ADVANCES IN DESIGN AND SPECIFICATION LANGUAGES FOR SoCs
Advances in Design and Specification Languages for SoCs

Selected Contributions from FDL’04

Edited by

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This book is the sixth in the ChDL (Chip Design Languages) series. Year 2004 has seen many efforts in the field of electronic and mixed technology circuit design languages. The industry has recognized the need for system level design as a way to enable the design of the next generation of embedded systems. This is demonstrated by the “ESL Now!” campaign that many companies are promoting. This year has also seen many interesting standardization efforts for system level design, such as SystemC TLM (http://www.systemc.org/) for transactional level modeling with SystemC, AUTOSAR (http://www.autosar.org/) for automotive embedded system applications, or SPIRIT (http://www.spiritconsortium.org/) for IP interchange. In the field of modeling languages, the Model Driven Architecture of the OMG (http://www.omg.org/mda/) has given rise to model driven engineering, which is a more general way of software engineering based on model transformations. As embedded systems are more and more programmable and as the design abstraction level rises, model driven methodologies are also considered for electronic system level design. In this context, the OMG has recently published a call for propositions for a UML 2.0 profile for Modeling and Analysis of Real-Time and Embedded systems (MARTE).

The constraints on the design process of these next generation embedded systems are considerable: Real-time, power consumption, complexity, mixed technology integration, correctness, time to market, cost, . . ., all contribute to the now famous “design gap”. The existing tools are pushed to their limits when designing complex systems-on-chip (SoCs) and reuse has become one of the major ways to fill the gap.

In this very exciting moment in the field of electronic system design languages, the Forum on Specification and Design Languages (FDL’04) has been once again the main European event for this community. This book is a collection of the best papers from FDL’04 selected by the program chairs, Alain Vachoux, Piet van der Putten, Eugenio Villar and Wolfgang Müller.
This book is structured in four parts:

- **Part I, Analog and Mixed-Signal Systems**, presents five chapters covering issues in mixed-signal modeling.

- **Part II, UML-Based System Specification and Design**, is composed of five chapters with emphasis on model transformation approaches to system modeling.

- **Part III, C/C++-Based System Design**, is also structured as five chapters with SystemC as its main topic.

- **Part IV, Invited Contributions**, concludes the book with two invited chapters presenting the important topic of system verification, and the AUTOSAR initiative.

Together, the 17 chapters of this book present recent research advances in design and specification languages for SoCs. I hope that this book will be a thought provoking read to researchers, students and practitioners in the field of languages for electronic system design.

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Lille, France, April 2005

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**Previous books**


