



Collaborative Large-scale Integrating Project



**Open Platform for Evolutionary Certification Of  
Safety-critical Systems**

## **Plan for the adoption outreach program D8.2**



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## Document History

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## Executive Summary

The focus of OPENCROSS is to propose a European open platform for safety certification tool services built upon an evolutionary and compositional certification framework for different vertical markets. The consortium will use its links to European certification and regulation agencies, standardization initiatives, large industrial companies, technology suppliers and research institutions to present the OPENCROSS concept and propose the adoption of the open platform. One key instrument to this purpose is the OPENCROSS advisory board (see D8.1), which is composed of a group of influent and prominent personalities from European regulation agencies, research institutions, and open source communities that have an especial interest in OPENCROSS outcomes.

Within this project, a novel formalized safety certification management infrastructure is being defined. This infrastructure and the interfaces with relevant development and safety assurance tools will be made publicly available and proposed as standards. WP8 will aim at building a critical mass of suppliers and a large enough user community to maintain the infrastructure beyond the project life.

WP8 has the following objectives:

- Establish a community of individuals and organisations with keen interest in OPENCROSS results and in its research areas, and identify a structured roadmap needed after project completion. This will help increase the project quality, impact and visibility within the relevant communities of practice.
- Coordinate the inputs and activities of the OPENCROSS Advisory Board to make sure that the incremental results of the project are properly driven by European needs and meet regulatory constraints.
- Establish an open source community to maintain OPENCROSS results and identify a roadmap beyond project completion.
- Participate and contribute to European initiatives reaching a wide community in the different vertical domains of safety critical systems, such as Certification Together, ERA initiative for a common framework for safety certification, and EICOSE [[www.eicose.org](http://www.eicose.org)], among others.
- Initiate, assess industrial interest, and execute a plan of standardization of the common certification language and other relevant OPENCROSS results in standardization bodies such as ISO, OMG, and/or INCOSE.

This deliverable, provided in M25 (October 2013), defines the plan for adoption outreach program, released by task 8.2.

The objective of this task is to define a Roadmap for an early adoption of the OPENCROSS approach by a user community. While T8.1 provides the means to bring together this user community, T8.2 combines both operational and research-led activities for the design of a strategic roadmap for the adoption of OPENCROSS. The roadmap uses inputs from the different baselines developed in WP4, WP5, WP6 and WP7, as well as the main expected results from OPENCROSS to create a systematic program to adopt OPENCROSS. This program also provides recommendations for the promotion of OPENCROSS, their future development, and the creation of future initiatives for training and research in this field. Finally the program will execute some of these recommendations so as to promote the early adoption of OPENCROSS by different companies and initiatives.

## 1 Introduction

To ensure the adoption of final OPENCROSS results and improve the effectiveness on certification costs of industrial safety systems, the adoption outreach program defines the strategy to be executed by project partners. Whereas focus is put on objectives to be addressed during the project time frame, objectives to be achieved after project completion will also be addressed to a certain degree.

First, the various actors to be targeted in the early adoption are identified and their major expectations are listed in chapter “Expectations from OPENCROSS User Community”.

Then, the major results of OPENCROSS that require to be promoted are gathered in section “OPENCROSS concepts and results to be promoted”. A particular attention is devoted to work out what results are fulfilling expectations previously identified but also realistic priorities from OPENCROSS exploitation.

In order to set up the relevant communication, available means and additional ones are addressed in chapter “Means for Adoption Outreach Program”.

Finally, section “Adoption Outreach Program Roadmap” sums up which stakeholders need to be provided what kind of content regarding their expectations. Related objectives are gathered in a roadmap defining the relevant deadlines in accordance with project timeframe.

In addition the roadmap identifies relevant risks and related mitigation means to ensure overall control of the adoption strategy.

### 1.1 Relation with other tasks and work packages

The adoption outreach program is strongly related to other OPENCROSS WP as it should promote their results to the relevant stakeholders.

In addition to the link to other WP deliverables, the building of the plan itself is tightly dependant for the results of following WPs:

#### 1.1.1 Requirements and architecture design (WP2)

Content of section “Expectations from OPENCROSS User Community” is reusing expectations worked out in tasks T2.1 and T2.3 focusing on business cases and high level requirements.

#### 1.1.2 Standardization and community building (WP8)

Content of section “Expectations from OPENCROSS User Community” is reusing stakeholder identification of tasks T8.1 focusing on the building of OPENCROSS user community.

#### 1.1.3 Exploitation, Dissemination and training (WP9)

Project dissemination (T9.1) and training program (T9.2) are identifying means which are relevant for the adoption outreach program and have been integrated in “Means for Adoption Outreach Program”. Further iteration with WP9 will be required to implement additional means identified in this document.

### 1.1.4 Other WPs

Technical WPs are providing content to be taken into consideration by adoption objectives.

## 1.2 Collaboration with other WPs

The collaboration scheme required for plan implementation is described below especially regarding T9.2 (dissemination and training).

T8.2 is closed after the identification of additional objectives for training, dissemination, and community networking. It provides objectives to the related tasks (T8.1, T9.1 and T9.2). These tasks update their plans if necessary.

Training and demonstration are discussed with the related technical WPs to define detailed content relevant to the objectives defined in the current plan.

