Workshop Proceedings

ACES^{MB} 2008

First International Workshop on Model Based Architecting and Construction of Embedded Systems

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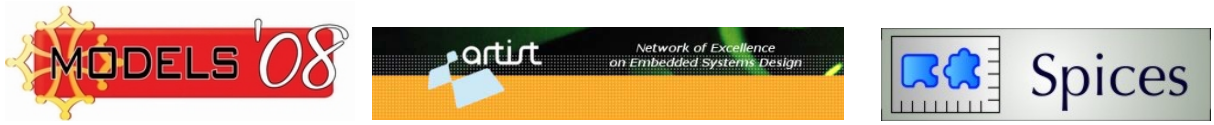

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Foreword

The development of embedded systems with real-time and other types of critical constraints implies handling very specific architectural choices, as well as various types of critical non-functional constraints (related to real-time deadlines and to platform parameters, such as energy consumption and memory footprint). The last few years have seen a growing interest in (1) using precise (preferably formal) domain-specific models for capturing such dedicated architectural and non-functional information, and (2) using model-driven engineering (MDE) techniques for combining these models with platform independent functional models to obtain a running system. As such, MDE can be used as a means for developing analysis oriented specifications that represent the design model at the same time.

The objective of this workshop is to bring together researchers and practitioners interested in all aspects of model-based software engineering for real-time embedded systems. We target this subject at different levels, from modelling languages and related semantics to concrete application experiments, from model analysis techniques to model-based implementation and deployment. In particular the workshop focus on the following:

- Architecture description languages (ADLs). Architecture models are crucial elements in system and software development, as they capture the earliest decisions that have a huge impact on the realisation of the (non-functional) requirements, the remaining development of the system or software, its deployment, etc. In particular, we are interested in examining:
    - the position of ADLs in an MDE approach
    - the relation between architecture models and other types of models used during requirement engineering (e.g., SysML), 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 from critical embedded systems through analytical methods, specific languages with particularly well-behaved semantics are often used in practice, such as synchronous languages and models (Lustre/SCADE, Signal/Polychrony, Esterel), time triggered models (TTA, Giotto), scheduling-oriented models (HRT-UML, Ada Ravenscar), etc. 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 (UML-MARTE, AADL, OMEGA, etc.)

- Component languages and system description languages (SysML, BIP, FRACTAL, Ptolemy, etc.).

We received 16 submissions from 8 different countries, of which 10 papers were accepted for the workshop. We hope that the contributions for the workshop and the discussions during the workshop will help to contribute and provide interesting new insights in Model Based Architecting and Construction of Embedded Systems.

The ACES^{MB} 2008 organising committee,

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