

ECSEL Research and Innovation actions (RIA)



AMASS

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

**AMASS open source platform marketing and outreach plan
D7.4**

Work Package:	WP7 Industrial Impact and Community Building
Dissemination level:	PU = Public
Status:	Final
Date:	28 April 2017
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Document reference:	AMASS_D7.4_WP7_ECL_V1.0

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Executive Summary

This report is deliverable 7.4 (AMASS open source platform marketing and outreach plan), part of task T7.3 (Building and Coordination of AMASS Open-Source Community), released by the AMASS WP7 (Industrial Impact and Community Building).

Since its inception, the AMASS consortium has considered open source and community building as keystones for the sustainability of AMASS results and more specifically of the AMASS open platform. This deliverable presents the plan for the promotion of the AMASS open platform. It describes the activities related to the Community Building of the AMASS Open Platform in the context of the PolarSys working group.

This document follows deliverable D7.3 (AMASS open source platform project proposal) [4], which describes the creation of the AMASS Open Platform constituted by the OpenCert [13], CHESS [14] and EPF [15] projects. It presents the plan that will be implemented in D7.5 (AMASS open source platform provisioning and website) and following versions of the website.

This report puts in perspective the usual project marketing and outreach activities with the specificities of open source: users can freely access to the platform and test it, but they need specific documentation and resources to understand the benefits of the platform, and to spend the necessary time to adopt it.

1. Introduction

AMASS will create and consolidate a de-facto assurance and certification open tool platform, published in open source in the PolarSys Working Group at the Eclipse Foundation.

This document is deliverable D7.4 (AMASS open source platform marketing and outreach plan), released by the AMASS WP7 (Industrial Impact and Community Building). Open source makes it easy for users to test and adopt the open platform, but in order to be successful, an open source project must not only provide interesting features, but also find the best way to reach its audience, and provide documentation and material to convince the audience to use the project. This deliverable presents the plan for the promotion of the AMASS open platform.

The remaining structure of this deliverable is as follows. Chapter 2 describes the different profiles of stakeholders interested in the AMASS Open Platform, from typical users, to the direct projects contributors including platform integrators and technology experts. For each profile, it lists their specific expectations in terms of documentation, demonstrations and other artefacts.

In chapter3, the report gives examples about how open source has been used and can be used to establish de facto standards, whereas chapter 4 explains the specificities of open source regarding to marketing and outreach.

Finally, chapter 5 describes the concrete plan under implementation by the AMASS partners, in terms of communication channels, website and documentation, as well as what specific community development activities are planned in order to maximize the adoption of the AMASS open platform.

2. AMASS Open Source platform stakeholder profiles

This chapter identifies the different stakeholder profiles targeted by the AMASS open source platform marketing and outreach plan. For each of these profiles, we give some context including their skills, their concerns, and their requirements.

Other deliverables in work package 1 “Cases Studies and Benchmarking” and work package 2 “Reference Architecture and Integrations”, see [1], [2] and [3], describe the different stakeholders of the project. In this deliverable we focus on four different kinds of profiles:

- Users of the AMASS Open Source platform.
- Tools Integrators, also described as “Tools providers” in other deliverables.
- Eclipse Modelling and PolarSys experts, who can become evangelists of the platform.
- Developers of the AMASS Open Source platform

2.1 Users of the AMASS open source platform

Job Description:

Users can be Systems Engineering Experts, Safety or Assurance Engineers, Project Managers, or even Assessors. They are “typical” users of the AMASS open platform for certification and process assurance. When they need integration or customization, they work with software vendors or methods and tools teams described hereafter as “tools integrators”.

Company:

Either a system or sub system manufacturer, an assessment company, or a certification body.