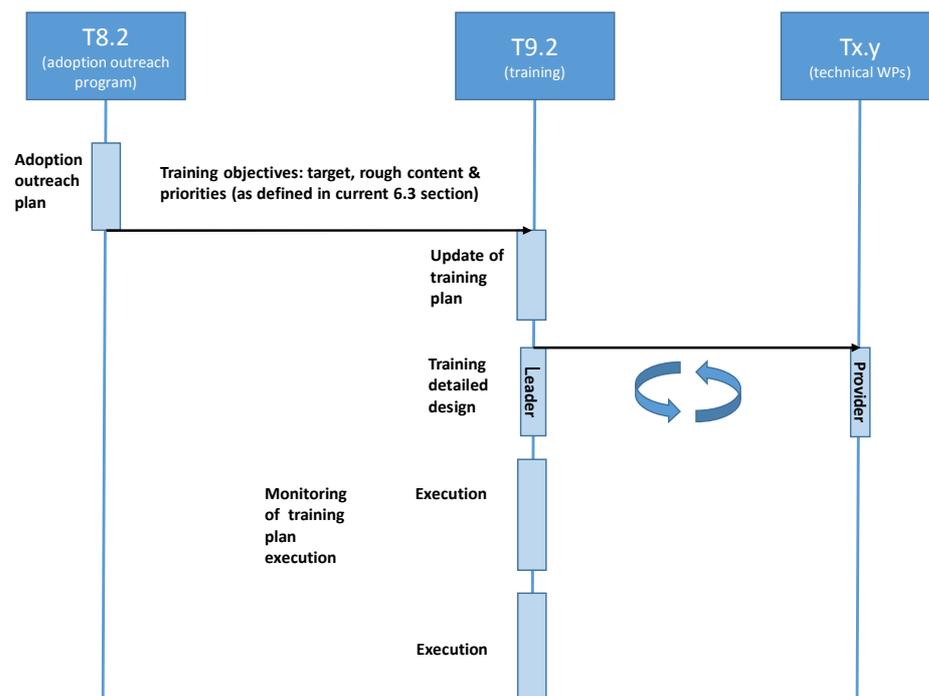


Figure 1. Collaboration for training

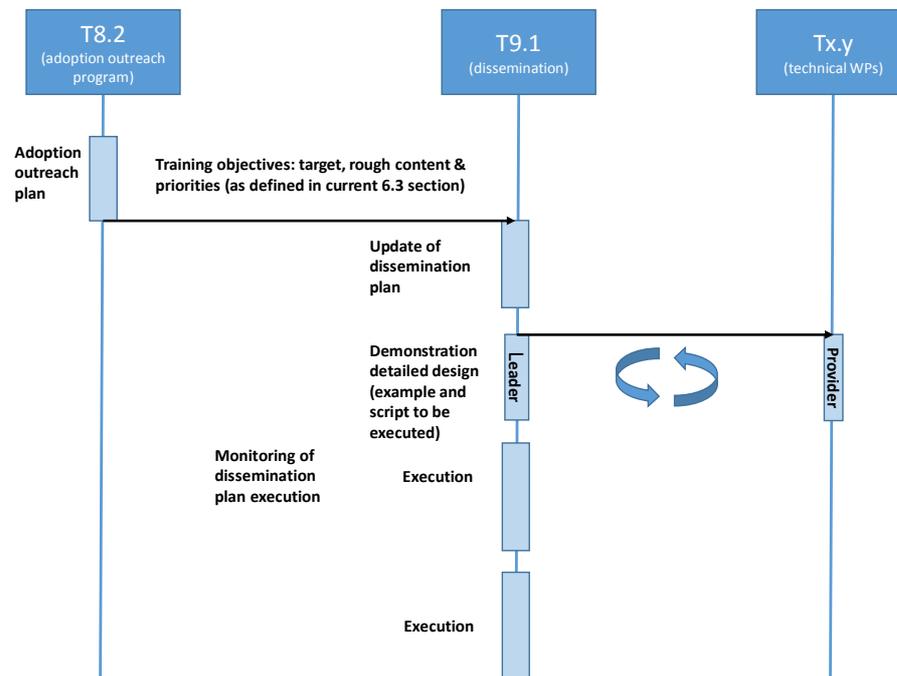


Figure 2. Collaboration for dissemination

## 2 Adoption Outreach Program Objectives

Considering the project time frame, the following objectives shall be taken into consideration:

- Address required stakeholders/adopters

The outreach program shall address the various organizations interested in the project, either directly or indirectly through the advisory board. The “User community” which is defined and set up in T8.1, identifies and gathers the relevant actors. This user community in turn consists of heterogeneous communities that often operate in relative isolation, and which need to be targeted individually.

Identification of relevant actors is covered in the chapter “Expectations from OPENCROSS User Community”

- Promote relevant added value with regard to adopter business cases

If OPENCROSS shall ensure an improvement in term of overall effectiveness, it is mandatory to identify for every actor what is the expected added value regarding its own business cases. In particular, different communities of “practices” are likely to be interested in different aspects of OPENCROSS. This depends on their role in the supply chain and certification of the products on the one hand, and details of the challenges currently faced by individual industrial sectors on the other.

Key expectations per actor will be covered in the chapter “Expectations from OPENCROSS User Community”

- Plan relevant objectives during project time frame

To ensure a proper deployment, the different actors of the supply chain involved in the project shall be addressed with the relevant time frame during the project with respect to:

- Development sequence used in the supply chain
- OPENCROSS assets maturity that may be promoted to them (e.g. concepts for academics, pragmatic methods and tools to industrial partners ...)
- Iteration and increments required to avoid chicken-and-egg problem (industrial not deploying due to a lack of tools, tool vendors not involved due to a lack of market demand...)

