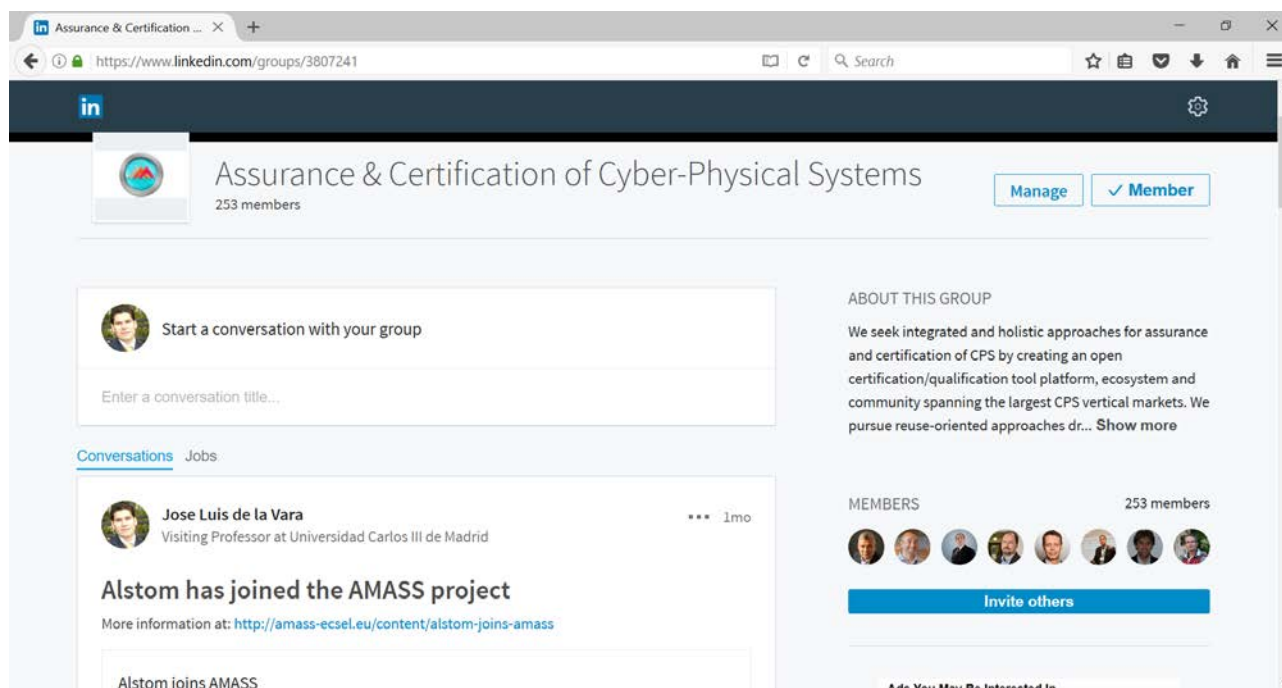
Figure 11. LinkedIn group managed by AMASS

2.2.4 Event Organization

The AMASS consortium has been very active in the organisation of events related to the assurance and certification of CPS. The main events are described in the subsections below.

2.2.4.1 De-CPS 2016

The third edition of the workshop on 'Challenges and new Approaches for Dependable and Cyber-Physical Systems engineering' (De-CPS; http://de-cps-2016.softeam-rd.eu/), was organized in 2016 as a satellite event of the 21st International Conference on Reliable Software Technologies (Ada-Europe 2016). The workshop focused on:

- Industrial challenges and experience reports on co-engineering for multiple dependability concerns in CPS engineering
- Modelling and analysis of CPS and the IoT
- Tools and methodologies to guarantee dependability-related properties including real-time and mixed-criticality cohabitation
- Challenges posed for CPS design and verification by multi-core processors
- Smart Factoring, Industry 4.0
- Platforms for the IoT – CPS

The workshop aims at gathering industrial practitioners and researchers concerned with dependable CPS engineering to foster future collaboration, and use the momentum provided by the International Conference on Reliable Software Technologies to foster further collaboration. The event's full description and agenda are available at http://www.cister.isep.ipp.pt/ae2016/workshops. The workshop proceedings have been published in the Ada User Journal Volume 37, Number 4, December 2016.

2.2.4.2 FuSaCom

The Functional Safety Community (FuSaCom; http://www.v2c2.at/en/details/article/erfolgreiches-erstes-zusammentreffen-der-functional-safety-community/) is a cross-industry working group for functional safety and safety related topics such as the impact of security on software safety. ViF organizes FuSaCom events three times a year. The participants are experts from industry, research and law.

The main objectives of FusaCom are:
- Promoting networking between different companies from industry, consultancy and research
- Exchanging local knowledge exchange among Functional Safety experts
- Educating about the interpretation of different safety standards
- Exchanging Functional Safety experience between different domains (automotive, railway, aviation, machinery, industry, health care)
- Providing workshops on selected topics

The topics of the latest FuSaCom events are shown below. Figure 12 shows some photographs taken at a FuSaCom event.

- 16th Get-2-Gether Event (23rd of January 2017):
    - o SOTIF (Safety of the intended functionality) (MAGNA)
        - Status and on-going work in the ISO standardization working group
        - Concept of ISO PAS 21448 - Extended view of ISO 26262
        - Discussion of examples and the proposal of development workflow diagram

- 15th Get-2-Gether Event (27th of October 2016, see Figure 12):
    - o Methods and requirements for safety and security co-analysis (AIT)
        - Overview of analysis methods covered in ISO 26262 and SAE J3061

o The right for automated driving (Lawyer)
- Legal basis for automated driving in Europa and USA

Figure 12. 15th Get-2-Gether Event of the FuSaCom, with Erwin Schoitsch (AIT) and Helmut Martin (VIF)

2.2.4.3 SASSUR 2016

The 5th International Workshop on Next Generation of System Assurance Approaches for Safety-Critical Systems (SASSUR; https://www.ntnu.edu/web/safecomp2016/sassur-2016) was held in Trondheim in 2016, Norway.

