



Call for Papers of Special Session on Mixed-Criticality System Design, Implementation and Analysis (MCSDIA) at 17th Euromicro Conference on Digital System Design (DSD), 27-29 August 2014, Verona, Italy

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DESCRIPTION

Modern embedded appliances already integrate a multitude of functionalities with potentially different criticality levels into a single system and this trend is expected to grow in the near future. The integration of multiple functions with different criticality and certification assurance levels on a shared computing platform constitutes a mixed-criticality system (MCS). Mixed-criticality systems range from lowest assurance requirements up to the highest criticality levels (e.g., DAL A in RTCA DO-178B or SIL4 in EN ISO/IEC 61508 and 26262). In many domains such as automotive, avionics and industrial control, the economic success depends on the ability to design, implement, qualify and certify advanced real-time embedded systems within bounded time, effort and costs. Without appropriate preconditions, the integration of mixed-criticality subsystems can lead to a significant and potentially unacceptable increase of engineering and certification costs. There are several ongoing research initiatives studying mixed-criticality integration in single and multicore processors, as well as on distributed systems. Key challenges are the combination of software virtualization and hardware segregation and the extension of partitioning mechanisms jointly addressing significant extra-functional requirements (e.g., time, energy and power budgets, adaptivity, reliability, safety, security, volume, weight, etc.) along with a proven development and certification methodology. To support the design and implementation of mixed-criticality systems, new design techniques and tools for the analysis of extra-functional properties are required.

SPECIAL SESSION SCOPE

This special session aims at gathering contributions regarding the design, implementation and analysis of mixed-criticality systems within a dedicated forum. Papers on any of the following and related topics will be considered for the special session:

Task and system models for mixed-criticality systems on single and multicore platforms, mechanisms for temporal and spatial partitioning, physical resource virtualization for temporal and spatial segregation, resource partitioning to achieve composability in multiple dimensions (time, power, temperature, ...), solutions for shared communication resource partitioning, resources partitioning techniques at chip and cluster level, dynamic resource management for services of mixed-criticality, multi-physical component- and model-based design techniques, (composable) analysis of extra-functional properties (like timing, power, temperature, safety and security), reliability and energy integrity of services with mixed-criticality, dependable operation of battery-driven/mobile mixed-criticality systems, requirements engineering and traceability for mixed-criticality systems, modular safety cases, (incremental) verification of extra-functional properties, composable certification techniques, design-space exploration for multi-physical mixed-criticality systems, and industrial case-studies.

SUBMISSION GUIDELINES

Prospective authors are encouraged to submit their manuscripts for review electronically through the following web page (<http://www.easychair.org/conferences/?conf=dsd2014>) or by sending the paper to the Session Chair via email (but only if an unexpected web access problem is encountered) before the deadline for submission (kim.gruettner@offis.de).

Each manuscript should include the complete paper text, all illustrations, and references. The manuscript should conform to the required IEEE format: single-spaced, double column, A4/US letter page size, 10-point size Times Roman font, up to 8 pages. In order to conduct a blind review, no indication of the authors' names should appear in the submitted manuscript, it should be written so that no clue of who the authors are may be found, and this includes treating any previous work or self-reference as third party efforts.

The IEEE Conference Publishing Services (CPS), publishes the DSD Proceedings, which are available worldwide through the IEEE Xplore Digital Library. An extended version of the best papers will be published in a special issue of the ISI-indexed "Microprocessors and Microsystems: Embedded Hardware Design" journal, printed by Elsevier Ltd.

IMPORTANT DATES (EXTENDED)

- **Submission of papers: April 6th April 20th, 2014**
- Notification of acceptance: ~~May 25th~~ June 16th, 2014
- Camera ready papers: ~~June 15th~~ July 2nd, 2014

WEB LINKS

- DSD'14 web page:
<http://www.euromicro.org/dsd/>
- Euromicro web page:
<http://www.euromicro.org>