Increments and iteration of the adoption outreach program will detailed in the chapter “Adoption Outreach Program Roadmap”

### 3 Expectations from OPENCROSS User Community

The OPENCROSS community is built into five main axes: the OPENCROSS project partners, the Industrial community, the Scientific and Research community, the External Advisory Board (EAB – representing OPENCROSS community stakeholders) and the Open-source community. The OPENCROSS deliverable D8.1 details the project plan for community building, advisory board coordination, and standardization.

Identification of the various stakeholders to be targeted by the outreach program is based on the work done for deliverable D9.2-A (dissemination plan), which is a key lever for early adoption by project partners.

This chapter sums up major expectations for stakeholders as defined in OPENCROSS deliverable D2.2 “High-Level Requirements on the OPENCROSS Platform” and related background work. These stakeholders will be later addressed directly (relevant for project partners) or indirectly through the EAB.

#### 3.1 Industrial community

The industrial community represents key stakeholders to be targeted. Within this community, different groups of “practices” are likely to be interested in different aspects of OPENCROSS. This depends on their role in the supply chain and certification of the products on the one hand, and details of the challenges currently faced by individual industrial sectors on the other. These varying interests require a different content to be promoted.

The composition of the consortium naturally addresses “vertical” communities of practice (i.e. those associated with the different industrial sectors): automotive, avionics and railway.

Orthogonal to the industrial sectors are a number of ‘horizontal’ groups of industrial stakeholders.

##### 3.1.1 Safety critical component suppliers (COS)

Within the supply chain / extended enterprise, key equipment suppliers are responsible for assuring the critical properties of their products. Whilst in some jurisdictions it may be possible to certify key equipment, equipment suppliers need to support higher level integrators, in their certification processes, by provision of appropriate evidence and rationale on how the evidence supports the specific claims about the product.

Therefore equipment suppliers will take benefit from (D2.2/M1.x and M2.x needs):

- specifying safety case modules in a form that can be integrated into the overarching safety case
- sharing common contractual interfaces to integrators of diverse safety-critical systems across the automotive and other application domains allowing transfer of certification artefacts (e.g. safety case modules) across certification jurisdictions
- preserving the integrity of the evidence they provide to platform integrators, and ensuring the integrity of the evidence both up- and down- stream of the supply chain
- decreasing or at least avoiding increase in the cost of safety assessment as a proportion of system development costs

- reusing previously created safety cases/assurance cases on same/similar systems (delta recertification/assessment) even if these safety cases are not created according to the procedures of the OPENCROSS platform
- protecting company's intellectual property from competitors and restricting sharing information only to authorized personnel
- transitioning gradually to a new way of working, thereby avoiding high sudden costs in software acquisition and training of personnel
- identifying the safety requirements in a more efficient way
- interpreting the standard with respect to a given context or circumstance
- planning, reviewing, viewing, developing, storing, and saving workflows, evidence artefacts, safety arguments and compliance checklists
- Finding out why an assurance project is not achieving its goals within planned budget, planned time, within planned resources and to mitigate the source and replan the project.
- planning resources, viewing and producing metrics on the progress of the project at hand, and to managing workflows in order to get a better overview
- predicting the time, resources and other costs required for assessment of products more precisely

### 3.1.2 Integrators of safety critical platforms (ISP)

Within the industrial setting, platform integrators are ultimately responsible for the safety of the products delivered to the consumer market. They typically take primary responsibility for the assessment of the safety of the platform, integration of the overall safety case, and certification.

This group of stakeholders will take benefit from:

- Mechanisms for composition of the overall safety case from individual component safety cases, that ensure the integrity of the evidence passed through the supply chain (as identified in D2.2/M3.1)

### 3.1.3 Consultancy providers (CSP)

They support both platform integrators and equipment suppliers. They provide their support in term of training, gap analysis, coaching, assessment and follow-on. They may also recommend best practices and best tools (though usually they do not directly sell tools like tool vendors).

### 3.1.4 Assessor Company (ASC)

These companies, which are in charge of verifying and validating the safety of critical systems (products, systems, components), will take benefit from (from D2.2 / A3.1&S1.x):

- Alerting on shortcomings of the safety critical system as identified in D2.2/A3.1
- Reducing time and costs for assurance and safety assessments
- Handling the data of the manufacturer confidentially
- Viewing the baseline artefacts like workflows, arguments, compliance checklists, and evidence relating to the system or component.
- Avoiding data in a format which is difficult to read and navigate
- Avoiding tedious rework
- Simplifying the safety assessment

- Improving trust and insights into assurance and safety assessments from other assessors (cross-acceptance)
- Benefiting from previous assessments on same/similar systems (delta-assessment)
- Better understanding of how the manufacturer plans to provide assurance of the safety of the product
- Improving locating deficiencies and inconsistencies in the safety critical system

Cooperating with (Safety) Project Managers and Safety Assessors

### 3.1.5 Tool vendors (TOV)

Tool vendors support both platform integrators and equipment suppliers, and they facilitate the exchange of relevant information between all supply chain and certification stakeholders.

Distinction shall be made between:

- Providers of tools used in the field of safety and certification engineering. Their authoring tools are intended to be coupled with the OPENCROSS platform to ensure that the relevant information is managed in the platform and provide OPENCROSS user with relevant proofs for certification.
- Developers that join the open tool community in order to implement and maintain the core of the platform and deliver it to the user community (addressed in chapter Open-source community)

Major benefits for tools vendors are:

- Ease of interfacing to the platform through a stable and open interface (API as identified in D2.2/T1.2)
- De facto standard of the platform allowing them to focus their interfacing development effort, rather than managing multiple interfaces depending on their customers/users
- Ability to focus on the development of competitive tools ensuring practitioners efficiency (D2.2/T1.1)

## 3.2 Scientific and Research community (SRC)

The scientific and research communities will take benefit from:

- Easy access to use case studies, deliverables, and any other project outcomes for their research, educational, and training activities
- Consistent platform allowing them easily transfer theories into prototypes for demonstration
- Improved impact of further research and academic activities to be done by this community

## 3.3 Standardization and Regulatory bodies (SRB)

Since development, analysis and assurance of safety-critical platforms is highly regulated and standardised in most jurisdictions, standardisation and regulatory bodies are key stakeholders in the certification process.