The SASSUR workshop is intended to explore new ideas to improve system assurance and certification of safety-critical systems. In particular, SASSUR provides a forum for thematic presentations and in-depth discussions about the alignment of standards and system characteristics, specification of assurance cases, safety evidence management, and reuse of assurance information in a way that makes assurance and certification more cost-effective, precise, and scalable.

The workshop is collocated with the SAFECOMP conference (International Conference on Computer Safety, Reliability and Security). The workshop proceedings are published on Springer and available at: http://www.springer.com/gp/book/9783319454795

Figure 13. Alejandra Ruiz (TEC) at SASSUR 2016

Twenty people attended the workshop, including people from academia and industry. Among the AMASS partners, Alejandra Ruiz (TEC) and Jose Luis de la Vara (UC3) participated in the workshop as co-organisers, and Fredrik Warg (SPS) presented a paper. Barbara Gallina (MDH; AMASS Technical Manager) was one of the most active attendees, and was engaged in many paper discussions.

The keynote speaker was Odd Ivar Haugen from the DNV GL unit Marine Cybernetics. DNV GL is a world-leader in provision of classification, technical assurance, software, and independent expert advisory services to the maritime, oil & gas, automotive, and energy industries. Odd Ivar presented DNV's vision for system assurance and certification, which includes the use of both prescriptive standards and goal-based ones, and the introduction of digital twins in the maritime domain.

SASSUR papers were divided into two main areas: assurance approaches and tool support. The main topics of the eight accepted papers (see workshop program and proceedings) are safety concept definition, autonomous function definition, safety requirements, new needs and challenges for assurance and certification of cyber-physical systems, model-based engineering for safety-critical systems, co-engineering of security and safety requirements, change impact analysis, and simulation. The papers presented insights from the current state of practice.

2.2.4.4   Scandinavian Conference on System & Software Safety

The Scandinavian Conference on SYSTEM & SOFTWARE SAFETY (SCSSS; http://safety.addalot.se/2017) is a central meeting place for Scandinavian safety experts from different industries. It is an opportunity to share experiences and make new contacts. In the framework of the fifth edition of this conference, MDH has organized a workshop to spread information on research results stemming from the two ECSEL SafeCOP and AMASS projects. More specifically, the focus of the workshop is Cooperative functions in safety-critical System-of-Systems scenarios, which is relevant to AMASS in the context of CS3 (Collaborative automated fleet of vehicles) and WP4 Multiconcern Assurance.

MDH acted as co-organiser of workshop 2 and was also a speaker.

The original call for presentations can be seen below (taken from http://safety.addalot.se/2017/call-for-presentations/workshops#WS3):

Cooperative functions in safety-critical System-of-Systems scenarios

Cooperative Open Cyber-Physical Systems (CO-CPS) can successfully address several societal challenges. For example, cooperative vehicles have been shown to reduce fuel consumption, and the number of accidents, and in the maritime area, cooperative ships can dramatically increase navigation safety. The development, as well as safety and security assurance, of CO-CPS poses challenges that are not adequately addressed by existing practices or standards. This workshop will be focusing on such challenges and how they possibly can be met.

The workshop will be based on research conducted within two EU/ECSEL projects; SafeCOP (Safe Cooperating Cyber-Physical Systems using Wireless Communication) and AMASS (Architecture-driven, Multi-concern and Seamless Assurance and Certification of Cyber-Physical Systems).

In this workshop we will present some early results from these projects and also solicit related presentations in the area of CO-CPS.

2.2.4.5   Workshop at CPS Week

AIT organized a full-day EMC² Summit at CPS-Week in Vienna (April 11th, 2016; https://www.artemis-emc2.eu/events/2016041116-emc2-summit-2016-at-cps-week-2016-vienna-austria-final-programme/).   In the introduction, Erwin Schoitsch gave an overview on the current and upcoming ARTEMIS and ECSEL projects at AIT, focussing on the multi-concern aspects of CPS systems and systems of systems. The AMASS flyer was displayed and distributed.

2.2.4.6   IDIMT 2016

The 24th annual IDIMT conference (Interdisciplinary Information Management talks, co-organized by the University of Economics, Prague, Czech Republic, and Johannes Kepler University, Linz, Austria; http://idimt.org/) is continuing in its tradition as an interdisciplinary forum for multi-disciplinary, multi-national and future-oriented research. It deals with current and future challenges caused by Information and Communication Technologies that structure and modify our environment, society and economics.

AIT organized a Session on Highly Autonomous Systems and Vehicles, and Erwin Schoitsch held the keynote (Autonomous Vehicles and Automated Driving: Status, Perspectives and Societal Impact), highlighting the multi-concern issue in this context, and referring to the work in ARTEMIS and ECSEL projects past and present, particularly AMASS. The paper is open access (ZENODO) and the full proceedings are available on the IDIMT Website (http://idimt.org/wp-content/uploads/proceedings/IDIMT_proceedings_2016.pdf).

2.2.4.7   Safety meets Security

"Safety meets Security" (https://www.hanser-tagungen.de/web/index.asp?task=001&vid=2016052081925) is a one-day Conference organized by HANSER in Germany together with Fraunhofer IESE, Siemens, Bosch, AIT and Airbus Defense (Advisory Board). It discusses Safety-Security Challenges as cross-domain issues, best practices, standardization, regulatory background and the latest trends and developments. Participants are mainly from industry, but also from research and authorities. The background from European research projects is clearly visible in this area, since all members of the advisory board are involved in various European research projects. In 2017, this conference will take place near Stuttgart on March 9th; the previous year it took place at FhG IESE in Kaiserslautern.

2.2.4.8 DECSoS 2016

The 11th DECSoS workshop (Figure 14; https://www.ntnu.edu/web/safecomp2016/decsos16) was co-organized by Erwin Schoitsch (AIT) and Amund Skavhaug, and presented initial results from multiple European projects, including AMASS.

