2nd International Workshop on Model Based Architecting and Construction of Embedded Systems (ACES^{MB} 2009)

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In conjunction with MoDELS 2009, Denver, Colorado, USA

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Motivation

The development of embedded systems with real-time and other critical constraints raises distinctive problems. In particular, development teams have to make very specific architectural choices and handle key non-functional constraints related to, for example, real-time deadlines and to platform parameters like energy consumption or memory footprint. In this context, the last few years have seen an increased interest in using model-based engineering (MBE) techniques. MBE techniques are interesting and promising for the following reasons: They allow to capture dedicated architectural and non-functional information in precise (and even formal) domain-specific models, and they support a layered construction of systems, in which the (platform independent) functional aspects are kept separate from architectural and non-functional (platform specific) aspects, where the final system is obtained by combining these aspects later using model transformations.

Objective

The objective of this workshop is to bring together researchers and practitioners interested in model-based software engineering for real-time embedded systems. We are seeking contributions relating to this subject at different levels, from modelling languages and semantics to concrete application experiments, from model analysis techniques to model-based implementation and deployment. Given the criticality of the application domain, we particularly focus on model-based approaches yielding efficient and provably correct designs. Concerning models and languages, we welcome contributions presenting novel modelling approaches as well as contributions evaluating existing ones. We target in particular:

- **Architecture description languages (ADLs)**. Architecture models are crucial elements in system and software development, as they capture the earliest decisions which have a huge impact on the realisation of the (non-functional) requirements, the remaining development of the system or software, and its deployment. We are particularly interested in examining:
  - Position of ADLs in an MDE approach;
  - Relations between architecture models and other types of models used during requirement engineering (e.g., SysML, EAST-ADL, AADL), design (e.g., UML), etc.;
  - Techniques for deriving architecture models from requirements, and deriving high-level design models from architecture models;
  - Verification and early validation using architecture models.
- **Domain specific design and implementation languages**. To achieve the high confidence levels required for critical embedded systems through analytical methods, in practice languages with particularly well-behaved semantics are often used, such as synchronous languages and models (Lustre/SCADE, Signal/Polychrony, Esterel), super-synchronous models (TTA, Giotto), scheduling-friendly models (HRT-UML, Ada Ravenscar), or the like. We are interested in examining the model-oriented counterparts of such languages, together with the related analysis and development methods.
- **Languages for capturing non-functional constraints** (MARTE, AADL, OMEGA, etc.)
- **Component languages and system description languages** (SysML, MARTE, EAST-ADL, AADL, BIP, FRACTAL, Ptolemy, etc.).

Workshop Format

This full-day workshop will consist of an introduction by the organizers, presentations of accepted papers, an in-depth discussion of a set of topics that are identified by the attendees, and a concluding session presenting the results of the discussion groups.

Submissions

Attendees are invited to submit a short position paper (max. 5 pages) or a full technical contribution (max. 15 pages) in PDF format. Submissions must conform to the Springer LNCS formatting guidelines. Papers can be submitted online at http://www.easychair.org/conferences/?conf-acesmb09. The authors will be notified about acceptance before the MoDELS 2009 early registration deadline. Only full papers can be candidate for the best paper award (which will be included in the MoDELS 2009 Workshop Proceedings). All accepted papers (full and short) will be published in the Workshop Proceedings, which will be distributed electronically via CEUR-WS.org, and potentially in hardcopy form.

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