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Distributed Applications and Interoperable Systems

11th IFIP WG 6.1 International Conference

DAIS 2011

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Proceedings



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Foreword

In 2011 the 6th International Federated Conferences on Distributed Computing Techniques (DisCoTec) took place in Reykjavik, Iceland, during June 6-9. It was hosted and organized by Reykjavik University. The DisCoTec series of federated conferences, one of the major events sponsored by the International Federation for Information processing (IFIP), included three conferences: Coordination, DAIS, and FMOODS/FORTE.

DisCoTec conferences jointly cover the complete spectrum of distributed computing subjects ranging from theoretical foundations to formal specification techniques to practical considerations. The 13th International Conference on Coordination Models and Languages (Coordination) 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, run-time systems, and related verification and analysis techniques. The 11th IFIP International Conference on Distributed Applications and Interoperable Systems (DAIS) elicited contributions on architectures, models, technologies and platforms for large-scale and complex distributed applications and services that are related to the latest trends in bridging the physical/virtual worlds based on flexible and versatile service architectures and platforms. The 13th Formal Methods for Open Object-Based Distributed Systems and 31st Formal Techniques for Networked and Distributed Systems (FMOODS/FORTE) together emphasized distributed computing models and formal specification, testing and verification methods.

Each of the three days of the federated event began with a plenary speaker nominated by one of the conferences. On the first day, Giuseppe Castagna (CNRS, Paris 7 University, France) gave a keynote titled “On Global Types and Multi-Party Sessions.” On the second day, Paulo Verissimo (University of Lisbon FCUL, Portugal) gave a keynote talk on “Resisting Intrusions Means More than Byzantine Fault Tolerance.” On the final and third day, Pascal Costanza (ExaScience Lab, Intel, Belgium) presented a talk that discussed “Extreme Coordination—Challenges and Opportunities from Exascale Computing.”

In addition, there was a poster session, and a session of invited talks from representatives of Icelandic industries including Ossur, CCP Games, Marorka, and GreenQloud.

There were five satellite events:

1. The 4th DisCoTec workshop on Context-Aware Adaptation Mechanisms for Pervasive and Ubiquitous Services (CAMPUS)
2. The Second International Workshop on Interactions Between Computer Science and Biology (CS2BIO) with keynote lectures by Jasmin Fisher (Microsoft Research - Cambridge, UK) and Gordon Plotkin (Laboratory for Foundations of Computer Science - University of Edinburgh, UK)

3. The 4th Workshop on Interaction and Concurrency Experience (ICE) with keynote lectures by Prakash Panangaden (McGill University, Canada), Rocco de Nicola (University of Florence, Italy), and Simon Gay (University of Glasgow, UK)
4. The First Workshop on Process Algebra and Coordination (PACO) with keynote lectures by Jos Baeten (Eindhoven University of Technology, The Netherlands), Dave Clarke (Katholieke Universiteit Leuven, Belgium), Rocco De Nicola (University of Florence, Italy), and Gianluigi Zavattaro (University of Bologna, Italy)
5. The 7th International Workshop on Automated Specification and Verification of Web Systems (WWV) with a keynote lecture by Elie Najm (Telecom Paris, France)

I believe that this rich program offered each participant an interesting and stimulating event. I would like to thank the Program Committee Chairs of each conference and workshop for their effort. Moreover, organizing DisCoTec 2011 was only possible thanks to the dedicated work of the Publicity Chair Gwen Salaun (Grenoble INP - INRIA, France), the Workshop Chairs Marcello Bonsangue (University of Leiden, The Netherlands) and Immo Grabe (CWI, The Netherlands), the Poster Chair Martin Steffen (University of Oslo, Norway), the Industry Track Chairs Björn Jónsson (Reykjavik University, Iceland), and Oddur Kjartansson (Reykjavik University, Iceland), and the members of the Organizing Committee from Reykjavik University: Árni Hermann Reynisson, Steinar Hugi Sigurðarson, Georgiana Caltai Goriac, Eugen-Ioan Goriac and Ute Schiffel. To conclude I want to thank the International Federation for Information Processing (IFIP), Reykjavik University, and CCP Games Iceland for their sponsorship.

June 2011

Marjan Sirjani

Preface

This volume contains the proceedings of DAIS 2011, the IFIP International Working Conference on Distributed Applications and Interoperable Systems. The conference was held in Reykjavik, Iceland, during June 6–9, 2011 as part of DisCoTec (Distributed Computing Techniques) federated conference, together with the International Conference on Formal Techniques for Distributed Systems (FMOODS and FORTE) and the International Conference on Coordination Models and Languages (COORDINATION). The DAIS 2011 conference was sponsored by IFIP (International Federation for Information Processing) in cooperation with ACM SIGSOFT and ACM SIGAPP, and it was the tenth conference in the DAIS series of events organized by IFIP Working Group 6.1.

The conference program presented the state of the art in research on distributed and interoperable systems.

Distributed application technology has become a foundation of the information society. New computing and communication technologies have brought up a multitude of challenging application areas, including mobile computing, inter-enterprise collaborations, ubiquitous services, service-oriented architectures, autonomous and self-adapting systems, peer-to-peer systems, just to name a few. New challenges include the need for novel abstractions supporting the development, deployment, management, and interoperability of evolutionary and complex applications and services, such as those bridging the physical/virtual worlds. Therefore, the linkage between applications, platforms and users through multidisciplinary user requirements (e.g., security, privacy, usability, efficiency, safety, semantic and pragmatic interoperability of data and services, dependability, trust and self-adaptivity) becomes of special interest. It is envisaged that future complex applications will far exceed those of today in terms of these requirements.

The main part of the conference program comprised presentations of the accepted papers. This year, the technical program of DAIS drew from 55 submitted papers. All papers were reviewed by at least three reviewers. After initial reviews were posted, a set of candidate papers were selected and subjected to discussion among the reviewers and Program Committee Chairs to resolve differing viewpoints. As a result of this process, 18 full papers were selected for inclusion in the proceedings and 6 short papers were included additionally. The papers presented at DAIS 2011 address key challenges of modern distributed services and applications, including pervasiveness and peer-to-peer environments, and tackle issues related to adaptation, interoperability, availability and performance, as well as dependability and security.

Finally, we would like to take this opportunity to thank the numerous people whose work made this conference possible. We wish to express our deepest gratitude to the authors of submitted papers, to all Program Committee members for their active participation in the paper review process, to all external reviewers

for their help in evaluating submissions, to Reykjavik University for hosting the event, to the Publicity Chairs, to the DAIS Steering Committee for their advice, and to Marjan Sirjani for acting as a General Chair of the joint event.

June 2011

Pascal Felber
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