Figure 14. DECSoS programme overview

2.2.5 Event Participation

In addition to those organised by the partners, the AMASS consortium has participated in the following 18 events:

- **ADCSS 2016**, 10th ESA International Workshop on Avionics, Data, Control and Software Systems (https://indico.esa.int/indico/event/148//; OHB)
- **ARTEMIS Technology Conference 2016** (https://artemis-ia.eu/technology-conference-2016.html; TEC)
- **ASSURE 2016**, 4th International Workshop on Assurance Cases for Software-intensive Systems (https://ti.arc.nasa.gov/events/assure2016/; MDH)
- **CARS 2016**, 4th International Workshop on Critical Automotive Applications: Robustness & Safety (http://conf.laas.fr/cars2015/CARS/CARS2016.html; MDH)
- **Con.nect Informunity** (FutureNet), Workshop Security Trends (AIT)
- **DASC 2016**, 35th Digital Avionics Systems Conference (http://2016.dasconline.org/; MDH)
- **ERF 2016**, European Robotics Forum (http://www.erf2016.eu/; AIT)
- **ISSA 2016**, International Workshop on Interplay of Security, Safety and System/Software Architecture (https://www.irit.fr/issa/; MDH)
- **MESS 16**, Microelectronics Systems Symposium (http://www.mess.co.at/; AIT)
- **MODELSWARD 2017**, 5th International Conference on Model-Driven Engineering and Software Development (http://www.modelsward.org/?y=2017; UC3)
- **PROFES 2016**, 17th International Conference on Product-Focused Software Process Improvement (https://profes2016.idi.ntnu.no/; MDH)
- **QUATIC 2016**, 10th International Conference on the Quality of Information and Communications Technology (http://2016.quatic.org/; MDH)
- **FiSMA Safety Panel** (http://www.fisma.fi/kalenteri/artikkeli/2665/; MDH)

- **TRC World 2016** conference (https://www.reusecompany.com/events/338-the-reuse-company-trc-world; UC3 and TRC)
- **SPICE 2016**, 16th International Conference Process Improvement and Capability dEtermination (http://www.spiceconference.com/; MDH)
- **OSS4MDE 2016**, Third Workshop on Open Source Software for Model Driven Engineering (http://mase.cs.queensu.ca/oss4mde/; INT)
- **RSSR 2016**, First International Conference Reliability, Safety and Security of Railway Systems: Modelling, Analysis, Verification and Certification (https://conferences.ncl.ac.uk/rssrail2016/; MDH)
- **10th Zürcher Conference**: Technologieoutlook und Megatrends (AIT)

2.2.6 Publications

During the first 12 months of AMASS, the project has resulted in the following **17 scientific publications**.

2017
- de la Vara, J.L., Génova, G., Álvarez-Rodríguez, J.M., Llorens, J.: **An Analysis of Safety Evidence Management with the Structured Assurance Case Metamodel**. Computer Standards & Interfaces 50: 179-198.
- Gallina, B., Gomez-Martinez, E., Benac-Earle, C.: **Promoting MBA in the Rail Sector by Deriving Process-related Evidence via MDSafeCer**. Computer Standards & Interfaces (accepted paper).
- Mendieta, R., de la Vara, J.L., Llorens, J., Alvarez-Rodriguez, J.M.: **Towards Effective SysML Model Reuse**. 5th International Conference on Model-Driven Engineering and Software Development (MODELSWARD 2017) (accepted paper).
- Juez Uriagereka, G., Lattarulo, R., Pérez Rastelli,J., Amparan Calonge, E., Ruiz Lopez, A., Espinoza, H.: **Fault Injection method for Safety and Controllability Evaluation of Automated Driving** . IEEE Intelligent Vehicles Symposium (IV 2017) (accepted paper).

2016
- Alajarami, S., Romanovsky, A., Gallina, B.: **Software Development in the Post-PC Era: Towards Software Development as a Service**. 17th International Conference on Product-Focused Software Process Improvement (PROFES 2016), 662-671.
- Bendík, J., Benes, N., Cerná, I., Barnat, J.: **Tunable Online MUS/MSS Enumeration**. 36th International Conference on Foundations of Software Technology and Theoretical Computer Science.
- de la Vara, J.L., Marín, B., Giachetti, G., Ayora, C.: **Do Models Improve the Understanding of Safety Compliance Needs? Insights from a Pilot Experiment**. 10th ACM/IEEE International Symposium on Empirical Software Engineering and Measurement (ESEM 2016), 32:1-32:6.
- Gallina, B., Andrews, A.: **Deriving Verification-related Means of Compliance for a Model-based Testing Process**. 35th Digital Avionics Systems Conference (DASC-2016).
- Gallina, B., Padira, K., Nyberg, M.: **Towards an ISO 26262-compliant OSLC-based Tool Chain Enabling Continuous Self-assessment**. 10th International Conference on the Quality of Information and Communications Technology (QUATIC 2016), 199-204.
- Schoitsch, E.: **Autonomous Vehicles and Automated Driving: Status, Perspectives and Societal Impact**. 24th Interdisciplinary Information Management Talks (IDIMT 2016), 405-425.
- Ayala, I., Gallina, B.: **Towards Tool-based Security-informed Safety Oriented Process Line Engineering**. 1st International workshop on Interplay of Security, Safety and System/Software Architecture (ISSA-2016), 38.
- Gallina, B., Castellanos-Ardila, J.P., Nyberg, M.: **Towards Shaping ISO 26262-compliant Resources for OSLC-based Safety Case Creation**. 4th International Workshop on Critical Automotive Applications: Robustness & Safety (CARS 2016).

- Mazzini, S., Favaro, J., Puri, S., Baracchi, L.: **CHESS: an open source methodology and toolset for the development of critical systems**. Third Workshop on Open Source Software for Model Driven Engineering (OSS4MDE 2016).
- Ruiz, A., Gallina, B., de la Vara, J.L., Mazzini, S., Espinoza, H.: **Architecture-driven, Multi-concern and Seamless Assurance and Certification of Cyber-Physical Systems**. 5th International Workshop on Next Generation of System Assurance Approaches for Safety-Critical Systems (SASSUR 2016), 311-321.
- Schmittner, C., Ma, Z., Puschner, P.: **Limitation and Improvement of STPA-Sec for Safety and Security Co-analysis**. ERCIM/EWICS/ARTEMIS Workshop on "Dependable Embedded and Cyber-physical Systems and Systems-of-Systems" (DECSoS 2016), 195-209.
- Sljivo, I., Gallina, B.: **Building Multiple-Viewpoint Assurance Cases Using Assumption/Guarantee Contracts**. 1st International workshop on Interplay of Security, Safety and System/Software Architecture (ISSA-2016), 39.
- Sljivo, I., Gallina, B., Carlson, J., Hansson, H.: **Configuration-aware Contracts**. 4th International Workshop on Assurance Cases for Software-intensive Systems (ASSURE 2016), 43-54.

