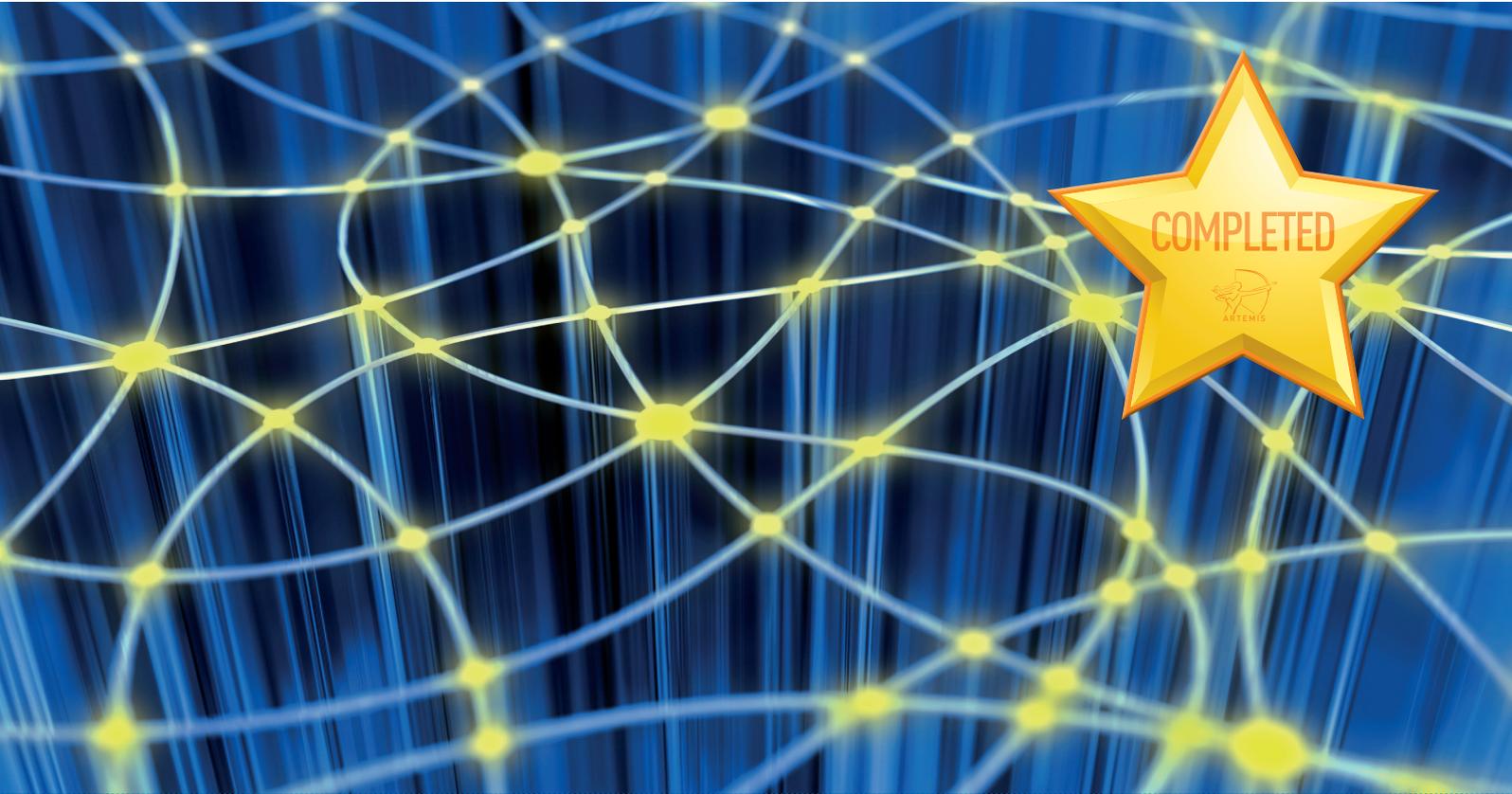




ACROSS

ARTEMIS **CROSS**-Domain Architecture



EXECUTIVE *summary*

The ACROSS project will significantly reduce the development cost through a component-based architecture with support for composability as well as increased robustness and the capacity to fully exploit the economies of scale in the semiconductor industry. It does so by offering domain-independent architectural solutions for the automotive, aerospace and industrial control domains, addressing common technological challenges such as complexity management and robustness.