Major benefits will be:

- Existence of a tooling platform
- Fulfilling their certification requirements. OPENCROSS will support the deployment of standards and their underlying practices

- Allowing to protect and make benefit from the intellectual property in the produced standards as defined in D2.2/S2.2
- Allowing to create, maintain and improve international standards in order to cope with growing societal requests as defined in D2.2/S2.1

### **3.4 Open-source community (OSC)**

The open source communities, however, form a very generic group of participants, from companies such as IBM to University based contributors. It is rather seen as an exploitation strategy than a stakeholder representative. For OPENCROSS a specific number of open source communities is relevant and can be seen as special stakeholders.

Major benefits for open source community newcomers are:

- Openness of the platform development allowing further extensions
- Reduced time to market for new functionalities

### **3.5 Stakeholders addressed through the EAB**

The following stakeholders identified for building the high level requirements in T2.2, are addressed through their representation in EAB:

- Consumer
- National Safety authorities
- European Safety authority
- National Government
- European Commission

## 4 OPENCROSS concepts and results to be promoted

The following concepts and related deliverables have to be considered in priority in the adoption outreach program. The underlying concepts are solving business concerns and shall be disseminated to the relevant stakeholders during the project time frame in order to communicate on:

- OPENCROSS ability to solve operational concerns
- OPENCROSS progress achieved
- Identification and estimation of required preparatory work to be done in stakeholder side

Among the various results of OPENCROSS, the following assets (extracted from Full Project Proposal and deliverable D2.3) require to be promoted as they are at the heart of the OPENCROSS approach and associated tooling platform.

### 4.1 Layer point of view



Figure 3. Tangible OPENCROSS project outcomes

#### a) Conceptual level

A first set of results belongs to the conceptual domain (Conceptual Certification Framework, CCF) including:

- A **compositional certification method** gathering a set of generic compositional certification rules. This method provides the composability rules of pre-certified blocks, for a systems-level certification composed of application components/systems with heterogeneous criticality.
- The **common certification language (CCL)**, supporting the above method and implemented as a domain-specific modelling language (DSML). This DSML allows specifying the certification items/requirements, claims, arguments and evidence with respect to a common notation. This attempts to enable management of certification items in a common format, certification evidence management, certification assessment, and re-certification between different standards.

#### b) Implementation level

A second set of results is related to tooling implementation. The **safety certification management infrastructure (SCMI)** will provide a fully-fledged open-source platform that helps integrate safety certification activities into development tools and processes.

The visible part consists in authoring tools allowing direct users to interact with the OPENCROSS platform, while underneath, infrastructure components are ensuring the required computation.

## 4.2 Functional domains point of view

OPENCROSS provides solutions in the following functional domains:

a) Prescriptive knowledge

Management (edition, search, transfer, etc.) of standards information as well as any other information derived from them, such as interpretations about intents, mapping between standards, etc. This functional group maintains a knowledge database about “standards & understandings”, which can be consulted by other OPENCROSS functionalities.

b) Evidences handling

Management of the full life-cycle of evidences and evidence chains. This includes evidence traceability management and impact analysis. In addition, this module is in charge of communicating with external engineering tools (requirements management, implementation, V&V, etc.).

c) Arguments handling & Compositional Assurance/Certification approach

Management of argumentation information in a modular fashion. It also includes mechanisms to support compositional safety assurance, and assurance patterns management.

d) Transparent process handling

This functionality factorizes aspects such as the creation of safety assurance projects locally in OPENCROSS and any project baseline information that may be shared by the different functional modules. This module manages a “project repository”, which can be accessed by the other OPENCROSS modules.

### 4.3 Stakeholders' main interests

		Prescriptive knowledge	Evidence management	Safety Argumentation	Transparent Process and certification	Compositional certification
<b>End User Interest</b> (COS, ISP, CSP, ASC)	<b>Concepts (CCF)</b>	<ul style="list-style-type: none"> <li>Reference assurance framework concepts</li> <li>Ability to capture of industry and company standards</li> </ul>	<ul style="list-style-type: none"> <li>Evidence concepts</li> <li>Ability to capture concrete example with OPENCROSS</li> </ul>	<ul style="list-style-type: none"> <li>Arguments concepts</li> <li>Ability to capture concrete examples with OPENCROSS</li> </ul>	<ul style="list-style-type: none"> <li>Process and process execution concepts</li> <li>Mapping possibilities</li> <li>Ability to capture process and execution data</li> </ul>	<ul style="list-style-type: none"> <li>Composition concepts</li> <li>CCL argument writing</li> <li>Impacts comp. changes</li> <li>Argumentation impact analysis</li> <li>Unexpected emerging</li> </ul>
	<b>Authoring (SCMI)</b>	<ul style="list-style-type: none"> <li>Standards and mapping editor</li> </ul>	<ul style="list-style-type: none"> <li>Evidence characterization and traceability editor</li> </ul>	<ul style="list-style-type: none"> <li>Modular argumentation editor</li> </ul>	<ul style="list-style-type: none"> <li>Process specification and standard mapping editor</li> </ul>	
	<b>CCL</b>	<ul style="list-style-type: none"> <li>Reference assurance framework metamodel</li> <li>Vocabulary metamodel</li> </ul>	<ul style="list-style-type: none"> <li>Evidence metamodel</li> </ul>	<ul style="list-style-type: none"> <li>Argumentation metamodel</li> <li>Vocabulary metamodel</li> <li>Artefact metamodel</li> </ul>	<ul style="list-style-type: none"> <li>Process metamodel</li> <li>Assurance project metamodel</li> <li>Artefact metamodel</li> <li>Vocabulary metamodel</li> <li>Mappings metamodel</li> </ul>	<ul style="list-style-type: none"> <li>Manageable Assurance Asset Metamodel</li> </ul>
<b>Tool developers Interest</b> (TOV, OSC)	<b>Infrastructure (SCMI)</b>		<ul style="list-style-type: none"> <li>Evidence analysis manager</li> <li>External tool integration manager</li> </ul>	<ul style="list-style-type: none"> <li>Component integration analysis manager</li> </ul>	<ul style="list-style-type: none"> <li>Compliance agreement negotiation manager</li> <li>Process analysis manager</li> <li>Process execution and compliance monitoring manager</li> </ul>	