Expectations:

- During the first contact with the AMASS open platform, users want to watch videos and detailed tutorials to evaluate if the platform fits with their needs.
- When they decide to test the tool, they want to have a working example running on their laptop in less than 10 minutes.
- Even if they know that the platform is also offered by software vendors in more advanced products, they want to be able to use it “as-is” in a simple pilot project, or for very simple projects.
- They will rely on the training material provided as video lectures, the AMASS Handbook and the platform user manual to better understand how to use the platform, both in terms of features and process.
- More advanced requirements include a good integration of the AMASS open platform with the rest of the tools they have to use in their day-to-day job.
- When they start using the platform regularly, they need a good community support, like a place to find and share best practices and examples or a direct link to the platform development team when they have a question. Such a direct link is most of the time provided through an access to a public bug tracker where they can report a bug.

2.2 AMASS platform integrator

Job Description:

Software architect or senior software developer at a tool provider company.

Company:

An ISV or a solution integrator that creates tools for manufacturing CPS or supporting assessment of these systems.

Expectations:

- Integrators need a set of stable and open APIs in order to build their own solutions on top of the platform.
- They need to be able to extend the platform with their own plugins and features in order to implement their added value on top of the platform and to create their product or solution. Such integration must be easy and must comply with the state of the art of technologies.
- Integrators will be looking for documentation e.g., use cases of different types regarding the integration that help them choose the architecture of their solution.
- They will leverage existing documentation like the AMASS handbook and the platform user manual in order to create documentation for their product or solution.
- Finally, during implementation, they need a good support by the platform development team.

2.3 Eclipse modelling expert

Job Description:

Eclipse technologies expert and trainer. They primarily provide expertise to tools integrators.

Company:

Freelance

Expectations:

- They need material to evaluate the solution with a representative example running on their laptop in less than 10 minutes.
- They will use documented success stories to promote the solution and make business by helping in the deployment of the solution.
- They will reuse the training material provided with the platform as a basis to build their own training sessions, and eventually contribute back to improvement or additional content.
- The AMASS handbook and the platform user manual will also be good sources of examples and feature descriptions they will use to promote and explain the platform.
- They need good support, an access to the bug tracker and to the forge, as they might help their customers to improve the solution.

2.4 AMASS Open Source platform contributor

Job Description:

Developer or Senior Developer, contributing to OpenCert, CHESS or other components of the AMASS platform.

Company:

One of the AMASS partners. In the future, it can also be an external company contributing to the AMASS open platform.

Expectations:

- They need a robust infrastructure, to host their code and manage the project. Such infrastructure, as the one provided by PolarSys, typically provides code version control, code review, continuous integration and bug tracker.
- They will read documentation about how to contribute, how to build the project from scratch and everything about the development of the project including who are the committers. They will also edit and improve the documentation about the project, to describe new features and APIs.

- They need good communication channels to collect feedback from users and other contributors, and to discuss with other developers. This includes but is not limited to mailing lists, forums, or bug trackers.

3. Success stories on using Open Source to promote standards

This chapter reports about success stories in open source ecosystems where the publication of software as open source either changed the market in the domain, or drastically improved the dissemination of the technology.

3.1 MQTT – from a proprietary solution to an open source and ISO standard

There are numerous stories in IT demonstrating that open source software is not only a powerful dissemination channel but also a great generator of *de facto* standards.

One of the famous cases is the MQTT communication protocol [6] widely adopted by the Internet of Things developer community.

To assist us in our explanation, let's give a look at the Google Trend of the MQTT keyword:

