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Formal Techniques for Distributed Objects, Components, and Systems

34th IFIP WG 6.1 International Conference, FORTE 2014
Held as Part of the 9th International Federated Conference
on Distributed Computing Techniques, DisCoTec 2014
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Proceedings

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Foreword

In 2014, the 9th International Federated Conference on Distributed Computing Techniques (DisCoTec) took place in Berlin, Germany, during June 3–5. It was hosted and organized by the Technische Universität Berlin. The DisCoTec series, one of the major events sponsored by the International Federation for Information Processing (IFIP), included three conferences:

- COORDINATION 2014, the 16th International Conference on Coordination Models and Languages
- DAIS 2014, the 14th IFIP WG 6.1 International Conference on Distributed Applications and Interoperable Systems
- FORTE 2014, the 34th IFIP WG 6.1 International Conference on Formal Techniques for Distributed Objects, Components and Systems

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

Each day of the federated event began with a plenary speaker nominated by one of the conferences. The three invited speakers were:

- Frank Leymann (University of Stuttgart, Germany)
- Maarten van Steen (VU University Amsterdam, The Netherlands)
- Joachim Parrow (Uppsala University, Sweden)

There were also three satellite events, taking place on June 6–7:

1. The 5th International Workshop on *Interactions between Computer Science and Biology* (CS2BIO) with keynote lectures by Marco Pettini (Université de la Mediterranée, France) and Vincent Danos (University of Edinburgh, UK) and a tutorial by Jeffrey Johnson (Open University, UK)
2. The 7th Workshop on *Interaction and Concurrency Experience* (ICE) with keynote lectures by Kim Larsen (Aalborg University, Denmark) and Pavol Cerny (University of Colorado Boulder, USA)
3. The First International Workshop on *Meta Models for Process Languages* (MeMo) with keynote lectures by Joachim Parrow (Uppsala University, Sweden) and Marino Miculan (Università degli Studi di Udine, Italy)

This program offered an interesting and stimulating event for the participants. Sincere thanks go the chairs and members of the Program Committees of the involved conferences and workshops for their highly appreciated effort. Moreover,

organizing DisCoTec 2014 was only possible thanks to the dedicated work of the Organizing Committee from TU Berlin, including Margit Russ, Kirstin Peters (also Publicity and Workshop Chair), and Christoph Wagner. Finally, many thanks go to IFIP WG 6.1 for providing the umbrella for this event, to EATCS and TU Berlin for their support and sponsorship, and to EasyChair for providing the refereeing infrastructure.

June 2014 Uwe Nestmann

Preface

This volume contains the proceedings of FORTE 2014, the 34th IFIP WG 6.1 International Conference on Formal Techniques for Distributed Objects, Components and Systems. FORTE 2014 took place June 3–5, 2014, as part of DisCoTec 2014, the 9th International Federated Conference on Distributed Computing Techniques. After 1996 in Kaiserslautern and 2003 in Berlin, this year the conference returned to Germany, in the heart of Europe, to the exciting, multi-faceted city of Berlin.

FORTE—since 2014 the heir to the original FORTE series, FMOODS series and joint FMOODS/FORTE conference series—is a forum for fundamental research on theory, models, tools, and applications for distributed systems, supporting the advance of science and technologies in this area. The conference encourages contributions that combine theory and practice and that exploit formal methods and theoretical foundations to present novel solutions to problems arising from the development of distributed systems. FORTE covers distributed computing models and formal specification, testing and verification methods. The application domains include all kinds of application-level distributed systems, telecommunication services, Internet, embedded and real-time systems, cyber-physical systems and sensor networks, as well as networking and communication security and reliability.

We received 55 abstracts, out of which 50 full papers were submitted for review. Each submission was reviewed by at least four Program Committee members. Based on the reviews and a thorough (electronic) discussion by the Program Committee, we selected 18 papers for presentation at the conference and for publication in this volume.

Joachim Parrow (Uppsala University, Sweden) was the keynote speaker of FORTE 2014. He is well-known in our community for his fundamental contribution to concurrency theory. In particular, he is one of the founding fathers of the π-calculus, and of the Fusion calculus. His team in Uppsala is the developer and the maintainer of the Mobility Workbench, a tool for manipulating and analyzing mobile concurrent systems. In his keynote speech, Joachim Parrow presented his recent work on the use of interactive theorem provers to validate frameworks of formalisms.

We would like to thank all who contributed to making FORTE 2014 a successful event in a constructive atmosphere: first of all the authors for submitting the results of their research to FORTE; the Program Committee and the additional reviewers for the reviews, efficient discussions, and a fair selection process; our invited speaker for enriching the program with his inspiring talk; the FORTE Steering Committee for taking care of the general needs and interests of the series; and of course the attendees of the event for their interest in the presentations and for the numerous constructive discussions. We benefited greatly

from the EasyChair conference management system, which we used to handle the submission, review, discussion, and proceedings preparation processes. We would also like to express our thank to the International Federation for Information Processing (IFIP), the European Association for Theoretical Computer Science (EATCS) and the Technische Universität Berlin for their great support. Last but not least, we are grateful to the DisCoTec General Chair Uwe Nestmann and all members of his local organization team at the University of Berlin for taking care of all the organizational issues.

June 2014

Erika Ábrahám
Catuscia Palamidessi

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