All of the publications above are open access, in accordance to the recommendations provided in D8.5 (e.g. through repositories whose information is retrieved by OpenAIRE [3]).

In addition to the 16 public deliverables listed in Section 2.2.1, the following five have been released:
- D1.2 - Report of case study data collection
- D2.2 - AMASS reference architecture
- D8.1 - AMASS website and project collaboration platform
- D9.1 - Project management plan and handbook
- D9.2 - First intermediate annual progress report

2.3   Communication Activities

The purpose of AMASS communication activities has been to inform general audiences (e.g. overall groups of practitioners and the general population) of the project and its results. The ultimate goal is to raise awareness of the project. All AMASS partners make every effort to communicate information concerning the project and its progress to as wide an audience as possible.

The communication activities undertaken up to m12 are listed in Table 2.

Table 2. Communication activities

Event	Date	Resp.	Description
Press release	Apr 2016	UC3	Press release to advertise the beginning of the project (e.g. http://www.tecnalia.com/en/ict-european-software-institute/news/the-work-on-the-european-wide-open-platform-and-community-for-assurance-and-certification-of-cyber-physical-systems-has-started.htm)
Press release	Jun 2016	MDH	Press release to advertise the project in Sweden, http://www.mdh.se/nyheter/nyhetsarkiv/eu-s-mal-halvera-kostnaden-for-certifiering-av-inbyggda-system-1.89571
Press release	Jun 2016	UC3	Video and adapted press release in Spanish, English, and Chinese (http://www.uc3m.es/ss/Satellite/UC3MInstitucional/en/Detalle/Comunicacion_C/1371221005543/1371215537949/Researching_how_to_improve_certification_of_intelligent_devices)
Newspaper article	Jun 2016	UC3	Article about AMASS published in Spanish newspaper (http://www.lavanguardia.com/local/madrid/20160618/402597458780/investigadores-de-la-carlos-iii-trabajan-en-itv-de-dispositivos-inteligentes.html)
EWICS meeting	Sep 2016	MDH	Presentation of AMASS during the EWICS meeting
First newsletter	Oct 2016	UC3	Vision and main achievements of the project in m01-m06, and upcoming work
Websites	2016	All	AMASS presence and advertisement at partners' websites, such as: TEC: http://www.cyberssbytecnalia.com/content/projects/amass TLV: http://www.schneider-electric.com/b2b/en/products/medium-voltage-switchgear-and-energy-automation/r-and-d-projects/ MDH: http://www.es.mdh.se/projects/434-AMASS INT: https://es.fbk.eu/projects/amass GMV: http://www.gmv.com/en/Company/AboutGMV/Aids/AMASS TAS: https://www.thalesgroup.com/en/worldwide-spanish/news/tas-e-participates-project-amass-under-ecsel-program-co-financed-ec-and UC3: http://www.uc3m.es/ss/Satellite/UC3MInstitucional/en/TextoMixta/1371206594056/International_projects TRC: https://www.reusecompany.com/projects/325-amass OHB: http://www.ohb-sweden.se/amass/ UOM: https://www.muni.cz/en/research/projects/35988 ViF: http://www.v2c2.at/en/funding-programs/international-funding-projects/ RISE: http://www.sp.se/en/index/research/dependable_systems/amass/Sidor/default.aspx

2.4   Updated Dissemination Plan

Based on the plans presented in D8.5 and the progress made up to March 2017, Table 3 presents an update of the general dissemination plan for AMASS, and 0 the communication plan.

Table 3. Dissemination plan

Activity	Date	Resp.	Description
DIF conference	May 2017	TEC & ALT	Industry-driven Digital innovation conference in Europe, showing R&I results and emerging challenges towards a vision on the future for and built by industry.
DeCPS workshop	Jun 2017	INT	International Workshop on Challenges and new Approaches for Dependable and Cyber-Physical Systems Engineering, in conjunction with Ada-Europe 2017.
ECSEL JU Symposium	Jun 2017	TEC & UC3	Event focused on deep technological presentations, both about project achievements and about state-of-the-art technology, consisting of four thematic one-day workshops: Smart Cities, Smart Energy, Interoperability in CPS and IoT, and Future CPS industrial research challenges.
SASSUR workshop	Sep 2017	TEC & UC3	International Workshop on Next Generation of System Assurance Approaches for Safety-Critical Systems, collocated with SAFECOMP.
DECSoS workshop	Sep 2017	AIT	International workshop on Dependable Embedded and Cyber-physical Systems and Systems-of-Systems.
SAFECOMP conference	Sep 2017	FBK	Annual event covering the state-of-the-art, experience and new trends in the areas of safety, security and reliability of critical computer application.

Table 4. Communication plan

Event	Date	Resp.	Description
Second newsletter	Apr 2017	UC3	Vision and main achievements of the project in m07-m12, and upcoming work.
Third newsletter	Oct 2017	UC3	Vision and main achievements of the project in m13-m18, and upcoming work.
Fourth newsletter	Apr 2018	UC3	Vision and main achievements of the project in m19-m24, and upcoming work.
Fifth newsletter	Oct 2018	UC3	Vision and main achievements of the project in m25-m30, and upcoming work.
Sixth newsletter	Mar 2019	UC3	Main achievements of the project in m31-m36 and main conclusions from the project.
Press release	Mar 2019	UC3	Press release about AMASS finalisation.

3. Training Progress

The training activities performed in AMASS between April 2016 and March 2017 are divided into internal and external training. Most work has focused on internal training. In addition to the training activities performed, this section presents an updated plan for training events.

3.1 Internal Training

The events in this section have been arranged for internal training in AMASS.

3.1.1 Training on Baseline Solutions

This first training event focused on presenting the outcomes from previous projects the consortium partners were involved in, such as OPENCOSS [8], SafeCer [9] and CHESS [10].