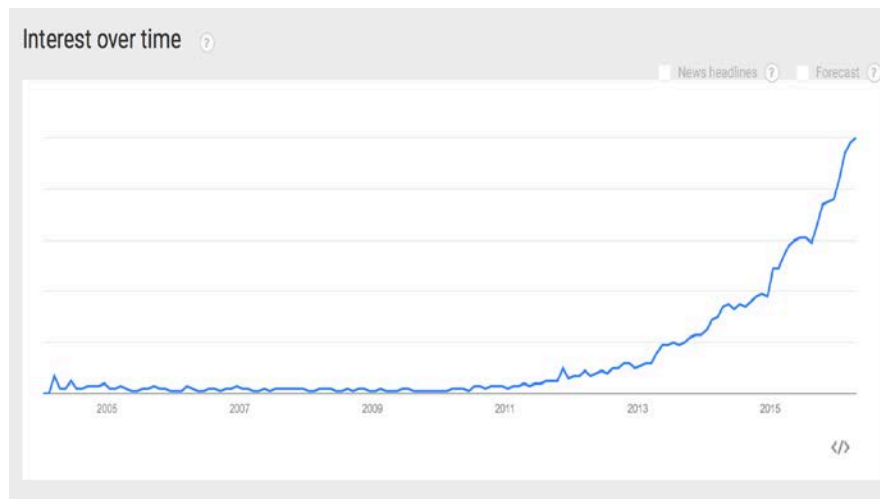


Figure 1. Google Trend on MQTT

Source <https://trends.google.us/trends/explore?date=2004-01-01%202017-03-22&q=MQTT>

MQTT was invented by Dr Andy Stanford-Clark of IBM, and Arlen Nipper of Arcom (now Eurotech), in 1999. It comes from the IBM message queuing product named MQ Series [7] used for doing message queuing across multiple platforms like Windows, Linux, OS/2, IBM mainframe, and Unix. Since 2000, it was a proprietary solution used on some dedicated embedded projects.

The Google Trend displays a picture between 2011 and 2013. If we dig into the history of the protocol, we can observe that on November 3rd, 2011, IBM donated the source code of its machine-to-machine (M2M) messaging software to the Eclipse Foundation [8].

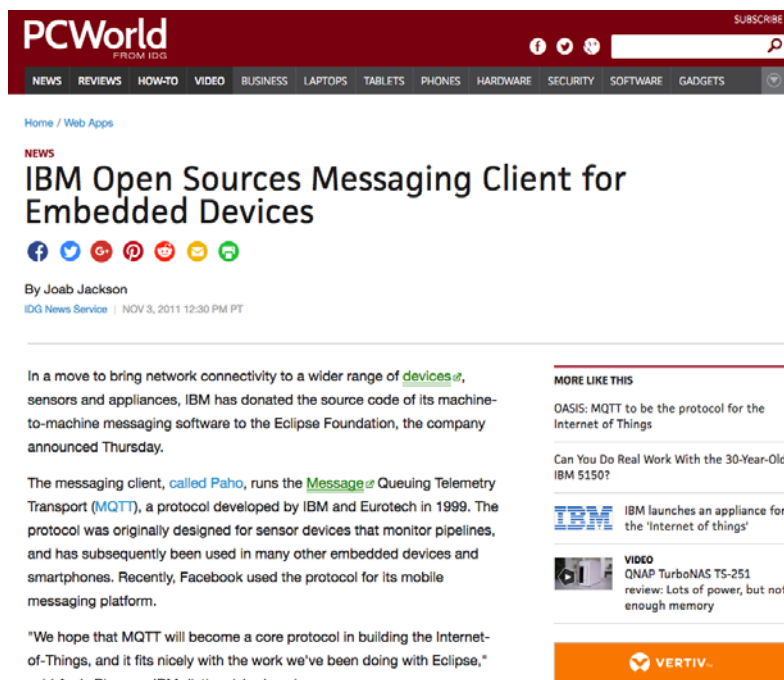


Figure 2. MQTT is open sourced to the Eclipse Foundation

Since that date, the trend and the interest to this protocol increased significantly.

It grew so well that 5 years after it was open sourced, MQTT, which became quickly a *de-facto* standard, was published as an OASIS standard in October 2014, and was officially approved as an ISO standard for messaging protocols in January 2016, under the reference ISO/IEC 20922 [9].

3.2 How the Eclipse IDE changed the game in development tools

The story of IBM open sourcing the Eclipse Java IDE is also a good example about how open source can be a game changer.

In late 90's, IBM launched a new development platform named VisualAge MicroEdition, which supported development of embedded Java applications. Actually, IBM re-implemented its Java IDE. The previous one, VisualAge for Java, was written in Smalltalk.