**Scientific Community Interest (SRC)**

Figure 4. Map of stakeholders' interest

From a high level point of view, due to the stakeholders' nature, we may identify the following major trends:

a) Direct users (COS, ISP, CSP ASC)

This audience is focused on operational improvement and are evaluating OPENCROSS added value using domain criteria. Therefore there is an interest for the concepts proposed and for the authoring tools which allow to operationally integrate these concepts in their development practices.

b) Tool developers (TOV, OSC)

This audience, including both developers of legacy tools and open source community developers, has a great interest in the tool architecture, components and interfaces (either external or internal).

c) Scientific community (SRC)

This audience is focused on formal concepts proposed by OPENCROSS and need to validate, improve them. This audience requires access to both OPENCROSS approach and platform.

## 4.4 Specific/dedicated interests

In addition to main interests defined in previous section, it is required to be able promote any OPENCROSS asset separately to cope with specific interests from project partners or external actors.

The following objectives are identified in addition:

- CCL (Toyota is interested on CCL to be considered on an OMG standards under consideration)
  - One innovative part of CCL is cross-standard, cross-domain reuse
  - Another is the Vocabulary to: (a) help building Assurance/Safety Cases with semantics, (b) specify interpretations of standards/regulations, among others
  - Argumentation metamodel with Modular support (not supported by OMG's SACM)
  - Evidence and Assurance Process Metamodels in order to refine SACM part related to these.
- Modular Argumentation Editor (to be potentially exploitable with other external contacts from Japan)
- Evidence Management approach including link with external tools (likely by using OSLC), Impact Analysis, Traceability, and Evidence Evaluation
- Compositional Assurance/Certification approach based on an ambiguous grammar for Contracts (assumptions/Guarantees related to Assurance/Certification), which includes support for Contract validation/Checking.
- The whole OPENCROSS tool platform as an open source infrastructure to be used by big companies managing a product supply chain (external users likely accessing to the tool platform)

## 5 Means for Adoption Outreach Program

This section describes available or to be set up means which are relevant to ensure communication of the content identified in the previous section.

## 5.1 Existing means identified in dissemination and training plans

The following means are identified in deliverables D9.2-A and D9.2-B respectively for dissemination and training roadmaps implementation.

- **OPENCROSS website and logo (WEB)**  
 The project website will be set up including project presentation, public downloadable documents (project reports and dissemination papers), links to related projects, demonstration material, news section etc. The website will have tools for dissemination purposes, training material, discussion forums, blogs and news posts. The OPENCROSS logo and website graphics will promote the project in a unified graphical layout.
- **An OPENCROSS brochure and poster (POS)**  
 To be used at events and conferences. The brochure and poster will be produced in the initial phase of the project, and updated at regular intervals as necessary. In addition each partner will add information about OPENCROSS membership on their company website. Simultaneously to this brochure we will create data sheets which describe how the framework supports development of certified software. This information will be distributed among partners customers and during trade shows and seminars.
- **OPENCROSS news channels (NEW)**  
 An electronic newsletter, published twice per year on the website, will present updated information about project progress and news about the latest results / enhancements achieved in the project. In addition, we will use popular channels such as Twitter, Linked-In communities and RSS feeds in order to inform interested subscribers more rapidly and directly.
- **Scientific papers and publications (PUB)**  
 The academic partners of the project will individually and in collaboration publish and present scientific advances at esteemed conferences and workshops, as well as in journals and magazines. We plan to have at least 25 publications at the end of the project. Relevant conferences include: International Conference on Systems Engineering (INCOSE), International Conference on Computer Safety, Reliability and Security (SAFECOMP), European Safety and Reliability Conference (ESREL), High Assurance Systems Engineering (HASE), Dependable Systems and Networks (DSN) etc.
- **Promotion through industry events (EVT)**  
 Project presentation at exhibitions, conferences, and seminars targeting relevant industry and decision makers.
- **Organisation of international OPENCROSS workshops (WKS)**  
 The goal of these workshops will be to disseminate both the techniques developed during the project and the preliminary results of the project to the targeted beneficiaries of the OPENCROSS project. We plan to organise at least 4 workshops throughout the project. We will align with the 'annual' European Symposium on Verification and Validation of Software Systems (VVSS) (<http://www.laquso.com/events/vvss/2011/>) which 2011 will be focused on "From Analysis to Certification".
- **Media/general public (MED)**  
 To reach out to European society at large, local and mass media coverage are relevant direct channels. This can be achieved through press releases, interviews, and demonstrations.
- **Industry partner community (CPNY)**  
 Each project partner can communicate the OPENCROSS results and goals through its network (ex: school/enterprise events, expert community forum, and supplier's network).