The event was divided into three sessions: the first two on 9th May 2016 and the last one on the 11th May 2016. The agenda for the sessions was as follows:

Session 1: OPENCOSS
    1.1. General Overview by Huáscar Espinoza (TEC)
    1.2. Compliance Management by Huáscar Espinoza (TEC)
    1.3. Argumentation Management by Alejandra Ruiz (TEC)
    1.4. Evidence Management by José Luis de la Vara (UC3)
    1.5. Cross Domain Reuse by Huáscar Espinoza (TEC)

Session 2: SafeCer
    2.1 SafeCer Project Approach by Stefano Puri (INT)
    2.2 SafeCer Component Model / CHESS by Stefano Puri (INT)
    2.3 SafeCer Enabling generation and reuse of safety argument-fragments via weak and strong contracts by Irfan Sljivo (MDH)
    2.4 SafeCer Contract based analysis with OCRA by Stefano Tonetta (FBK)
    2.5 SafeCer Process lines, assurance case lines, generation & reuse by Barbara Gallina (MDH)
    2.6 SafeCer Compliance, argumentation management (DCASE Editor & WEFACT) by Thomas Gruber (AIT) and Robert Bramberger (VIF)

Session 3: Miscellanea
    3.1 Safety and Security co-engineering by Christoph Schmitter, Thomas Gruber and Zhendong Ma (AIT)
    3.2 The MERgE Project by Frédérique Vallée (A4T)
    3.3 Model-based Safety & Security Framework by Morayo Adedjuouma and Gabriel Pedroza (CEA)
    3.4 OSLC and CRYSTAL Project Overview by José M. Álvarez (UC3)
    3.5 CRYSTAL: RBE Approach – Introduction for AMASS Project by José Fuentes (TRC)

The trainees were all AMASS partners.

All three sessions were held online and recorded. After the meetings, the recordings were produced and uploaded as videos to the AMASS subversion repository to make them available to those partners that could not attend the session. Figure 15 shows a slide from this training event.

Figure 15. Slide from the training session on OPENCOSS

3.1.2 Training on Technologies for Seamless Interoperability

In this event, industrial partners in AMASS showed the rest of consortium how their tools could interoperate in the AMASS platform.

The event was divided into two sessions, which were held on the 21st and 23rd June 2016.

Session 1: 21st June 2016 9:00 am

    1.1. Medini Analyze by Jan Mauersberger (KPIT)
    1.2. Chess by Stefano Puri and Silvia Mazzini (INT)
    1.3. Contract-Based Architectural Design with OCRA by Stefano Tonetta (FBK)
    1.4. The xSAP safety Analysis Platform Marzo Bozzano (FBK)
    1.5. TESTONA by Peter M. Kruse (B&M)

Session 2: 23rd June 2016 14:00 am

    2.1. TRC Tools interoperability by Luis Alonso (TRC)
    2.2. Papyrus by Morayo Adedjouma (CEA)
    2.3. RVS Coverage by Will Lunniss (RPT)
    2.4. Safety Architect by Mohamed Bakkali (A4T)

