ARTEMIS Call 2009 Project
100202

# RECOMP

*System Level Modelling Environment for SMEs*


## EXECUTIVE *summary*

RECOMP will reduce the cost of certifying or re-certifying embedded systems across many safety-critical and mixed-criticality applications. It will achieve this by providing platform architectures and components, especially for advanced multi-core systems, together with the required design methods, tools and guidelines to ensure certifiability.

## CONTRIBUTION *to SRA*

RECOMP contributes to the following industrial priorities of the AWP 2009:

- Design methods and tools for certification and re-certification of mixed criticality applications on multi-core platforms.
  - RECOMP aims to measurably reduce the cost of system design for mixed criticality by integrating certifiable components.
  - RECOMP aims to reduce development cycles for systems in sectors requiring certification by providing guidelines that ensure certifiability.
- Reference design, platform (HW/SW) and cross-domain compatible components to be used as a base for future mixed-criticality multi-core system .
  - RECOMP aims to manage greater complexity by providing components and platforms.

The general availability of the modeling methodologies will be facilitated by the open source and/or free software approach, where all tools will be made available free of charge.

## MARKET INNOVATION *& impact*

- Enable broad usage of multi-core technologies since no efficient multi-core HW/SW solution for certification will hinder the full utilisation of its potential.
- Enable faster time-to-market in competitive product areas with large European economic interests (automation, rail, aerospace, automotive, etc.) due to faster, cheaper and more highly transparent and reliable certification.
- Enable optimum competitive positioning of chip and tool vendors in a global system design market.
- Allow SMEs to access safety-critical markets without the obstacle of extremely high certification costs.

> Help maintain a sustainable position for European certification service providers with an international world leadership reputation.

## RELEVANCE & CONTRIBUTIONS *to Call 2009 Objectives*

RECOMP will develop a common multi-domain architecture, APIs, design tools and associated runtime support for multi-core HW/SW platforms under safety requirements, thereby contributing to ASP1 and ASP5.

RECOMP addresses the following industrial objectives:

> Lower total system cost by using multi-core running full applications on a circuit board module that saves mass, volume and power.
> Lower the cost of the certification of first version of the product by using a certified computing platform.
> Accelerated time-to-market by integrating pre-certified components and platforms to reduce certification efforts.
> Less re-certification effort supported by modular certification and separation into different levels of criticality and re-certification limited to safety-critical functionalities.
> Supplier-based development process with the possibility to develop pre-certified components to enable component suppliers to take on a bigger share of the product development, distributing costs over several customers, and thus reducing the overall costs of the development process.

## R&D INNOVATION *and technical excellence*

The RECOMP approach will provide the necessary design methods, tools, practices and processes to support the modular certification and pre-certification of multi-core components. RECOMP will also provide Hardware and Software platforms based on application independent HW/SW mechanisms that enable safe multi-core virtualisation and core-to-core communication.

RECOMP will enable a transition from sectoral, vertically structured markets to a horizontally structured market by providing common methods, tools and reference platforms for mixed-criticality multi-core embedded applications.

RECOMP will have an impact on standardisation through liaison with relevant standardisation activities in the following areas: Functional Safety EC/EN/DIN 61508, SW standards (e.g. ISO/IEC 15504 SPICE and CMMI + SAFE extension) and middleware with AUTOSAR.

## PROJECT *partners*

DELPHI, SYMTA VISION, Infineon, WITTENSTEIN, CISTER, fortiss, EADS, Carolo-Wilhelmina Braunschweig, SYSGO EMBEDDING INNOVATIONS, THALES, camea, PAJ SYSTEMTEKNIK, SKOV, VALIDAS, PSA PEUGEOT CITROËN, Honeywell, Discover the Experience, TÜV SÜD, ceatlist, intel, SPINET, University of Southern Denmark, Danfoss, ESI European Software Institute tecnalia, SAFE RIVER, AALBORG UNIVERSITY, XSeven Solutions, Technical University of Denmark, DTU, metso, Aalto University, KONE, espelsa, INTEGRASYS, Åbo Akademi University, Universidad de Granada, SpaceSystems Finland

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START
April 2010

DURATION
36 months

TOTAL INVESTMENT
€25.7 M

PARTICIPATING ORGANISATIONS
41

NUMBER OF COUNTRIES
9