- **Trainings (TRA)**

The main objective of the Training activities is to encourage the adoption of the OPENCROSS results in the standardization bodies, academic and industrial communities. A secondary objective of Training activities is to stimulate the OPENCROSS consortium through the mutual exchange of knowledge experience and working method.

## 5.2 Additional means to be set plans

In addition to the existing ones, new means have to be set up, especially to provide more adequate tools to convey intermediate results. This may involve some other WP to review their current plan such as dissemination (T9.2-A) or training (T9.2-B). For the later one it will for instance define the second step of trainings to be set up regarding achievements of OPENCROSS.

- **Product data sheets (PDS)**

Document focusing on unique capabilities of OPENCROSS and describing OPENCROSS principles

- **Demonstrators (DEM)**

Demonstration (and video recordings) of prototype use to illustrate the concepts to key stakeholders and show the progress of the project

- **Web-Portal for industrial adoption (WIN)**

Please refer to “Industrial target (O4I)” section

- **Tools support kit (TSK)**

Install guidelines, access to FAQ and easy support. User manual

## 6 Adoption Outreach Program Roadmap

### 6.1 Identified risks and possible mitigation

The following risks have originally been extracted from deliverable D10.1 focusing on risk management at project level. Risks have been filtered regarding:

- Risks related to a major OPENCROSS concept required for adoption
- Organizational risks possibly endangering adoption

Additional risks have been identified in T8.2 and will be proposed to the general project list.

Description	Adoption impact	Mitigation
Tool providers may not be able to provide the technologies in time	Delay in convincing adopters	Monitor OPENCROSS progress and rework demonstration actions in present plan accordingly (objective for current plan)
<p><b>Generic or too complex results</b> It is difficult to train, disseminate and later exploit results that are complex or perceived as such. With the ambition of meeting in one shot automotive, railways and avionic domains, the OPENCROSS achievements might result too generic and complex at the same time, and thus scarcely acceptable by any single domain representative.</p>	Low adoption rate	Keep It Small and Simple by focusing on key added value per stakeholder (definitely objective of current plan)
<p><b>Unavailability of real success stories</b> For new tools or approaches, in order to become affirmed or de-facto recognized, both automotive and avionic domains, but in some extent also railways, are characterized by long latent times. In case a first outstanding success story is missing, or achieved late, there is the risk that OPENCROSS remains a valuable research project only.</p>	Stakeholders are not convinced of the usefulness and usability of OPENCROSS results	Use of demonstration for first actions and then results from pilots once available
Priority adopters per domain	Domain players not willing to invest fearing regulatory organization / body not validating the approach	Address in priority such players in each domain as defined in D2.1 (Business cases and Use Cases): This is mitigated through EAB Set up of training program for university students in order to induce future engineers
Lack of coordination among OPENCROSS tasks related to	Adoption-oriented actions are not adequately performed and	Agreement among the tasks upon the strategy to follow for

adoption (NEW)	monitored	adoption
Some stakeholders are not aware of OPENCROSS and its results (NEW)	OPENCROSS results do not reach all its targeted audience	Coordination with dissemination and training actions
OPENCROSS results do not fit the current, most important needs in industry (NEW)	OPENCROSS results do not reach all its targeted audience	Coordination with other tasks to get feedback from industry (e.g., via the External Advisory Board)
Unrealistic expectations regarding adoption of all or some OPENCROSS results (NEW)	Excessive effort spent for promoting adoption of results with little impact in practice	Prioritization of the results according to their adoption potential

## 6.2 Description of objectives

On the basis of “Expectations from OPENCROSS User Community”, working out an optimal number of communication objectives to be done leads to identify the following packages.

### 6.2.1 Industrial target (O4I)

#### 6.2.1.1 Intended audience

- Safety critical component suppliers (COS)
- Integrator of safety critical platforms (ISP)
- Consultancy providers (CSP)
- Assessor companies (ASC)
- Standardization and regulation bodies

#### 6.2.1.2 Objective

The purpose is to present the OPENCROSS concepts, explicitly showing which concepts are fulfilling the previously identified expectations (refer to “Expectations from OPENCROSS User Community”). Technology details shall not be addressed there. Rather, focus shall be put on the possibility to demonstrate through prototypes the operational aspects.

#### 6.2.1.3 Content

General concepts shall be presented regarding:

- Reference assurance framework
- Evidences and arguments
- Composition
- Process definition and execution

A strong emphasis shall be devoted to illustrating these concepts by real industrial examples allowing to understand:

- How an industry standard (such as DO178) or company generic process can be captured
- How a specific project process can be derived and monitored during execution
- What evidences OPENCROSS can handle and how to capture them
- How arguments can be formalized and captured
- How mappings can be identified between project artefacts and standards to justify project compliance
- How existing assets can be reused from previous projects to optimize compliance demonstration

In order to convince about the operational orientation of OPENCROSS the following tools shall be presented (or better, demonstrated):

- Standards, process and mapping editors
- Evidence characterization and traceability editor
- Argumentation editor

**6.2.1.4 Material**

The preferred mean will be demonstration of OPENCROSS using platform prototypes (either in real life or by recordings). To ease upfront understanding of OPENCROSS added value, a specific web area will be dedicated to promote the above content.