The trainees were all AMASS partners. Both sessions were held online and recorded. After the sessions, the recordings were produced and uploaded as videos to the AMASS subversion repository to make them available to any partner that could not attend the session. Figure 16 shows a screenshot from this training event.
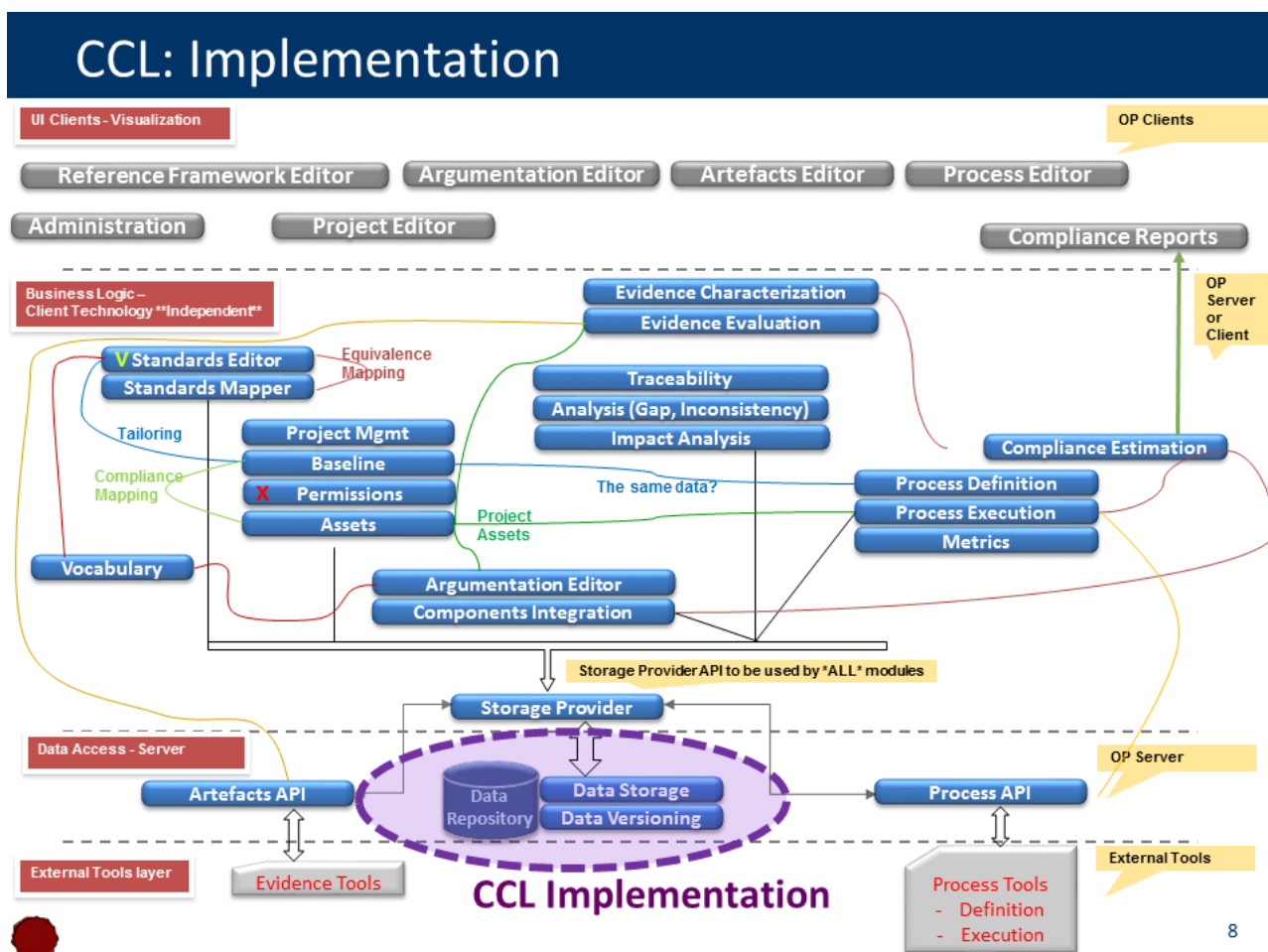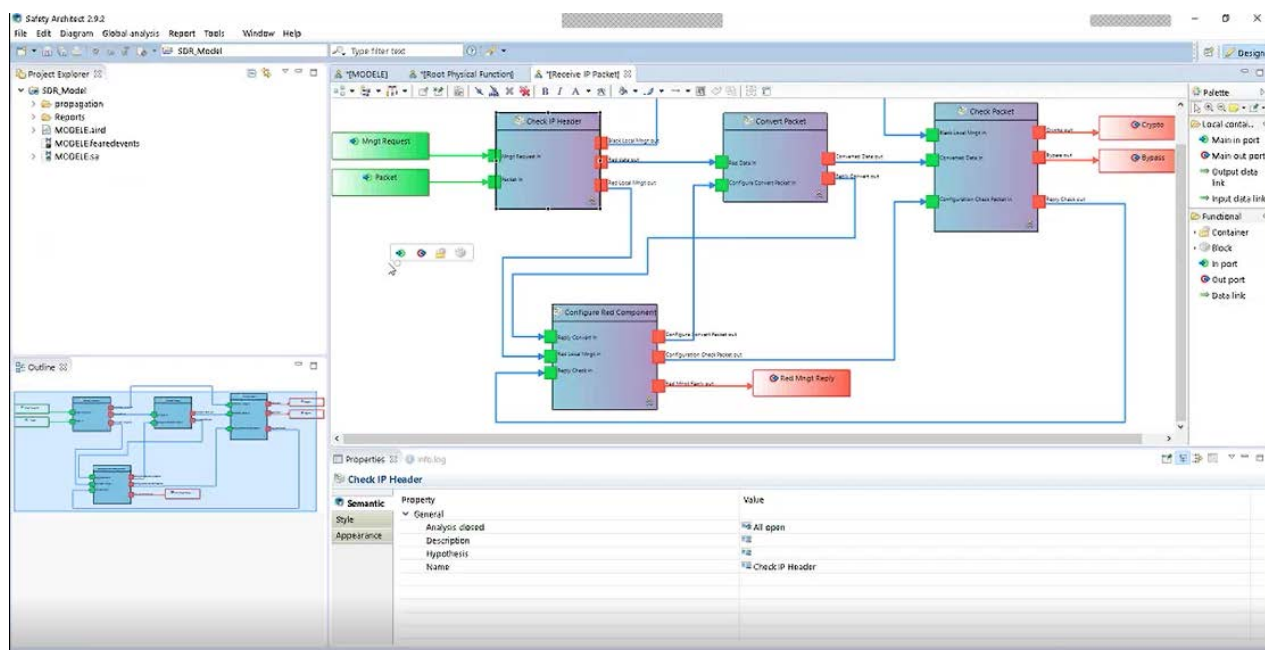

Figure 16. Screenshot from the training session on Safety Architect

3.1.3 Training on the Core Prototype

The AMASS Implementation Team provided training on the Core Prototype release of the AMASS platform developed by the partners.

The event was divided into two sessions. Each session took place over roughly two hours, and the sessions were held on the 6th and 8th February 2017 at 13:00 and 11:00 respectively. The agenda is presented in Table 5 and Table 6.

Table 5. 1st Session – 1h 45m; Monday 6th February 2017 at 13:00

1st session	Duration	Trainer
1. Installation OpenCert + CHESS	10 minutes	TEC
2. Installation EPF Composer	10 minutes	MDH
3. General approach	15 minutes	TEC
4. Standards Modelling (OpenCert)	20 minutes	TEC
5. Assurance Project (OpenCert)	10 minutes	TEC
6. Evidence Management (OpenCert)	20 minutes	UC3

Table 6. 2nd Session – 2h 10m; Wednesday 8th February 2017 at 11:00

2nd Session	Duration	Trainer
1. EPF for Process Modelling	50 minutes	MDH
2. Argumentation Specification (OpenCert)	20 minutes	TEC
3. System Component Specification - Papyrus & CHESS	30 minutes	INT
4. Compliance Management (OpenCert)	20 minutes	TEC
5. Further discussion to implement Case Studies	15 minutes	All: Developers & Users

The speakers were: Huáscar Espinoza, Ángel López and Garazi Juez (TEC); Barbara Gallina (MDH); Stefano Puri (INT); and Jose Luis de la Vara (UC3). The trainees were all the AMASS partners.

