



PROJECT RESULTS

Boosting Europe's electronics industry in middleware

Software platform and component environment for you



The ITEA project Space4U builds on the foundations established by the earlier ROBOCOP initiative. Whereas ROBOCOP defined a component-based software architecture for the middleware layer of high volume embedded appliances, Space4U has extended the framework in the areas of power management, fault management and remote terminal management, based on clear demands from the application domains of consumer electronics, mobile communication and domotica. The implementation and validation process has followed the lines of the ROBOCOP prototype, ensuring a fully ROBOCOP compliant, component-based framework. The dissemination and standardisation efforts have enabled the deployment of the results. So far, the project has delivered a significant number of publications and is strongly involved in the standardisation of middleware in the ISO MPEG standardisation activity.

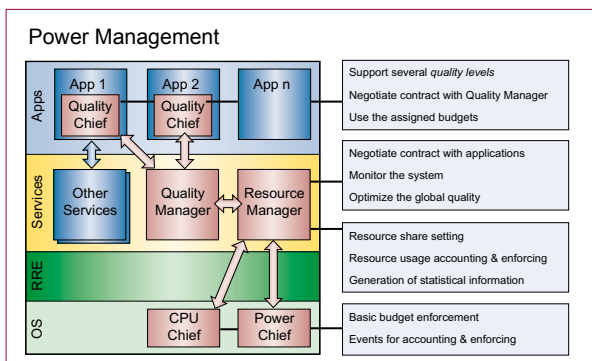
Open systems essential

The software in embedded systems has mostly been based on proprietary solutions. With the previous generation of non-connected and closed systems and services, this did not present great problems. Recently, however, systems are becoming more and more interconnected and the need for interoperable applications and services requires the introduction of open systems.

Given current state-of-the-art technology and existing standards, proprietary solutions have so far been the only way to guarantee acceptable performance and robustness. They nevertheless slow down the introduction of new services and result in increased interoperability problems. In other application areas such as information technology, it became clear that this mode of operation could not compete with the network economy model, in which each participant focuses on a single role.

Meeting market needs

Space4U contributed to the improved interoperability and robustness of the middleware of embedded systems to enable the 'traditional' consumer electronics, mobile and domotica terminal providers to participate in the new networked economy models. In addition, the project's approach makes it possible for third parties to develop compliant system-level components. In this way, software intellectual property (IP) trading for the middleware of embedded systems becomes feasible, creating an abundance of opportunities.



SPACE4U (ITEA 02016)



Partners

- CSEM
- Eindhoven University of Technology
- FAGOR Electrodomésticos
- IKERLAN-Electrónica
- Nokia
- Philips Research
- SAIA – Burgess Electronics
- Technical University of Madrid
- Visual Tools

Countries involved

- Finland
- The Netherlands
- Spain
- Switzerland

Start of the project

August 2003

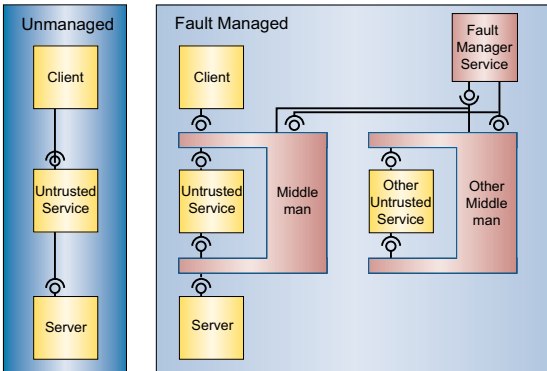
End of the project

August 2005



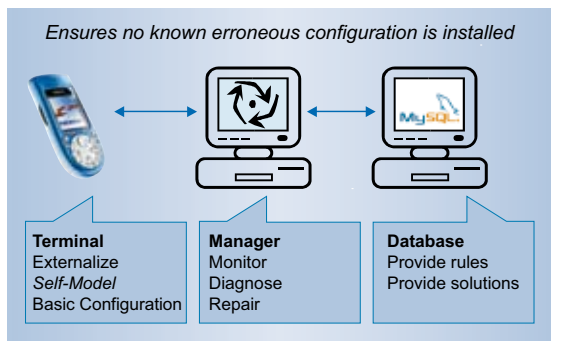
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Fault Management



- a business model that fuses with component models, making it possible for system integrators to import components at several levels of abstraction, depending on the stage of the system integration process; and,
- validation of the component models by examples supporting the development cycle of Space4U-compliant components, including the facilities needed to execute and validate in a well-defined manner.

Terminal Management



The results of the Space4U project can be categorised in the following three areas:

- a component framework that will provide the bridge between the application and the underlying platform resources (also for non-functional characteristics, allowing applications to be effectively monitored and possibly controlled);

The first two of these elements are being standardised in the ISO MPEG M3W standard.

Strategic applications

The Space4U project focuses on specific aspects in consumer electronics, mobile communications and domotica application domains, such as:

- moving towards open inter-connected systems that put higher demands on the secure downloading and terminal management of appliances;
- putting a high demand on the power management of portable appliance capabilities, directly translatable into operation life-time / comfort; and,
- new application domains – personal well-being and safety, personal medicare, automotive and the like – where reliable execution of the installed software is vital.

Major project outcomes

Dissemination

- 22 publications
- 14 presentations at conferences/fairs

Exploitation

- 1 new product
- 3 new services, all intended for internal use

Standardisation

- 3 submissions to MPEG M3W (multimedia middleware) reflecting the majority part of the ISO/IEC 23004 (MPEG-E M3W) standard

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ITEA - Information Technology for European Advancement - is an eight-year strategic pan-European programme for pre-competitive research and development in embedded and distributed software. Our work has major impact on government, academia and business.

ITEA was established in 1999 as a EUREKA strategic cluster programme. We support coordinated national funding submissions, providing the link between those who provide finance, technology and software engineering. We issue annual Calls for Projects, evaluate projects, and help bring research partners together. We are a prominent player in European software development with some 9,000 person-years of R&D invested in the programme so far.

ITEA-labelled projects build crucial middleware and prepare standards, laying the foundations for the next generation of products, systems, appliances and services. Our projects are industry-driven initiatives, involving complementary R&D from at least two companies in two countries. Our programme is open to partners from large industrial companies, small and medium-sized enterprises (SMEs) as well as public research institutes and universities.

