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
DURATION
42 months
TOTAL INVESTMENT
€3.9 M

PARTICIPATING ORGANISATIONS
9
NUMBER OF COUNTRIES
5