

## Project Profile

# Open engineering platform

## Speeding adoption of innovative technologies for dependable/critical software-intensive embedded systems

*The OPEES project is building a community to ensure long-term availability of innovative engineering technologies for dependable/critical software-intensive embedded systems. Its main goals are to secure the industrial strategy, improve competitiveness and develop the European software industry. The project fills a gap in technology adoption of system/software engineering tools and components for embedded systems. Its open platform will speed and widen implementation of technology developed with public and private funding as it makes it possible to meet the operational needs of users wanting to embrace these technologies.*

Software is the key driver for innovation and business development in many domains; and embedded software and systems are a fast growing part at over 14% a year. European and national authorities are funding countless collaborative R&D projects, leading to promising techniques and tools in embedded software engineering. However, when it comes to putting results into operation, the path to industrial use is full of road blocks.

### LONG-TERM AVAILABILITY MANDATORY

One of the characteristics of dependable embedded systems is that they have a very long maintenance phase. Embedded systems are expected to be maintained for more than 20 years in the energy industry, more than 30 years in the automotive industry and over 50 years in aerospace. Therefore, the long-term availability of tools and components is mandatory for most industrial users.

When considering adoption of new technology, users evaluate the long-term continuity of service. This includes all the features that industrial organisations require from such technology on a daily basis: the product itself, all requested documentation, maintenance services, training, support services, and customisation and specific developments.

Critical software-engineering tools demand a particularly high degree of continuity. As such tools were not available commercially initially, industrial companies in Europe developed their own solutions in different fields, including automatic code generation, process management and test automation.

## OPEES

(ITEA 2 ~ 08019)

### Partners

Adacore	Institut de Recherche en Informatique de Toulouse
Airbus	MBDA
Alyotech	OBEO
Anyware Technologies	ONERA
Atos Origin	Schneider Electric
Barco	SQS
CEA LIST	Space Applications Services
CNES	Telvent
CS	Thales
Dassault Aviation	Tronik Kontrol
EADS Astrium Satellites	Uni Leuven
EADS Astrium Space	Uni Politecnica de Valencia
Transportation European Software Institute	Uni Skövde
ICT-Norway	Uni Toulouse le Mirail
Indra Sistemas	Xipp
Innovaia Association	
INRIA	
Institut National Polytechnique de Toulouse/	

### Countries involved

Austria  
Belgium  
France  
Norway  
Spain  
Sweden

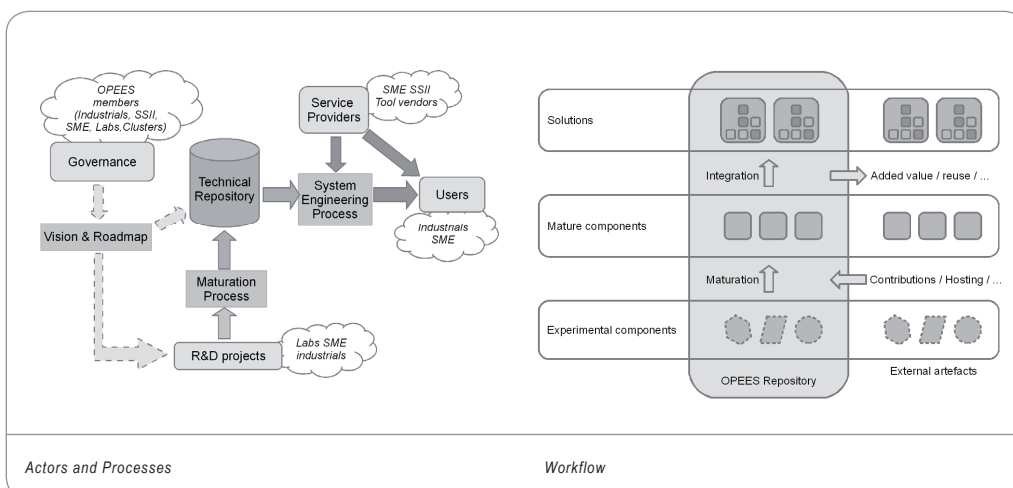
### Project start

November 2009

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There was then a progressive reorientation of these companies onto their core competence, leading to a move from making such tools to buying them. Some internal tools were transferred to software editors that industrialised them – but the massive investment required for dependable engineering tools and the very small distribution scale led to the disappearance of most of them. And proprietary tools are not easily available for deployment on a large scale. Engineering tools are also expensive.

