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Abstract State Machines, Alloy, B, VDM, and Z

Third International Conference, ABZ 2012
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Preface to iFM & ABZ 2012

iFM 2012, the 9th International Conference on Integrated Formal Methods, and ABZ 2012, the Third International Conference on Abstract State Machines, Alloy, B, VDM, and Z, joined together in a single event, iFM&ABZ 2012, to celebrate Egon Börger's 65th birthday and his contribution to state-based formal methods.

This co-location of iFM&ABZ 2012 was hosted by the Institute of Scienza e Tecnologie dell'Informazione A. Faedo of the National Research Council (ISTI-CNR) of Italy and took place at the Area della Ricerca del CNR in Pisa during June 18–21, 2012.

We would like to thank everyone in Pisa for making us feel very welcome during our time there. It was a pleasure to run an event to honor Egon.

Professor Egon Börger was born in Bad Laer, Lower Saxony, Germany. Between 1965 and 1971 he studied at the Sorbonne, Paris (France), Université Catholique de Louvain and Institut Supérieur de Philosophie de Louvain (in Louvain-la-Neuve, Belgium), and the University of Münster (Germany). Since 1985 he has held a Chair in Computer Science at the University of Pisa, Italy. In September 2010 he was elected a member of the Academia Europaea.

Throughout his work he has been a pioneer of applying logical methods in computer science. Particularly notable is his contribution as one of the founders of the Abstract State Machine (ASM) method. Egon Börger has been cofounder and Managing Director of the Abstract State Machines Research Center (see `www.asmcenter.org`).

Building on his work on ASM, he was a cofounder of the series of international ASM workshops, which was part of this year's conference held under the ABZ banner. He contributed to the theoretical foundations of the method and initiated its industrial applications in a variety of fields, in particular programming languages, system architecture, requirements and software (re-)engineering, control systems, protocols, and Web services. In 2007, he received the Humboldt Research Award.

He has been coauthor of several books and over 150 research papers, and organizer of over 30 international conferences, workshops, and schools in logic and computer science.

As one can see, his influence has been broad as well as deep. It is an influence that one sees in all of the notations covered in the ABZ conference, as well as in the iFM event and the various integrations and combinations of formal methods seen there. Neither iFM nor ABZ have been here before, and it is thus especially fitting that we hold such an event in Pisa, where Egon has held a chair for many years.

In addition to contributed papers, the conference program included two tutorials and three keynote speakers. The tutorials were offered by: Eric C.R. Hehner on Practical Predicative Programming Primer; Joost-Pieter Katoen, Thomas Noll, and Alessandro Cimatti on Safety, Dependability, and Performance Analysis of Extended AADL Models. We are grateful to Egon Böerger, Muffy Calder, and Ian J. Hayes, for accepting our invitations to address the conference.

Each conference, ABZ and iFM, had its own Program Committee Chairs and Program Committees, and we leave it to them to describe their particular conference. We shared invited speakers, so all conference attendees had the opportunity to hear Egon, Muffy, and Ian. We also shared some technical sessions so that all participants could see some of the best technical work from each conference.

We would like to thank the Program Committee Chairs, Diego Latella, CNR/-ISTI, Italy, Helen Treharne, University of Surrey, UK, for IFM 2012; Steve Reeves, University of Waikato, New Zealand, and Elvinia Riccobene, University of Milan, Italy, for ABZ 2012 for their efforts in setting up two high-quality conferences.

We also would like to thank the members of the Organizing Committee as well as several other people whose efforts contributed to making the conference a success and particular thanks go to the Organizing Committee Chair Maurice ter Beek.

April 2012

John Derrick
Stefania Gnesi

Preface to the Volume

The Third International ABZ 2012 Conference was held in Pisa (Italy), during June 18–21, 2012, in conjunction with iFM 2012, the 9th International Conference on Integrated Formal Methods, as a joint event in honor of Egon Börger's 65th birthday. The iFM proceedings appear as a separate LNCS volume, number 7321.

The ABZ conference series is dedicated to the cross-fertilization of five related state-based and machine-based formal methods: Abstract State Machines (ASM), Alloy, B, VDM and Z. They share a common conceptual foundation and are widely used in both academia and industry for the design and analysis of hardware and software systems. The main goal of this conference series is to contribute to the integration of these formal methods, clarifying their commonalities and differences to better understand how to combine different approaches for accomplishing the various tasks in modeling, experimental validation, and mathematical verification of reliable high-quality hardware/software systems.

The edition of ABZ to which this volume is dedicated follows the success of the first ABZ conference held in London (UK) in 2008, where the ASM, B, and Z conference series merged into a single event, and the success of the second ABZ 2010 conference held in Orford (Canada) where the Alloy community joined the event. The novelty of this third international event is the inclusion of the VDM community in the ABZ conference series.

ABZ 2012 received 59 submissions from all five research communities. Although organized as a single event, editorial control of the conference was vested in five separate Program Committees, one for each group: ASM, Alloy, B, VDM, and Z. Each submission was reviewed by at least three Program Committee members, and 33 papers were accepted for publication in this volume and presentation at the conference: 20 long papers covering a broad spectrum of research, from fundamental to applied work, and 13 short papers of work in progress, industrial experience reports, and tool demonstrations.

The ABZ program included two invited talks: one was given by Egon Börger, to whom this event is dedicated and whose paper also appears in the iFM proceedings, and one by Ian J. Hayes from the University of Queensland, Australia.

Organizing and running this event required a lot of effort from several people. We wish to thank all the Program Chairs, all members of the Program Committee, and all the external reviewers for their precise, careful evaluation of the papers and for their availability during the discussion period which considered each paper's acceptance. We wish to express our deepest gratitude to the CNR Institute in Pisa, which supported the event and provided all the necessary organizational support, and we also thank all the sponsors for their financial support.

The conference was managed with EasyChair, which was a valuable support for the submission and review process, and for the preparation of this volume.

A particular special thanks to Egon Börger, master of science and life.

April 2012

Steve Reeves
Elvinia Riccobene

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