- Web Portal for industrial adoption (WIN)
- O4I demonstrations (DEM)
- Training (TRA)
- Tool kits (TSK)

**6.2.1.5 Workflow**

The following workflow describes the sequence of activities and inputs synchronization related.

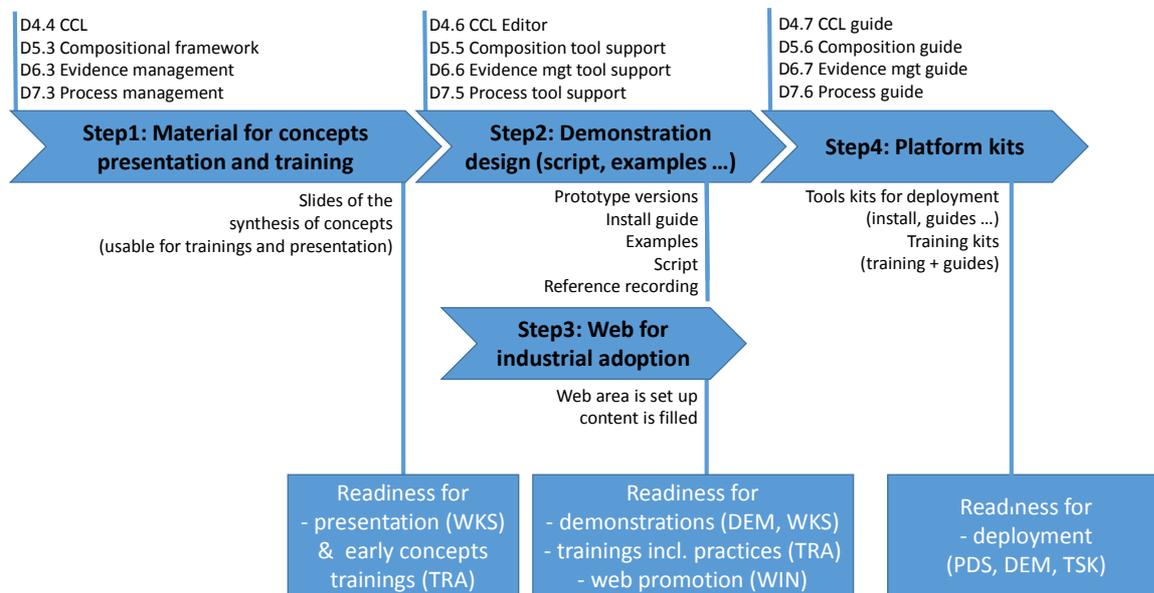


Figure 5. O4I related activities

**6.2.2 Scientific and students target (O4S)**

**6.2.2.1 Intended audience**

- Scientific and research community
- Students of universities

**6.2.2.2 Objective**

The purpose is to promote theoretical concepts formalized through metamodels and related open source tooling to allow scientific community to work with underlying concepts and prototype theoretical extensions

**6.2.2.3 Content**

General concepts shall be presented using metamodels

- Reference assurance framework metamodel
- Evidences and arguments metamodels
- Manageable assurance asset and project metamodels
- Vocabulary, artefact and mapping metamodel

A strong emphasis shall be devoted to the theoretical consistency of the metamodels between them and how they cope with the compliance issues using flexible mappings.

Platform access through editors will be demonstrated in order to allow scientific community to operate the platform and possibly extend it towards formal checks or any relevant research-related topic (compositional aspects for instance).

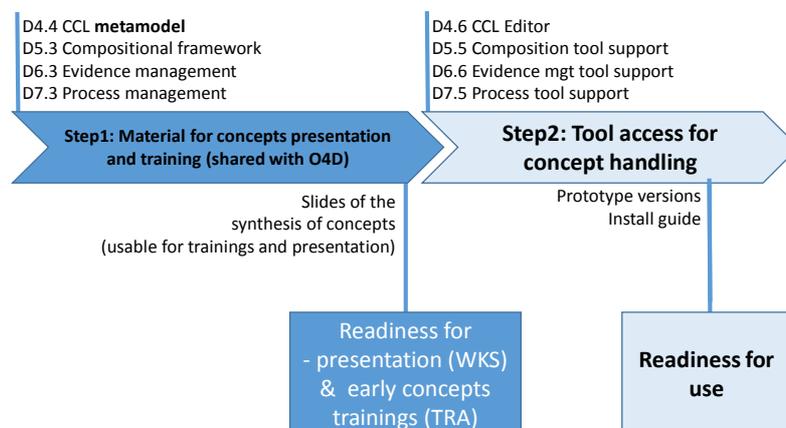
**6.2.2.4 Material**

The preferred mean will be theoretical presentation and training of OPENCROSS metamodels:

- Training (TRA)

**6.2.2.5 Workflow**

The following workflow describes the sequence of activities and inputs synchronization related.



**Figure 6. O4S related activities**

## 6.2.3 Developers target (O4D)

### 6.2.3.1 Intended audience

- Tool vendors
- Scientific and research community
- Open source community

### 6.2.3.2 Objective

The purpose is to extend O4S by providing all infrastructure information required to couple to or develop OPENCROSS tooling.

### 6.2.3.3 Content

General concepts shall be presented using metamodels (this part is shared with O4S)

- Reference assurance framework metamodel
- Evidences and arguments metamodels
- Manageable assurance asset and project metamodels
- Vocabulary, artefact and mapping metamodel

A strong emphasis shall be devoted to the theoretical consistency of the metamodels between them and how they cope with the compliance issues using flexible mappings. The relations between metamodel are a key point as it ensures consistency of editors and needs for bridges.

A demonstration of the reference platform will be performed in order to allow developers to understand the overall usage scenario.

