



# 1<sup>st</sup> International Workshop on Software Architectures for Next-generation Cyber-physical Systems

Dubrovnik/Cavtat, Croatia

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## Call for Papers to SANCS 2015

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Cyber-physical systems (CPS) is a fast growing area because of application domains such as automotive, healthcare, smart grids, or industrial automation. Traditional cyber-physical systems usually consisted of one dedicated function programmed by domain experts (e.g., electrical engineering), whose implementation contains few thousands lines of code.

Over the last 50 years, the hardware of CPS has become much more capable (e.g., multi-core CPUs) and new requirements have emerged such as Internet connectivity, autonomous behavior, or user-friendly interfaces. This has led to an enormous growth of both the volume and complexity of CPS software, which can reach several million lines of highly interrelated code. To efficiently maintain such a large amount of code, a proper software architecture must be in place that supports quality attributes such as maintainability, modifiability, or reusability.

Cyber-physical systems need software architecture at the system level as well as at the level of individual processing nodes, thus encompassing both, for example, solutions for adaptive collaboration and orchestration and for efficient use of modern heterogeneous hardware platforms. CPS also face the challenge of large amounts of legacy software that must evolve onto new platforms with new architectures. Whereas many architectural patterns are applicable to cyber-physical systems (e.g., component-based architecture), some are not directly applicable, and novel patterns may be required.

The goal of the SANCS workshop is to gather researchers and practitioners in the area of software architecture for cyber-physical systems to share opinions, identify key challenges and propose solutions. The workshop aims at addressing how the new trends affect the traditional architecture styles of embedded systems, as well as the challenges introduced by the complexity of the systems to come.

### Topics

Topics of interest include, but are not limited to, the following:

- Component- and model-based CPS architectures
- Architectural decisions and decision support for CPS development
- Architectural quality attributes and architecture-level analysis of e.g. timing or resource usage
- Virtualization of computation and communication resources
- Architecture evolution, maintenance and reengineering of CPS
- Architecture-based security measures
- Architecture documentation for CPS
- Architectural support for scalable parallel systems
- Service-oriented architecture for CPS
- Architectural Knowledge Management

### Important dates

Paper submission: **June 8 (firm)**; Notification: June 19; Camera-ready: June 26

### Paper Submission and Publication

We solicit two categories of papers:

- Regular papers (maximum 6 pages): Original papers that present novel research contributions and address relevant problems in the area of the workshop.
- Short papers (maximum 4 pages): This category includes position papers, tool demonstrations, industrial experience reports and case-studies.

All papers will be evaluated by at least three members of the Program Committee. Papers must describe, in English, original work that has not been published or submitted elsewhere, and should follow the ACM format and submission guidelines (<http://www.acm.org/signs/publications/proceedings-templates>). PDF versions of papers should be submitted through the EasyChair system. Accepted papers will be published by ACM.

### SANCS'15 Webpage



<http://www.mrtc.mdh.se/SANCS15>

### LinkedIn Group



<https://www.linkedin.com/groups?gid=8261511>