### DEVELOPING AN OPEN-SOURCE ECOSYSTEM

OPEES partners and supporters are therefore building an open-source ecosystem with the relevant business models to ensure the long-term availability of engineering tools and components in the domain of dependable/critical software-intensive embedded systems.

Its main goals are to:

1. Favour a durable development of the embedded software industry aligned with industrial strategic intents based on the open-source ecosystem;
2. Assess, define and experiment methods, processes and guidelines ensuring the required level of quality for OPEES components and engineering tools to enable them to be used in 'certified' development processes;
3. Leverage early results and actors at the national level to give a European and worldwide dimension to the initiative; and
4. Unite experience, research efforts and orientations among all actors. This effort will focus on:
  - Consolidating and sharing the results of R&D collaborative projects on system/software engineering to ensure long term availability;
  - Consolidating and exploiting requirements definition and experiences obtained by the industrial partners during R&D projects; and
  - Amalgamating members' proposals for new projects to ensure consistency and integration in OPEES under the European Institute for Complex Safety-Critical Systems Engineering (EICOSE) cluster.

The viability of the ecosystem requires several elements:

- An open and visible organisation with a European and worldwide dimension, implementing the business models, business plan and dissemination plan defined in the project, allowing the emergence of a European service industry able to create profitable businesses and employment;
- A common vision and roadmap making it possible to share and build upon the results of R&D collaborative projects and to ensure consistency and complementarities for the future R&D projects that will be launched to complete the set of engineering tools;
- An open technical repository that will hold a first set of core components and tools matured and assessed following the OPEES methodologies to support collaborative works around these components; and
- Processes and guidelines for tools/ components maturation, verification and qualification for candidate tools/ components, validated in real use cases to ensure components durability and interoperability, through promotion of open standards meeting industrial needs, constraints and domain standards.

### DISSEMINATION A CRUCIAL PROJECT ELEMENT

This ITEA 2 project will help the establishment of the long-term OPEES organisation, which will be created and launched in the early stage of the project. An important focus is dissemination, which is crucial for such a project. The constitution of the project consortium has already contributed to a European visibility to this initiative

With all these dimensions in terms of R&D activities on processes and validation of these processes through experimentations, a strong study of business models, vision and strategic orientations, active communications and dissemination, this ITEA 2 project will provide all the ingredients necessary to make OPEES a successful reality.

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- ITEA 2 – Information Technology for European Advancement – is Europe's premier co-operative R&D programme driving pre-competitive research on embedded and distributed software-intensive systems and services. As a EUREKA strategic Cluster, we support co-ordinated national funding submissions and provide the link between those who provide finance, technology and software engineering. Our aim is to mobilise a total of 20,000 person-years over the full eight-year period of our programme from 2006 to 2013.

- ITEA 2-labelled projects are industry-driven initiatives building vital middleware and preparing standards to lay the foundations for the next generation of products, systems, appliances and services. Our programme results in real product innovation that boosts European competitiveness in a wide range of industries. Specifically, we play a key role in crucial application domains where software dominates, such as aerospace, automotive, consumer electronics, healthcare/medical systems and telecommunications.

- ITEA 2 projects involve complementary R&D from at least two companies in two countries. We issue annual Calls for Projects, evaluate projects and help bring research partners together. Our projects are open to partners from large industrial companies and small and medium-sized enterprises (SMEs) as well as public research institutes and universities.



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