In 2001, IBM donated this IDE to the open source community and named it Eclipse. Its extensibility, its adaptability and the quality of the code were so good that the Java community adopted it immediately and it was considered for years as the best IDE. This reputation attracted not only Java developers but also several other programming language communities (like the C community with Eclipse CDT) and, later on, some non-for-developer tools communities like, for example, the modelling community (<http://www.polarsys.org>) or the scientific (Physic and Chemistry) community (<https://science.eclipse.org>). Each of these communities has participated in building solutions and standards widely adopted in their domain.

3.3 Open Source as a channel to developers

MQTT and the Eclipse IDE are just two examples that demonstrate clearly the strength and the power of a developer community. Linux, OpenStack, or the GNU C Compiler are other famous examples that we won't describe here.

Any company can “invent” a new “standard”, but if this technology is not adopted by a large community of developers, it cannot be considered as a standard.

As stated in the book “The new KingMakers” [10], developers have a more central role in technology adoption than they ever had, so attracting developer communities is a keystone for the sustainability of a project or a standard. Except with the aura of the GAFAM (Google, Apple, Facebook, Amazon or Microsoft), it is really hard to attract developers with a proprietary solution. Lots of big industries have understood this challenge and have decided to use open source to facilitate and accelerate the adoption of their technologies.

3.4 Open innovation with Open Source

Companies that try to drive innovation within their own organizations are increasingly looking for external sources to advance new ideas. Commonly referred to as “open innovation,” this paradigm encourages collaboration across organizational boundaries.

Open source is considered as a very good enabler for open innovation by providing both a collaboration platform and a legal framework. The collaboration platform includes the infrastructure to collaborate on code, on documentation as well as on the development process itself. The legal framework leverages open source licenses as a standard way to formalize the legal agreement between all the contributors and users of an open source project. Over the years, open source licenses have proved to be accepted and used internationally, and have enabled smooth collaboration worldwide.

Since 2001, the Eclipse Foundation has supported open innovation with open source by providing a reliable collaboration infrastructure, and a business-friendly open source license.

To go one step further, the Eclipse Foundation launched in 2009 the creation of Eclipse Working Groups that help organizations to combine the best practices of open source development with a set of services required for open innovation, and to foster industry collaborations. PolarSys is a good example of such industry collaboration to create and support open source tools for the development of embedded systems. It contributes to the success of solutions like Papyrus and Capella and will contribute to the dissemination of the AMASS open platform especially via OpenCert.

4. Considerations about the marketing and outreach of Open Source platforms

The advantages and requirements of open source for the marketing of platforms are well documented in the open source ecosystems. This chapter more specifically references two articles (see [11] and [12]) that explain the different approaches of open source project promotion, as well as several misconceptions about the difference between open source projects and products.

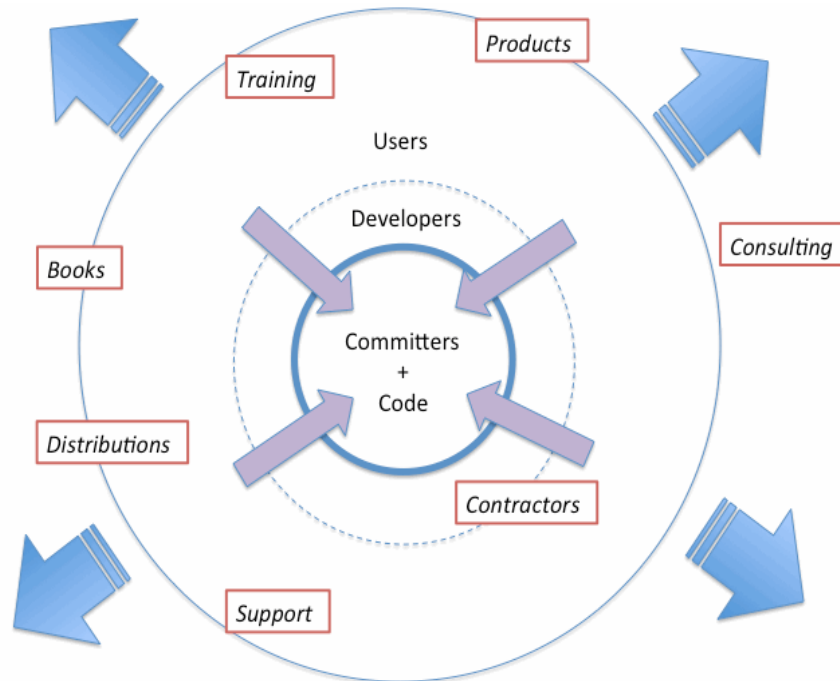


Figure 3. Building the Open Source ecosystem

Source: Patterns and practices for open source software success (see [11])

