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Modelling Methodologies and Simulation Key Technologies in Academia and Industry

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Edited by:

Wolfgang Borutzky

Alessandra Orsoni

Richard Zobel

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PREFACE

The 2006 European Conference on Modelling and Simulation (ECMS 2006) is a particularly significant event. Organised by the European Council on Modelling and Simulation (ECMS) and co-sponsored by the Society for Modelling and Simulation International (SCSI), it is the 20th conference in its well established series. Bonn-Rhein-Sieg University of Applied Sciences is pleased to host this conference one year after the 10th anniversary of the University's foundation.

ECMS 2006 is a truly international conference with an attraction far beyond Europe. This is well reflected by the 115 accepted papers by 242 authors from 35 countries (from Europe, the Americas, Asia and Africa).

The scientific programme of the conference comprises twelve thematic tracks, a student session and an exhibition. In addition, ECMS 2006 is joint by two collocated conferences, the High Performance Computing and Simulation Conference (HPC&S) and the 13th International Conference on Analytical and Stochastic Modelling Techniques and Applications (ASMTA), which contribute some another 40 accepted papers.

On the one hand, the ECMS 2006 scientific programme continues with the tradition of some well established and successful tracks, on the other hand, new tracks have been included, e. g., on Bond Graph modelling, or on Modelling and Simulation Methodologies respectively. The conference title Modelling Methodologies & Simulation - Key Technologies in Academia and in Industry well reflects the variety of subjects addressed by the contributed papers.

It gives us particular pleasure to have distinguished keynote speakers to this conference. Firstly, Prof. Zadeh, well known for pioneering development of fuzzy logic, for which he received the IEEE Metal of Honour, accepted to make the long trip from Berkeley to Sankt Augustin. His keynote address will be on Computation with Information Described in Natural Language.

Furthermore, we have Prof. Cellier, the acting President of the SCS. He has been active in leading positions in many major international conferences on modelling and simulation, especially in the International Conference on Bond Graph Modelling and Simulation. Thus, it not really surprising that he is presenting a keynote speech related to bond graph modelling.

Our third keynote speaker is Prof. Trottenberg from Cologne University who is also head of the Fraunhofer Research Institute for Scientific Computing and Algorithms (SCAI) in Sankt Augustin, Germany. He is internationally well recognised for his contributions to the multigrid method, which is especially efficient for the solution of many large-scale problems based on partial differential equations.

Finally, we are pleased to have Prof. S. Junco from the National University of Rosario, Argentina as an invited plenary speaker to the track on Bond Graph modelling. His talk well complements the keynote speech of Prof. Cellier on wrapping Multi-bond Graphs and the tutorial on Bond Graph modelling. In other words, Bond Graph modelling is one of topics on which this year's ECMS focuses.

The chairpersons of this conference would like to thank all authors for their contributions, the track chairpersons for encouraging colleagues, students and friends in their field and for organising the reviewing process. Our special thanks go to the referees for their time and their efforts in reviewing all submitted papers. With their expertise and with valuable comments in most cases, they helped to maintain a high scientific quality of the conference.

We would like to thank the Local Organisation Committee, chaired by Dr. Udo Scheuer, for their efforts with all aspects of local arrangements. Furthermore, our thanks are due to Martina-M. Seidel for running the ECMS office and to Prof. Andrzej Bargiela, the chairman of the European Council on Modelling and Simulation, for his efforts and his work in the background.

Last but not least, the General Conference Chairman would like to express his gratitude to Prof. W. Fischer, the rector of Bonn-Rhein-Sieg University, for his support.

We wish the participants of ECMS 2006 many interesting discussions, opportunities for the exchange of ideas, for intensifying contacts, and for establishing new co-operations. We look forward to see many of you again next year in Prague.

Wolfgang Borutzky

Alessandra Orsoni

Richard Zobel

General Conference Chair

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April, 2006

The 2006 High Performance Computing & Simulation (HPC&S) Conference

May, 28th – 31st, 2006

Bonn-Rhein-Sieg Univ. of Applied Sciences, Germany

In conjunction with
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THE 2006 HPC&S FOREWORD

On behalf of the organizers and International Program Committee, I would like to welcome you to the 2006 High Performance Computing and Simulation (HPC&S 2006) Conference held in Bonn, Germany, May 28-31, 2006, in conjunction with ECMS 2006. This conference will provide a dynamic forum to address, explore, and exchange information, knowledge, and experiences in the state-of-the-art in high performance computing systems, their modelling and simulation, design and use, and impact. HPC&S brings together researchers, scientists, engineers, practitioners, educators, and students from many nations and backgrounds to exchange their insights, breakthroughs, and research results about aspects of these systems and their technologies; to discuss challenges encountered in government, industry, and academe; and to seek new and innovative solutions. Additionally, we hope that the conference will present opportunities for many open technical interchanges in individual and group settings on key technology issues, during the conference and the potential for future collaborations among the participants, afterwards.

Current research in university and industry provides a new generation of HPC systems to create fully interconnected communities of interest and practice with decision quality information in compressed time cycles. Through modelling and simulation, knowledge sharing and discovery, and just-in-time global grid-based information processing, individuals and groups will work together and make better, not just faster, decisions. The technologies and research presented in HPC&S meetings will provide the foundations upon which these next generation systems will be built.

On behalf of the Organizing and Program Committees, I would like to thank the many people who helped make this conference successful. I thank all authors who submitted their work to HPC&S 2006 and who are presenting in Bonn. Our excellent collections of papers and presentations were possible through the diligent work of the International Technical Program Committee. The ITPC members and reviewers did an exceptional job and we are grateful for their help in reviewing and evaluating the paper submissions. For the first time, the conference this year had two workshops that were organized by Prof. Christian Toinard, Drs. Jean-François Lalande, Patrice Clemente, and Baback Izadi. We are thankful for their efforts and contributions. We strongly urge all participants to organize workshops and special sessions in their area of interest in future meetings and thus grow the community.

The conference this year comprises of 16 out of a total of 29 papers submitted, with an acceptance rate of 55.17%. Each paper was assigned to 4-5 reviewers and the majority of authors received at least 3-4 reviews back. Due to the TPC members' timely response, we were able to meet various deadlines we had planned for the track.

We wish to thank the European Council for Modelling and Simulation members for their hard work, support, and advice, which made the conference a success. And last but not least, I thank Ms. Martina Seidel, the HPC&S 2006 Conference Manager for her continual support throughout the year to make this conference possible in every way.

We thank all of our attendees for making ECMS 2006 an extraordinary and enjoyable event. We hope you find this year's conference stimulating and worthwhile and look forward to seeing you in Prague, The Czech Republic, June 3 – 6, 2007, for HPC&S 2007.

Waleed W. Smari
HPC&S 2006 Program Chair
Dayton, Ohio, USA
April 2006

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13TH INTERNATIONAL CONFERENCE

ON

**ANALYTICAL AND STOCHASTIC MODELLING
TECHNIQUES AND APPLICATIONS**

28-31 May 2006

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