After the meetings, the sessions were produced and uploaded as videos to the AMASS subversion repository to make them available to partners that could not attend the training session. Figure 17 shows a slide from this training event.
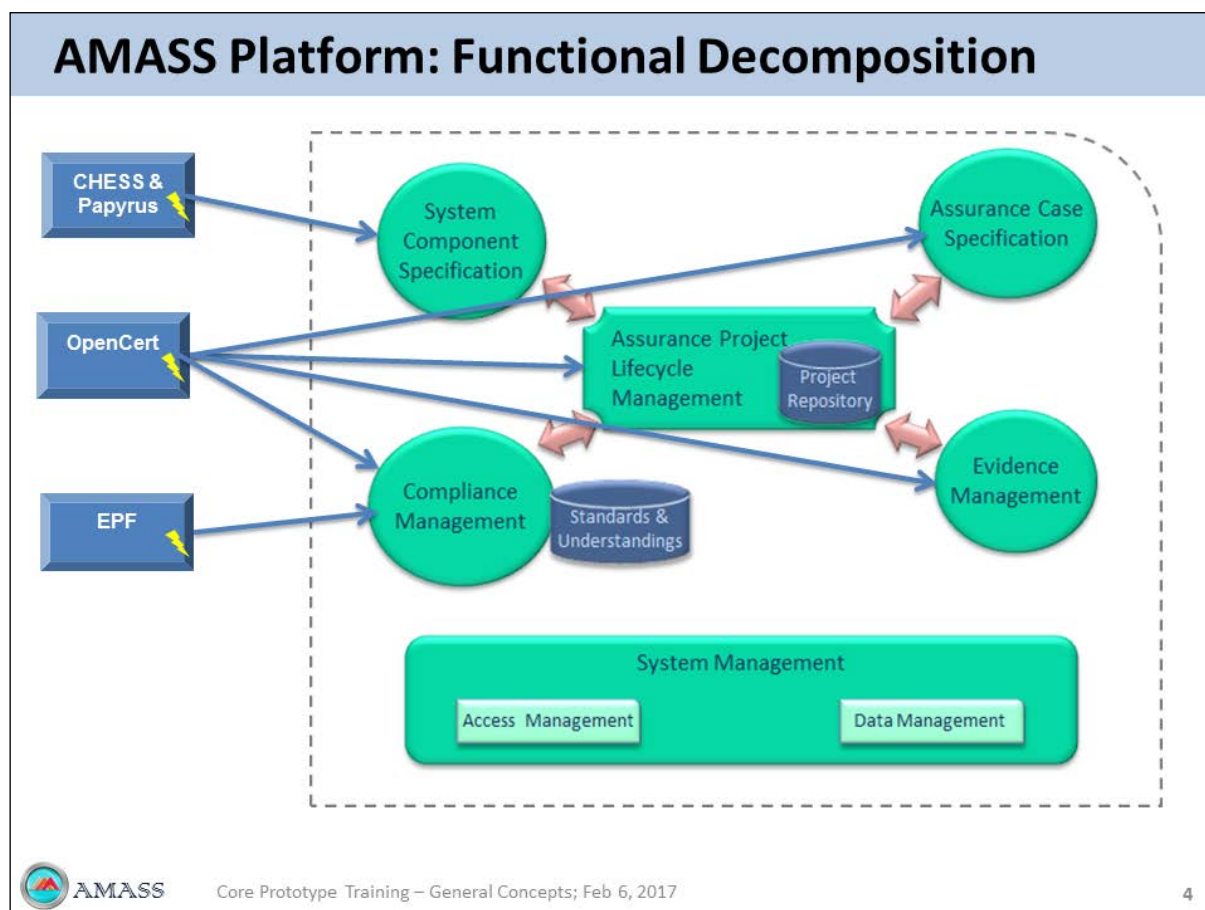
Figure 17. Slide from the training session "General approach"

3.2 External Training

External training is training targeted at parties not directly involved in AMASS. The external training provided up to March 2017 was research training.

3.2.1 Research Training

Research training has addressed the transfer of knowledge based on AMASS to the research and academic communities. UC3 has already worked on this training by supervising BSc and MSc theses on topics related to AMASS that are shown below:

- Elena Correas Montiel. "*Generación Automática de Editores y Repositorios de Evidencias a partir de Modelos de Estándares de Seguridad*" (Automatic Generation of Evidence Editors and Repositories from Models of Safety Standards).
- Oscar Leonardo González Gómez. "*Patrones en la industria: creación de una librería para el procesamiento del lenguaje natural de requisitos safety basada en sistemas de Procesamiento de*

Lenguaje" (Patterns in industry: development of a library for natural language processing of safety requirements).

- Roy Arturo Mendieta Zuniga. "Knowledge Reuse in SysML Models".
- Eduardo de Tena Martínez. "Extracción de la Información Presente en Diagramas en Formato Imagen" (Information Retrieval from Diagrams in Picture Format).
- Javier Fernández Páez. "Análisis de Consistencia Temporal en Requisitos: Propuesta de Modelo (Analysis of Requirements Temporal Consistency: Model Proposal).
- Cristina Barcia Gonzalez. "Estudio de los beneficios de una herramienta industrial para la evaluación basada en ontologías de la calidad de requisitos" (Study of the benefits of an industrial tool for ontology-based requirements quality assessment).
- Gabriel Orlando Jimenez Urrutia. "Evaluación de la calidad de 'safety cases' con una herramienta de ingeniería de requisitos basada en ontologías" (Evaluation of safety case quality with a requirements engineering tool based on ontologies).

Another four BSc, two MSc, and two PhD theses are currently being supervised by UC3.

MDH has also started the transfer of knowledge by fertilizing master theses, defined in related projects, with AMASS-related contextual information:

- Kathyayani Padira. "Investigation of Resources Types for OSLC domains Targeting ISO 26262: Focus on Traceable safety evidence for the Right side of the ISO 26262 Software V-model". Thesis conducted at Scania AB, defined and supervised by B. Gallina.
- Julieth Patricia Castellanos Ardila. "Investigation of an OSLC domain targeting ISO 26262" Thesis conducted at Scania AB, defined and supervised by B. Gallina.

Further theses have been proposed at MDH.

Finally, AMASS was presented by UC3 at Universidad Andrés Bello, Chile, and by MDH at Solvina AB, Sweden.

3.3   Updated Training Plan

The upcoming internal training events that have a defined date are shown in Table 7. External training events are shown in Table 8.

Table 7. Internal training events

Event	Date	Resp.	Description
Second Training for AMASS Demonstrators	Jan 2018	TRC	Training on AMASS second prototypes, around two months before their release.
Third Training for AMASS Demonstrators	Nov 2018	TRC	Training on AMASS final prototypes, around two months before their release.