4.1 Grow the user base

One of the main goals of an open source project is to attract users. For that, the project must be easy to install and the initial user experience after installation must also be easy. It is usually accepted that the first five to ten minutes are crucial as it is the period of time that gives the “first impression” about the project.

Even if the initial experience is good, an important aspect is also to reach out to potential users. Future users may already be using solutions to do their job. They may already be active on other communities, depending on their profile. And if the AMASS open platform is an answer to their needs, then we must make sure we reach to those users.

It is important to understand and find where are the potential users of the AMASS open platform, and start to engage them by providing content that shows the value of the AMASS open source platform. It can be providing answers to their questions on forums, writing blog posts that illustrate the usage of the AMASS Open platform for a specific use case, or even providing full examples that they can use to train themselves about Certification and Process and Product assurance.

Promoting an open source project is like promoting a product: you have to go to the events dedicated to the domain, not to the open source community. So for AMASS, it means demonstrating the AMASS open platform in Certification- and Process and Product assurance-related conferences.

After some time of promoting the open source project, people will hopefully start joining the project communication channels. It is then very important to welcome and to reward all contributions and feedback. Some open source leaders say that “a bug report is a love letter”. We should keep in mind that even if users complain, it means that they use the project, or at least, they try to use it. So it is very positive.

The best practice is to help them, to answer to their questions, or to put their feedback in the roadmap. If they dedicate some of their precious time to our project, we have to give them a lot of consideration: he, or she, is perhaps a future champion of the project in his company, a top contributor to the project, or a community leader. Some good rewards include guest blogging, interview about the use of the project or invitation to an event.

In summary, in any community, and especially in niche communities, all feedback has a lot of value.

4.2 Attract developers/integrators

Most of the time, developers will be attracted by projects that not only solve some of the issues they try to solve, but also provide clear APIs and are extensible. Thus, an important success factor of the project stands in its architecture.

The following resources must be available, open to improvement, and high quality:

- Code must be in a public repository for contributors, analysts and integrators.
- Documentation must be in a wiki, or any equivalent editable system; at least users must have a way to propose improvements like for the code.
- Forums should be moderated so that the content has a lot of value for the users.

In the context of the AMASS tools platform, this is ensured by the publication on the PolarSys forge and the compliance with the Eclipse development process.

Additionally, it is worth noting that a good architecture is not enough without a good documentation. This documentation must include:

- How to install and run the software in less than 10 min, even if the project is not mature.
- How to build the sources from scratch.
- How to report a bug.
- How to contribute, from expected code style rules to pull request validation process.
- Tutorials and examples based on concrete use cases.
- How to integrate the project.

Here are some additional best practices to better address integrators needs:

- When a common issue or question is identified (forum, bug tracker, etc.), that is typically the opportunity to write a tutorial in the documentation, add an answer to a FAQ or add a request for improvement as a priority in the public roadmap.
- People also need to access easily to a documentation that explains them how they can be involved in the community, e.g. the process to become a committer to the project, or to become a moderator on the forum.
- The project managers must keep in mind that there are many ways to contribute to a project. They should welcome coders and non-coders the same way. Indeed, someone who uses and promotes the project may have more impact than a developer who contributes code.

4.3 Do not mix open source project and commercial products issues

A common misconception is to look for customers in the community of users. There are two observations that should be made:

- A customer has no time, but has money and is ready to use the product with support.
- A community user has no money, but has time to spend to customize the project to his specific needs, and maybe, to contribute, once he has been convinced of the potential of the project during the first contact with it.
- Many commercial products can be built on top of an open source platform.

