

Proceedings

Joint Meeting of

**The Fourth Workshop on
Model-Based Development of
Computer-Based Systems**

and

**The Third International Workshop on
Model-Based Methodologies
for Pervasive and Embedded Software**

MBD/MOMPES 2006

30 March 2006 • Potsdam, Germany

Edited by

Ricardo J. Machado
João M. Fernandes
Matthias Riebisch
Bernhard Schätz


IEEE
COMPUTER
SOCIETY

 **IEEE**

Los Alamitos, California

Washington • Tokyo

Copyright © 2006 by The Institute of Electrical and Electronics Engineers, Inc.
All rights reserved.

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries may photocopy beyond the limits of US copyright law, for private use of patrons, those articles in this volume that carry a code at the bottom of the first page, provided that the per-copy fee indicated in the code is paid through the Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

Other copying, reprint, or republication requests should be addressed to: IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, P.O. Box 133, Piscataway, NJ 08855-1331.

The papers in this book comprise the proceedings of the meeting mentioned on the cover and title page. They reflect the authors' opinions and, in the interests of timely dissemination, are published as presented and without change. Their inclusion in this publication does not necessarily constitute endorsement by the editors, the IEEE Computer Society, or the Institute of Electrical and Electronics Engineers, Inc.

IEEE Computer Society Order Number P2538
ISBN-13: 978-0-7695-2538-9
ISBN-10: 0-7695-2538-5
Library of Congress Number 2005938590

Additional copies may be ordered from:

IEEE Computer Society
Customer Service Center
10662 Los Vaqueros Circle
P.O. Box 3014
Los Alamitos, CA 90720-1314
Tel: + 1 800 272 6657
Fax: + 1 714 821 4641
<http://computer.org/cspress>
csbooks@computer.org

IEEE Service Center
445 Hoes Lane
P.O. Box 1331
Piscataway, NJ 08855-1331
Tel: + 1 732 981 0060
Fax: + 1 732 981 9667
[http://shop.ieee.org/store/
customer-service@ieee.org](http://shop.ieee.org/store/customer-service@ieee.org)

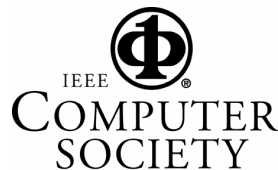
IEEE Computer Society
Asia/Pacific Office
Watanabe Bldg., 1-4-2
Minami-Aoyama
Minato-ku, Tokyo 107-0062
JAPAN
Tel: + 81 3 3408 3118
Fax: + 81 3 3408 3553
tokyo.ofc@computer.org

Individual paper REPRINTS may be ordered at: reprints@computer.org

Editorial production by Stephanie Kawada

Cover art production by Joe Daigle/Studio Productions

Printed in the United States of America by Applied Digital Imaging



IEEE Computer Society
Conference Publishing Services

<http://www.computer.org/proceedings/>

Proceedings



MBD/MOMPES 2006

Table of Contents

Message from the Organizers	vii
MBD/MOMPES 2006 Committees	viii

Invited Papers

SODA: Not Just a Drink! From an Object-Centered to a Balanced Object-Process Model-Based Enterprise Systems Development.....	3
<i>Dov Dori</i>	
Model-Based Specification and Validation of Automotive Electronics	15
<i>Torsten Schultz</i>	

Regular Papers

Embedded and Real-Time Applications

Design Method Support for Domain Specific SoC Design	25
<i>Marcus Alanen, Johan Lilius, Ivan Porres, Dragos Truscan, Ian Oliver, and Kim Sandström</i>	
Model-Driven Development of Real-Time Systems with UML 2.0 and C	33
<i>Mohammad Ullah Khan, Kurt Geihs, Felix Gutbrodt, Peter Göhner, and Roland Trauter</i>	

Model-Based System Development for Embedded Mobile Platforms	43
<i>Bertalan Forstner, László Lengyel, Tihamér Levendovszky, Gergely Mezei, Imre Kelényi, and Hassan Charaf</i>	
Model-Based Engineering of Embedded Control Software	53
<i>Bernhard Schätz</i>	
Intelligent Instrument Design with ArchWare ADL	63
<i>Jérôme Revillard, Sorana Cîmpan, Eric Benoit, and Flavio Oquendo</i>	
Software Architectures	
Comparison of Model-Driven Architecture and Software Factories in the Context of Model-Driven Development	75
<i>Ahmet Demir</i>	
CMOF-Model Semantics and Language Mapping for MOF 2.0 Implementations	84
<i>Markus Scheidgen</i>	
Concepts for Abstracting Away Object Reification at the Level of Platform Independent Models (PIMs)	94
<i>Geert Delanote and Eric Steegmans</i>	
Towards Weaving Software Architecture Models	103
<i>Davide Di Ruscio, Henry Muccini, Alfonso Pierantonio, and Patrizio Pelliccione</i>	
A Generic MOF Metamodel for Aspect-Oriented Modelling	113
<i>Lidia Fuentes and Pablo Sánchez</i>	
Model-Driven Methodologies	
From Code Centric to Model Centric Software Engineering: Practical Case Study of MDD Infusion in a Systems Integration Company	125
<i>Margarida Afonso, Regis Vogel, and Jose Teixeira</i>	
An EDOC-Based Approach for Specific Middleware Services Development	135
<i>Rita Suzana Pitangueira Maciel, Bruno Carreiro da Silva, and Leandro Abreu Mascarenhas</i>	
Modelling and Verification of BPEL Business Processes	144
<i>Marina Mongiello and Daniela Castelluccia</i>	
Model Patterns for Model Transformations in Model Driven Development	149
<i>Markus Scheidgen</i>	
Component-Oriented Modeling of Hybrid Dynamic Systems Using the Generic Modeling Environment	159
<i>Eric-J. Manders, Gautam Biswas, Nagabhushan Mahadevan, and Gabor Karsai</i>	
Author Index	169