



PROJECT PROFILE

Trustworthy software secures key applications

Dependable embedded software will meet future needs

The Trust4All project aims to develop a middleware software architecture specifically targeted at embedded systems that require a defined level of trust, due to the nature of the services they provide. The growing importance of software in embedded systems, its economic value and the fact that individuals and societies depend more and more on the correct functioning of these embedded systems are the major reasons behind the initiative. The project focuses on the trustworthiness-related aspects of the middleware software architecture in domains such as home medicare, security and automation, as well as on-the-move applications, for which dependability is particularly important.



Due to the change from closed and static stand-alone systems to

open, dynamic and interconnected systems, making the embedded software easily manageable poses ever-growing technological



challenges. It offers great opportunities to enhance the usability of systems; but also gives rise to growing threats with respect to the trustworthiness of the software behaviour.

When analysing the envisaged needs of future application domains from the users' viewpoint, there is clearly an expectation that such systems should be able to provide (higher) levels of dependability. Meeting this demand will require the establishment of defined levels (ranging from medium to high) of trustworthiness in several respects:

- Security during critical actions to guarantee the promised behaviour;
- Reliability throughout a reasonable lifetime, in order to deliver the expected benefits;
- Robustness during operation to guarantee functionality.

TRUST4ALL (ITEA 04003)

Partners

- Centrum voor Wiskunde en Informatica
- Csem
- ESI
- Fagor
- Ikerlan
- Leiden University
- Nokia Corporation
- OCE – Technologies
- Philips Applied Technologies
- Philips Research Laboratories
- Robotiker
- SAIA Burgess
- Solid Information Technology
- Technische Universiteit Eindhoven
- Telematica Instituut
- Visual Tools
- VTT Electronics

Countries involved

- Finland
- The Netherlands
- Spain
- Switzerland

Project start

July 2005

Project end

June 2007

Contact

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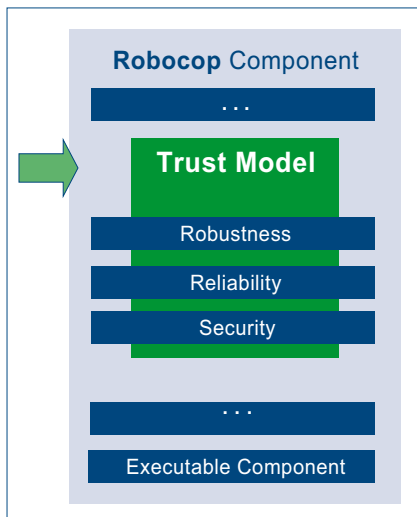


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Open system

The project intends to develop a trust model driven by the requirements of the targeted application domains. This will allow precise specification of the nature and level of expected dependability, which should be translatable into requirements and constraints on the embedded software composition.

Deployment of the trust model will depend on the development of a methodology to validate whether a given dynamically changeable composition satisfies the requirements. The proposed software architecture will be open, with published interfaces and methods supporting emerging ecosystems for third-party middleware in the embedded software domain. For this purpose, the consortium specifically intends to submit its results to standardisation bodies such as the ISO MPEG activity on middleware (MPEG-E M3W).



Flexible application

A key objective of the project is to define a trust model that cannot only be applied in the anticipated application areas, but will also be applicable in other related fields. This implies an ability to deal with a wide variety of requirements at different levels of severity.

The necessity to take account of application-specific parameters implies an extensive study of each domain. Care will be taken to ensure that the approach used for the metrics, as well as for the trust model itself, will be flexible enough to permit as broad a deployment as possible. In addition, there is a need to validate that a composed system will be able to retain its desired dependability when faced with a dynamically changing environment. Here too, an application-independent agnostic nature of the approach needs to be safeguarded.

The first project stage is an analysis of trust requirements in the selected application domains, as a basis for definition of the trust model. Experts in these particular sectors will then evaluate this trust model. The next step is the development of an architecture and associated life-cycle model, with embedded validation mechanisms to support checking and/or enforcement of a required trust level at defined intervals or events. All these developments will be promoted to international standardisation bodies, with a view to guaranteeing wide applicability and availability.

Trust ensured

The major result of the project will be the trust model, with an architecture that makes it possible at any point in time to verify the level of trust offered by a composed system. Its associated metrics and a methodology for dynamic monitoring of system status with respect to the model after (requested or un-requested) updates, upgrades or extensions represent the major deliverables of Trust4All. On the basis of this validation process, systems will be allowed to, or prevented from, executing applications or services that require a defined level of confidence.

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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.

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