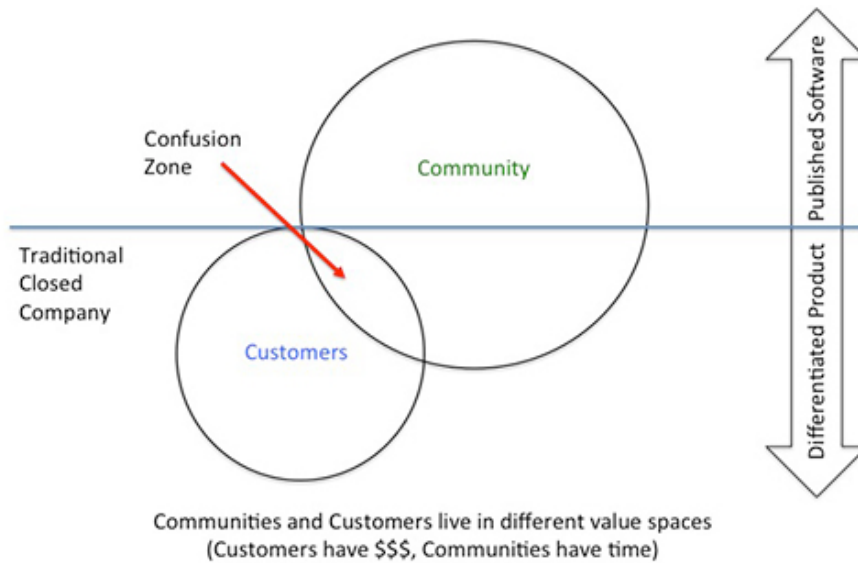


Figure 4. Don't confuse Communities with Customers

Source: Open source for products in four rules (see [12])

Here are a few ideas of why and how some customers of a product, based on the project, may have interactions with the community:

- Forums and community resources are very good additional free support.
- Recruitment of experts.
- Contribution to upstream.
- Advertisement of their use case, to be moderated carefully.

In summary, the effort and strategy to grow the community (which is our main goal in this document), and to grow the customers base are not the same.

5. Marketing and Outreach for the AMASS Open Platform

This chapter outlines the dissemination activities dedicated to the AMASS Open Platform. It is consistent with the Dissemination and Training plan (see [5]) that describes the global dissemination plan of AMASS. After listing our open source communication channels, we document how those channels can be used to promote the platform.

5.1 Communication channels

The marketing and outreach of the AMASS Open Platform will leverage the existing channels created by the AMASS project and described in the Dissemination and Training plan (see [5]). But due to its open source nature, it will also use more dedicated channels that we list here:

- The **websites** of the open source projects that constitute the AMASS open source platform (OpenCert, Chess and EPF) are the first contact that most of the potential users will have with the platform. We dedicate a full section on this topic hereafter.
- Open Source **newsletters** and more specifically an article in a special issue of the Eclipse newsletter distributed to more than 130000 subscribers.
- Open source **social networks**, and especially communication on the Eclipse Foundation twitter and LinkedIn channels when we will publish a version 1.0 and other important releases of the AMASS Open Source platform.
- We plan to publish several blog posts that will explain the features of the AMASS Open Source platform and will provide the content to the getting started and tutorials that we will publish. In particular, when we will identify a common issue or question (in the forum or in the bug tracker), we will write a blog post on this topic, and add the content to a tutorial in the documentation. Those blog post will be published on the AMASS blog, but relayed on the Eclipse Foundation social networks and linked from the websites.

5.2 Website

The main entry point to the AMASS open source platform will be the OpenCert website [13] as it is the place where users will be able to download an integrated package. This website is still under construction, and will come online in June 2017. In the design of the website, we make sure that each profile of users will easily find the content they are looking for.