In addition infrastructure information shall be presented:

- Framework and related architectures for each area including components
- Evidence analysis manager
- External too integration manager
- Component integration analysis manager
- Compliance agreement negotiation manager
- Process analysis manager

### 6.2.3.4 Material

The preferred mean will be theoretical presentation and training of OPENCROSS metamodels:

- Training (TRA)
- Tool kits (TSK)

### 6.2.3.5 Workflow

The following workflow describes the sequence of activities and inputs synchronization related.

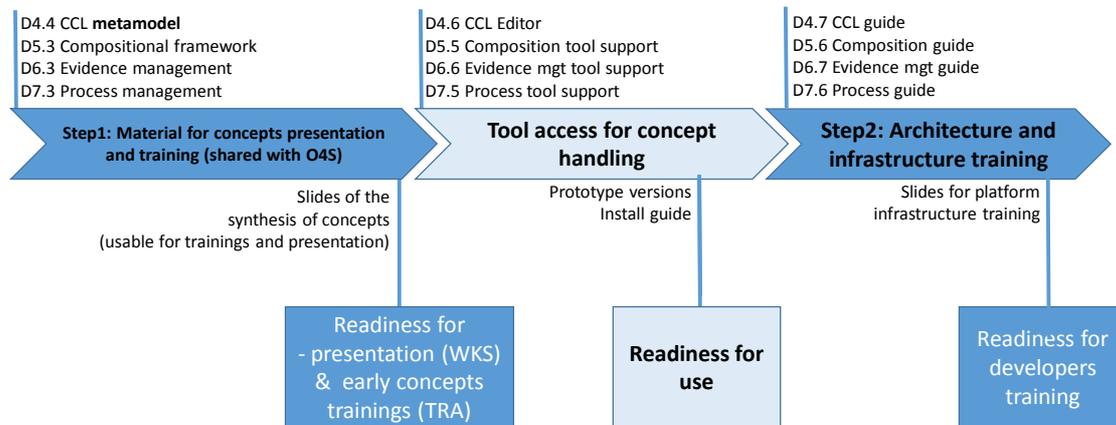


Figure 7. O4S related activities

### 6.3 Phasing adoption objectives

This section contains the roadmap for the adoption outreach program. In the previous sections we have answered a number of questions that must be included in this roadmap. Each of them defines a particular aspect of the outreach program, as follows:

- **“Why”** do we need the outreach program – what is its purpose, and how does the project plan to benefit from it? This has been defined in chapter Adoption Outreach Program Objectives.
- **“Who”** are expected to be targeted by the outreach program? This has been developed in chapter Expectations from OPENCROSS User Community
- **“Where”** can we reach and recruit prospective community members – what are the appropriate channels for communicating with them? This aspect has been discussed in chapter Means for Adoption Outreach Program
- **“What”** is the message to convey – what do we communicate, how does our message change over time? This aspect has been discussed in chapter OPENCROSS concepts and results to be promoted
- **“When”** should objective been taken into account? The detailed milestones will be defined by dissemination and training plans (respectively D9.2A and D9.2)

Note: meaning of acronyms have been introduced during the previous chapters.

Adoption outreach program objectives	Content (refer to next section)	Target	Mean	WP/TSK for content
OPENCROSS principles ( <u>release</u> )	O4I-Step1	COS	WKS	9.2A/8.1 (WKS)

		ISP ASC	TRA	9.2B (TRA)
OPENCROSS platform demonstration ( <u>release</u> )	O4I-Step2	COS ISP ASC	WKS DEM	9.2A/8.1
OPENCROSS principles on the web( <u>release</u> )	O4I-Step3	COS ISP ASC	WIN	9.2A/8.1
OPENCROSS training for industrial users ( <u>release</u> )	O4I-Step4	COS ISP ASC	TRA	9.2B
OPENCROSS concepts for scientific community ( <u>release</u> ) OPENCROSS concepts for tool developers ( <u>release</u> )	O4S-Step1 O4D-Step1	OSC SRC TOV	TRA	9.2A/8.1 (WKS) 9.2B (TRA)
Toyota session for OPENCROSS concepts	O4S-Step1 O4D-Step1		TRA	9.2B (TRA)
OPENCROSS Platform infrastructure ( <u>release</u> )	O4D-Step2	SRC TOV	TRA	9.2A/8.1 (WKS) 9.2B (TRA)
Modular argumentation editor	Dedicated	Japan	WKS	
OPENCROSS Platform architecture for big companies	O4D-Step2	??	TRA	-

### **Reminder:**

Safety critical component suppliers (COS)  
 Integrators of safety critical platforms (ISP)  
 Consultancy providers (CSP)  
 Assessor Company (ASC)  
 Tool vendors (TOV)  
 Scientific and Research community (SRC)  
 Standardization and Regulatory bodies (SRB)  
 Open-source community (OSC)

OPENCROSS website and logo (WEB)  
 An OPENCROSS brochure and poster (POS)  
 OPENCROSS news channels (NEW)  
 Scientific papers and publications (PUB)  
 Promotion through industry events (EVT)  
 Organisation of international OPENCROSS workshops (WKS)  
 Media/general public (MED)  
 Industry partner community (CPNY)  
 Trainings (TRA)

## **7 Conclusion**

This document is intended to provide guidance and objectives to activities started earlier within the project. The purpose is to allow them to revise their action plan in a consistent way between them. Therefore detailed actions will be found in the dissemination, training plan or EAB roadmap.

Objectives are defined by starting from stakeholder's identification and expectations, and then taking into account projects artefacts in order to define priority dissemination, training, communication information packages to be addressed.