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Marjan Sirjani (Ed.)

# Coordination Models and Languages

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Proceedings

Volume Editor

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# Foreword

In 2012, the 7th International Federated Conferences on Distributed Computing Techniques (DisCoTec) took place in Stockholm, Sweden, during June 13–16. It was hosted and organized by KTH Royal Institute of Technology. The DisCoTec 2012 federated conference was one of the major events sponsored by the International Federation for Information Processing (IFIP) and it acted as an umbrella event for the following conferences:

- The 14th International Conference on Coordination Models and Languages (Coordination)
- The 12th IFIP International Conference on Distributed Applications and Interoperable Systems (DAIS)
- The 14th Formal Methods for Open Object-Based Distributed Systems and 32nd Formal Techniques for Networked and Distributed Systems (FMOODS/FORTE)

Together, these conferences cover the complete spectrum of distributed computing subjects ranging from theoretical foundations to formal specification techniques to systems research issues.

At a plenary session of the conferences, Schahram Dustdar of Vienna University of Technology and Bengt Jonsson of Uppsala University gave invited talks. There was also a poster session, and a session of invited talks from Swedish companies involved in distributed computing: Spotify, Peerialism, and Severalnines. In addition to this, there were three workshops:

- The Third International Workshop on Interactions Between Computer Science and Biology (CS2BIO) with keynote talks by Jane Hillston (University of Edinburgh, UK) and Gianluigi Zavattaro (University of Bologna, Italy)
- The 5th Workshop on Interaction and Concurrency Experience (ICE) with keynote lectures by Marcello Bonsague (Leiden University, The Netherlands) and Ichiro Hasuo (Tokyo University, Japan)
- The 7th International Workshop on Automated Specification and Verification of Web Systems (WWW) with a keynote talk by José Luiz Fiadeiro (University of Leicester, UK)

I would like to thank the Program Committee Chairs of each conference and workshop for their effort. The organization of DisCoTec 2012 was only possible thanks to the dedicated work of the Publicity Chair Ivana Dusparic (Trinity College Dublin, Ireland), the Workshop Chair Rui Oliveira (Universidade do Minho, Portugal), the Poster Chair Sarunas Girdzijauskas (Swedish Institute of Computer Science, Sweden), the Industry-Track Chair György Dán (KTH Royal College of Technology, Sweden), and the members of the Organizing Committee

from KTH Royal Institute of Technology and the Swedish Institute of Computer Science: Amir H. Payberah, Fatemeh Rahimian, Niklas Ekström, Ahmad Al-Shishtawy, Martin Neumann, and Alex Averbuch. To conclude I want to thank the sponsorship of the International Federation for Information Processing (IFIP) and KTH Royal Institute of Technology.

June 2012

Jim Dowling

# Preface

This volume contains the papers presented at Coordination 2012: the 14th International Conference on Coordination Models and Languages held during June 13–14, 2012, in Stockholm. The conference focused on the design and implementation of models that allow compositional construction of large-scale concurrent and distributed systems, including both practical and foundational models, runtime systems, and related verification and analysis techniques.

The Program Committee (PC) of Coordination 2012 consisted of 31 top researchers from 14 countries. We received a total of 55 submissions from 23 countries out of which the PC selected 18 papers. Each submission was reviewed by at least three independent referees. After a careful and thorough review process, the PC selected 18 papers for publication, based on their quality, originality, contribution, clarity of presentation, and relevance to the conference topics. The selected papers constituted a program covering a varied range of topics including coordination of social collaboration processes, coordination of mobile systems in peer-to-peer and ad-hoc networks, programming and reasoning about distributed and concurrent software, types, contracts, synchronization, coordination patterns, and families of distributed systems. The program was further enhanced by an inspiring invited talk by Shahram Dustdar from Vienna University of Technology titled “Elastic Coordination—Principles, Models, and Algorithms.”

The success of Coordination 2012 was due to the dedication of many people. We thank the authors for submitting high-quality papers, and the Program Committee (and their co-reviewers) for their careful reviews, and lengthy discussions during the final selection process. We thank Gwen Salaun from INRIA who acted as the Publicity Chair of Coordination 2012. With his help we had an increase of 1.6 in the number of submissions compared to last year. We thank the providers of the EasyChair conference management system, which was used to run the review process and to facilitate the preparation of the proceedings. Finally, we thank the Distributed Computing Techniques Organizing Committee (led by Jim Dowling) for their contribution in making the logistic aspects of Coordination 2012 a success.

June 2012

Marjan Sirjani

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# **Elastic Coordination Principles, Models, and Algorithms Invited Talk**

Schahram Dustdar

Vienna University of Technology

Elasticity is seen as one of the main characteristics of Cloud Computing today. Social computing, as one of the most prominent applications deployed on Cloud infrastructures, would gain significantly from elasticity. In this talk I will discuss the main principles of elasticity related to coordination, present a fresh look at this problem, and examine how to integrate people in the form of human-based computing and software services into one composite system, which can be modeled, programmed, and instantiated on a large scale in an elastic way.

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