In particular, the OpenCert website will provide:

- A link to download the OpenCert integrated package.
- An “About” page that describes the link to the AMASS project and to Chess and EPF.
- A two-page “Fact Sheet” that describes the OpenCert platform including a short description of features and potential use cases. This “Fact sheet” can be considered the platform’s “business card”.
- A five minutes video tour of the platform.
- Potentially a play list of short videos that demonstrate a specific feature of the platform.
- A ten-minute tutorial that helps newcomers who start testing the platform.
- The links to further documentation described hereafter.

5.3 Documentation artifacts

5.3.1 Getting Started Documentation

The Getting Started Documentation is certainly the most important piece of documentation for the project adoption. Indeed, it must guide new users throughout the first steps:

- 1) Install the tool
- 2) Open a sample project
- 3) Navigate the different features

We will use a very simple and basic example for this getting started with the following goals:

- 1) Users get access to a default configuration that can be understood by beginners in the domain.
- 2) The default configuration can be considered too simplistic by domain experts, but it should not be considered wrong.
- 3) There is no need of expertise in a given industry considered by AMASS to understand the example.

We will also provide a video that follows the steps of the getting started documentation for users who struggle to follow the different steps of the getting started.

5.3.2 Integration and extension guide

The second most important documentation to promote an extensible platform like the AMASS Open Platform is the integration and extension guide.

This guide will document the APIs and the extension points, and give detailed explanations to help an average Eclipse developer with some knowledge of Eclipse Modelling technologies understand how he or she can use the AMASS Open Platform in their tool chain or product. Lowering the learning curve for integration is crucial in order to make the AMASS Open Platform become a de facto standard in the domain. Indeed, if we do it well, there are chances that more and more tool providers will adopt the AMASS Open Platform as the base component to handle certification and process assurance concerns in their tool chain. Such a kind of adoption takes time and might not happen before the end of the AMASS research project, but we observed this in the past 10 years with the rise of Eclipse CDT: Ten years ago, there was one different C development tool per embedded platform. But when CDT became robust enough, and as it was an open source project with open APIs, most of the embedded platform providers eventually adopted Eclipse CDT as the platform for the tools they provide to their customers. They decided to collaborate on the platform, and to focus on the addition of specific features dedicated to their platform.

5.3.3 Other documentation

As mentioned earlier, we will also provide documentation about how to build and test the platform and how to become a contributor.

Most of the Eclipse and PolarSys projects provide such documentations, which are very important for potential contributors, and also for explaining the process used by the development team in order to take new requirements into account.

5.4 Integrated demonstration with the PolarSys Rover project

In 2016, the PolarSys Working Group created the PolarSys Rover project as a demonstrator that integrates several PolarSys and Eclipse projects in a larger tool chain and demonstrates the usage of these tools for the development of a small Rover.

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PolarSys Rover

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The first objective of the PolarSys Rover is to create a realistic, hardware-based demonstration and testing platform for the **PolarSys solutions** to demonstrate and test their individual and joint capabilities.

The second objective is to provide code, documentation and all the necessary artefacts to help users getting started with the end to end development of a simple but representative real-world system with **PolarSys solutions**. The project is also an opportunity for Eclipse and PolarSys projects to provide demonstrations and tutorials of advanced use cases.

We consider several potential rover scenarios including autonomous exploration, park assist, remote controlled (RC) rover with video on the controller, find the exit of a maze, ...

The project consists of different parts, each addressing a single or multiple aspects from the point of view of a particular **PolarSys solutions** or a combination of solutions.

The project provides training material for these solutions applied to the same rover system including all the material necessary to acquire and create your own rover for testing and demonstration.

We are considering partnerships with online retailers to help you acquire the hardware elements you need to build your own rover.

The project covers all the phases of the development of an embedded system, including system hardware and software requirement, architecture and detailed modeling, code generation, real-time system development debug and trace, and testing.

Licenses:
Eclipse Public License 1.0

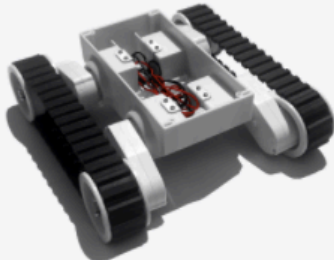


Figure 5. PolarSys Rover project home page

This demonstration has the advantage to exist in a very simple version where the Rover just proceeds to simple movements, to a version that uses camera and image recognition to act as an autonomous car.

