EMC²

Embedded Multi-Core systems for Mixed Criticality applications in dynamic and changeable real-time environments

PROJECT description
EMC² finds solutions for dynamic adaptability in open systems. It provides handling of mixed criticality multi-core-applications in real-time conditions, with scalability and utmost flexibility, full-scale deployment and management of integrated tool chains, through the entire lifecycle.

RELEVANCE CALL 2013 objectives
> EMC² reduces cost of the system design by 15%.
> It reduces by 15% the effort and time required to re-validate systems after making changes.
> It achieves 15% reduction in development cycles, especially in sectors requiring qualification or certification.

MARKET introduction
The EMC² project expects to facilitate the EU’s ability to deploy and use Embedded Systems across important European market sectors:
> Automotive: Embedded Systems are the key innovation driver, enabling the majority of innovations.
> Avionics: main challenges are related to the acceleration of technology cycles and cost of software development.
> Space: main challenges are related to the increase of performance/weight ratio, high reliability and long lifetime.
> Industrial control and factory automation: the key areas will be energy efficiency and sustainability.
> Healthcare: challenges are related to workflow efficiency, integration of diagnosis and treatment, quality assurance.
> Internet of Things: the increased amount of data available, as well as safety and security issues, will need to be processed.

TECHNICAL introduction
> Cost of the system design. EMC² multi-core architecture, with its development ecosystem of improved programmability, dynamic runtime environment and tool suite, eases design and analysis.
> Effort and time required for revalidation and recertification of systems after making changes: through architectural support for mixed-critical applications, the early consideration of non-functional properties and the holistic integration of development and validation/certification activities in the EMC² interoperability framework.
> Management of increased complexity. EMC² multi-core architecture and the development ecosystem reduce software complexity and leverage the benefits of module consolidation.
> Cross-sector reusability of Embedded Systems devices and architecture platforms: through cross-sector embedded hardware architecture including a dynamic runtime environment.

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IRIB
Instituto de Microeletronicas Aplicaciones
ISEP Institute of Space Informatics
Israel Industry & Aerospace IL
Kompetenzzentrum - Das virtuelle Fahrzeug Forschungsverbundgesellschaft
CET Royal Institute of Technology
Jules University of Technology
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