ARTEMIS Call 2008 Project
100026

iLAND

mIddLewAre for deterministic dynamically reconfigurable NetworkeD embedded systems

PROJECT *description*

To develop enabling technology and infrastructure of a modular component-based middleware for Network Embedded Systems having strong needs for deterministic dynamic functional composition and reconfiguration.

RELEVANCE *to call*

Objectives addressed:

- *Computing Environment for embedded systems:* horizontal multi-domain architecture validated in three domains enabling platform-independent service composition and resource management
- *Methods and processes for safety-relevant embedded systems:* modeling tools for service oriented applications
- *Dependability and security in embedded systems:* in trusted environments (video monitoring), untrusted environments (wireless transport), and mixture of both (home health care)

MARKET *innovation*

iLAND will provide the required run-time infrastructure and tools to enable:

- new products and services composed by existing distributed services, e.g. highly available distributed digital video recorder for security installations
- highly dynamic systems in various domains, e.g. remote monitoring in areas with no communication infrastructure; infrastructure-less email service for poor regions; highly efficient remote meter reading for water or gas meters
- new products and applications based on wireless sensor networks such as ambient assisted living monitoring at home or environmental monitoring

TECHNICAL *innovation*

- *Middleware architecture:* it will be light-weight (to suit embedded systems), component-based (for function isolation and easy algorithm replacement), and platform-independent (complete abstraction of specific resources, OS policies and networking infrastructures).
- *Deterministic middleware services:* bounded time composition algorithms and dynamic reconfiguration algorithms will be developed for service-based networked applications.
- *QoS-based resource management and support for adaptation:* combined resource management will be performed to achieve adaptation to changing needs due to environmental or programmed changes. They will be based on deterministic platform enhancements.
- *Application modeling approach* specification for deterministic dynamic reconfiguration and composition, and its integration in tools.
- *Validation and proof of concept* through three application demonstrators and a laboratory prototype: remote video monitoring, home healthcare, and highly dynamically reconfigurable early warning system using public transport carrier infrastructure.

PROJECT COORDINATOR
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START
March 2009

PARTICIPATING ORGANISATIONS
9

DURATION
42 months

NUMBER OF COUNTRIES
5

TOTAL INVESTMENT
€3.9 M€