CONTRIBUTION *to SRA*

ACROSS provides significant contributions for closing the design productivity gap:

- > Cross-sectoral reusability using a domain-independent ACROSS MPSoC with embedded components and tools
- > Reduced cost of the system design in ACROSS through support for composability
- > Reduction in development cycles based on a stable set of generic architectural services
- > Reduced effort and time required for re-validation due to the segregation of components

- > Management of increasing complexity through a deterministic platform and support for the classical simplification strategies of abstraction, partitioning and segmentation

In addition, ACROSS will help to increase the number of European SMEs engaged in the Embedded System supply chain. The cross-domain approach taken by ACROSS also contributes to the goal of a high penetration of ARTEMIS results into deployed embedded systems throughout the world.

MARKET INNOVATION *& impact*

The ACROSS project will contribute to the establishment of a common multi-domain architecture, APIs, and a design tool platform for advanced multi-core hardware and middleware solutions and thereby enable players from the European supplier industry to expand their market scope. ACROSS will offer a domain-independent technology (middleware, tools and IP cores) which will enable European supplier industry to increase their market share and OEMs to benefit from mature cross-domain technology at lower cost, reduced development cost and accelerated time-to-market. The results of ACROSS will ease the introduction of new cross-domain

applications, which rely on the interplay of different, formerly disjoint, disciplines. The cross-domain solutions will also enable economies of scale to be exploited in the semiconductor industry. For the end user, the composable architectural framework of ACROSS will result in more robust -products (e.g., fewer recalls and higher dependability of a car).

RELEVANCE & CONTRIBUTIONS to Call 2009 Objectives

The ACROSS project addresses

- > the industrial priority
 - "reference designs and architectures", and the
- > sub-programmes
 - "Methods and processes for safety-relevant embedded systems" and
 - "Computing environments for embedded systems"

Responding to the Call 2009 objectives ACROSS generates a reference platform with methods and tools to support the construction of embedded systems of all criticalities up to safety-critical hard-real-time systems, enabling the reuse of IP cores across applications and domains. It also addresses the sub-programmes "Methods and processes for safety-relevant embedded systems" and "Computing environments for embedded systems". The architecture is accompanied by a model-driven development process for compositional component-based development. ACROSS considers the requirements and constraints of the ARTEMIS SRA, in particular composability, robustness, diagnosis, maintenance, and integrated resource management.

R&D INNOVATION and technical excellence

ACROSS develops and implements an ARTEMIS cross-domain reference architecture based on the architecture blueprint defined in the GENESYS project. The ACROSS results will be:

- > ACROSS-MPSoC that implements generic core services (e.g., deterministic communication, global time, diagnosis, fault and error containment) in an FPGA-based hardware.
- > Design and implementation of generic optional services (e.g., security, gateways, diagnosis) for multiple domains.
- > Model-based design methodology, supported by appropriate adaptable tools, for the implementation and verification of ACROSS-based applications.
- > Design and implementation of domain-specific optional services for the realization of embedded applications in the automotive, aerospace and industrial domains.
- > Design and implementation of selected sample applications, which will show the benefits of using the ACROSS approach.

PROJECT partners



www.artemis.eu

ACROSS

PROJECT COORDINATOR
Christian EL-SALLOUM

INSTITUTION
Vienna University of Technology

EMAIL
office@across-project.eu

WEBSITE
www.across-project.eu

START
April 2010

DURATION
36 months

TOTAL INVESTMENT
€16 M

PARTICIPATING ORGANISATIONS
16

NUMBER OF COUNTRIES
4