In the context of the PolarSys Rover, PolarSys members demonstrate the Impact of an update to a requirement or a model, on the chain of dependent artefacts, produced in subsequent activities and on the behaviour of the Rover.

By adding the AMASS Open Platform to this example, we will have a good promotion tool to demonstrate how AMASS enables users to have a robust certification assurance process on a more realistic example.

5.5 Community development

5.5.1 Events and conferences

In order to promote the AMASS open source platform, it is important to participate not only to open source conferences but also to industry focused conferences like DASC (the Digital Avionics System Conference) where we will be able to demonstrate the advantages of the AMASS open platform to users that would not consider open source at first.

Concerning open source conferences, we include both Eclipse conferences and more general open source conferences like Paris Open Source Summit where there are some opportunities to promote the adoption of open source in new industry domains.

Concerning industry conferences, we will focus our presentations on the features of the AMASS Open Platform because the platform must be perceived at first as a good solution to fulfil existing requirements of the industry. The advantages provided by the fact that the platform is open source, such as easier extensibility and interoperability, will be promoted in a second time.

5.5.2 Webinars

Webinars have a double benefit: they are great to bring people from anywhere around the world in the same virtual session and they produce, at almost no cost, a video that you can share with the community as a new asset once the webinar is over.

After the publication of the first stable version of the AMASS Open Platform as an OpenCert package, we will run a webinar in the context of PolarSys to help this community learn more about the platform. The video of this webinar will be published on the OpenCert package website.

5.6 Next steps to implement the marketing and outreach plan

The next steps to implement this marketing and outreach plan for the AMASS open source platform are shown in Table 1.

Table 1. Next steps for the AMASS Open Platform marketing and outreach plan

Step	Estimated Date
Implement the OpenCert website including presentation and documentation of the AMASS Open Platform	Deliverable D7.5 [16] - July 2017
Initial version of the Getting started documentation based on getting started with the first prototype	July 2017
Second iteration of OpenCert and AMASS Open Platform website	Deliverable D7.6 [17] – March 2018
Integrated demonstration with the PolarSys Rover	March 2018
Second iteration of Getting Started First iteration of Extension guide	March 2018
Third iteration of OpenCert and AMASS Open Platform website	Deliverable D7.7 [18] – November 2018
Final iteration of Getting Started documentation Second iteration of Extension guide	November 2018
Webinar and videos	Mid 2018

Abbreviations and Definitions

API	Application Programming Interface
CDT	Eclipse C/C++ Development Tooling
CPS	Cyber Physical System
EPF	Eclipse Process Framework
FAQ	Frequent Asked Questions
IDE	Integrated Development Environment
IEC	International Electro-technical Commission
ISO	International Standard Organization
ISV	Independent Software Vendor
IT	Information Technology
M2M	Machine to Machine
MQTT	MQ Telemetry Transport
OASIS	Organization for the Advancement of Structured Information Standards
WP	Work package

References

- [1] AMASS [D1.1 Case studies description and business impact](#)
- [2] AMASS [D2.1 Business cases and high-level requirements](#)
- [3] AMASS D2.2 AMASS Reference Architecture (a)
- [4] AMASS [D7.3 AMASS open source platform project proposal](#)
- [5] AMASS [D8.5 Dissemination and Training Plan](#)
- [6] MQTT communication protocol (see <https://en.wikipedia.org/wiki/MQTT>)
- [7] IBM Websphere MQ Series (see https://en.wikipedia.org/wiki/IBM_WebSphere_MQ)
- [8] IBM Open Sources MQTT
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- [16] AMASS D7.5 AMASS open source platform provisioning and website (a)
- [17] AMASS D7.5 AMASS open source platform provisioning and website (b)
- [18] AMASS D7.5 AMASS open source platform provisioning and website (c)