Table 8. External training events

Event	Date	Resp.	Description
Software project management course	May 2017	UC3	Presentation of AMASS challenges and results at a course on software project management of UC3, which includes system quality assurance aspects.
Presentation at Universidad Diego Portales, Chile	May 2017	UC3	Presentation of AMASS challenges and results during a short stay at Universidad Diego Portales.

CPS Summer School	Jul 2017	FBK	Summer school targeted at research scientists and students, and R&D experts from industry, who want to learn about advances in CPS engineering.
Training for formalization of requirements	2017	HON	Presentation of requirement formalization– comparison of state of the art approaches.
Training for Polarsys members	2017	TEC	Presentation of first AMASS prototype.
Safety Critical Systems Engineering	Nov 2017	MDH	Presentation of AMASS challenges and results at a course on safety-critical systems engineering.
Software project management course	May 2018	UC3	Presentation of AMASS challenges and results at a course on software project management of UC3, which includes system quality assurance aspects.

4. Conclusion

This document has presented the methods used and activities performed for dissemination and training of AMASS results from the start of the project (April 2016) until March 2017. Both dissemination and training are essential to improve the impact that the AMASS project has. The entire consortium has engaged in collaborative and coordinated actions to make third parties aware of AMASS results and know how to exploit them.

Dissemination activities have aimed to promote project results, communicate achievements in the project and raise interest in the solutions developed. The preparation and deployment of things such as the AMASS website, project presentations, leaflets, and social media accounts have greatly contributed to these activities. Event organisation and participation, and publications have also played major roles in informing others about AMASS.

Regarding training, AMASS partners have provided industrial and research stakeholders with new knowledge and upgraded skills regarding CPS assurance and certification, and have collaborated to overcome the potential gaps between AMASS results and their application. Internal training has been essential to ensure a common, shared understanding of CPS assurance and certification, how to tackle these activities, and how to improve them. Three training events have been run on baseline solutions, technologies for seamless interoperability, and the core prototype.

The progress made in dissemination and training during the first project year is aligned with the plans presented in D8.5. Subsequent WP8 deliverables (see the Executive Summary) will report on the progress made on dissemination and training activities in the future, and will include adjustments to the current plans.

References

[1]　AMASS project: Blog. 2017. http://amass-ecsel.eu/blog

[2]　AMASS project: Deliverables. 2017. http://amass-ecsel.eu/content/deliverables

[3]　OpenAIRE: Architecture-driven, Multi-concern and Seamless Assurance and Certification of Cyber-Physical Systems. 2017. https://www.openaire.eu/search/project?projectId=corda__h2020::f1463df57feedfea84a5950aca41c4cf

[4]　ARTEMIS: DECISION OF THE GOVERNING BOARD OF THE ARTEMIS JOINT UNDERTAKING APPROVING THE MULTIANNUAL STRATEGIC PLAN AND RESEARCH AGENDA FOR 2012. 2011. https://ec.europa.eu/research/participants/portal/doc/call/fp7/artemis-2012-1/32195-artemis-gb-2011-d.33_signed_en.pdf

[5]　ARTEMIS: Strategic Research Agenda 2016. 2016. https://artemis-ia.eu/publication/download/sra2016.pdf

[6]　ARTEMIS: WG Education & Training. 2017. https://artemis-ia.eu/working-group/wg-education-training.html

[7]　ECSEL: MASP and Work Plans. 2017. http://ecsel.eu/web/documents/MASP%20and%20WP.php

[8]　OPENCOSS project. 2017. http://www.opencoss-project.eu/

[9]　SafeCer project. 2016. http://www.safecer.eu/

[10]　CHESS project. http://www.chess-project.org/

Appendix A. Progress of the Dissemination Plan until m12

All the planned general activities for dissemination, from April 2016 to March 2017, presented in D8.5 have been performed. These activities are listed in Table 9 and 0.

Table 9. Planned internal dissemination activities

Activity	Date	Resp.	Description
Website	Apr 2016	TEC	Dissemination means for news and publications
SVN repository	Apr 2016	KMT	Dissemination means for file sharing
Mailing lists	Apr 2016	KMT	Dissemination means for email communications
Wiki	May 2016	KMT & UC3	Dissemination means for information sharing
D1.2	Mar 2017	TAS	Case study data collection

Table 10. Planned external dissemination activities

Activity	Date	Resp.	Description
Website	Apr 2016	TEC	Launch of the public website.
DeCPS workshop	Jun 2016	INT	3rd International Workshop on Challenges and new Approaches for Dependable and Cyber-Physical Systems Engineering, in conjunction with Ada-Europe 2016, targeting industrial practitioners and researchers concerned with dependable and Cyber-Physical Systems engineering.
SASSUR workshop	Sep 2016	TEC & UC3	5th International Workshop on Next Generation of System Assurance Approaches for Safety-Critical Systems, collocated with SAFECOMP.
2nd edition of the ARTEMIS Technology Conference	Oct 2016	RPT	Event focused on deep technological presentations, both about project achievements and about state-of-the-art technology, consisting of four thematic one-day workshops: Smart Cities, Smart Energy, Interoperability in CPS and IoT, and Future CPS industrial research challenges.

Appendix B. Progress of the Training Plan until m12

All the planned general activities for internal training, from April 2016 to March 2017, presented in D8.5 have been performed. These activities are listed in Table 11. However, a planned activity for external training has not been performed (0) due to insufficient progress on research work.

Table 11. Planned internal training events that have been held

Event	Date	Resp.	Description
Baseline Solutions Seminar	9th and 11th May 2016	TRC	Training on baseline and background aspects for creation of AMASS results, from related projects and initiatives: OPENCOSS, SafeCer, CRYSTAL, MERGE, Papyrus, Arrowhead, EMC^2, CHESS, CONCERTO. Several partners contributed to preparing the training sessions.
AMASS Partner Tools Demo	21st and 23rd Jun 2016	KMT	Training on AMASS partner tools with respect to seamless interoperability. Several partners contributed to preparing the training sessions.
First Training for AMASS Demonstrators	6th and 8th Feb 2016	TRC	Training on AMASS first prototypes, around two months before their release.

Table 12. Planned external training events that have not been held

Event	Date	Resp.	Description
Training for formalization of requirements	2016	HON	Presentation of requirement formalization– comparison of state of the art approaches.