

# Special Section of the ACM Transactions on Embedded Computing Systems

## *Architecture-Centric Virtual Integration*

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### Call for Contributions

Real-time systems have increasingly complex architecture requirements because of the intricate inter-dependence of advanced hardware technologies they support in addition to engineering requirements of reusability, interoperability, flexibility and portability. These new dimensions favor the use of a purpose-specific architecture description language to offers a global repository and multiple viewpoints on the system under design, and in which it is suitable to handle real-time and non-functional characteristics of the system. The conceptual framework of Cyber-Physical Systems (CPS) makes real-time system design even more challenging with the added complexity of physics in the loop and hardware distribution. The purpose of this special section is to provide an opportunity to gather researchers and industrial practitioners to survey existing efforts related to behavior modelling and model-based analysis of CPS systems.

This special section of the ACM TECS is related to the International Workshop on Architecture-Centric Virtual Integration, held in conjunction with MODELS'14 (<http://www.aadl.info/aadl/avci>) and will consider the best papers selected from its proceedings for publication. However, papers that are not part of the MODELS'14 will also be considered for publication, and will go through the same review process as those appearing in MODELS'14.

### Topics

Cyber-Physical systems (CPS) combine many challenges to meet requirements for reusability, interoperability, flexibility or dependability. The use of architecture description language helps to integrate components before implementing the system. Such integration approach eases system design analysis and implementation, detects design errors and potential defects before development efforts, avoiding re-engineering costs and making the system more robust and safe.

This special section seeks contributions from researchers and practitioners interested in architecture-centric methods and their use to design and analyze systems. The conference topics of interest are:

- Modeling Notations: new language, inter-operability between languages
- Architecture Centric Analysis Tools
- Virtual Integration Process and Tools
- Definition of extensions for the design of specific systems (e.g. avionics) or support of a particular analysis (e.g., safety)
- Automatic Code Generation from Models
- Model Transformation
- Model Analysis Methods
- Support of Certification (e.g. DO178, DO330) using Models
- Industrial experiences of use of Model-Based technologies

## **Important Dates**

- Submission Deadline: December, 1 2014
- Acceptance Notification: 1 February 2015
- Final Papers: 1 March 2015
- Publication: Summer 2015

## **Submission Guidelines**

Conference papers may only be submitted if the paper was completely re-written or substantially extended (30%). The extension requirement by 30% is not in textual volume but in novelty. This is very important to remember. The papers should be submitted via the Manuscript Central website and should adhere to standard ACM TECS formatting requirements. The page count limit is 25. Authors should submit their journal version at Manuscript Central adhering to the formatting instructions on the TECS Web page and indicate that you are submitting to the Special Section. For additional questions please send an email to the Guest Editors.

## Guest Co-Editors

- Julien Delange - Carnegie Mellon Software Engineering Institute - [jdelange@sei.cmu.edu](mailto:jdelange@sei.cmu.edu)
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