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# Distributed Applications and Interoperable Systems

Anne Remke, Valerio Schiavoni

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Anne Remke · Valerio Schiavoni (Eds.)

# Distributed Applications and Interoperable Systems

20th IFIP WG 6.1 International Conference, DAIS 2020  
Held as Part of the 15th International Federated Conference  
on Distributed Computing Techniques, DisCoTec 2020  
Valletta, Malta, June 15–19, 2020  
Proceedings

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# Foreword

The 15th International Federated Conference on Distributed Computing Techniques (DisCoTec 2020) took place during June 15–19, 2020. It was organized by the Department of Computer Science at the University of Malta, but was held online due to the abnormal circumstances worldwide affecting physical travel.

The DisCoTec series is one of the major events sponsored by the International Federation for Information Processing (IFIP). It comprises three conferences:

- The IFIP WG6.1 22nd International Conference on Coordination Models and Languages (COORDINATION 2020)
- The IFIP WG6.1 19th International Conference on Distributed Applications and Interoperable Systems (DAIS 2020)
- The IFIP WG6.1 40th International Conference on Formal Techniques for Distributed Objects, Components and Systems (FORTE 2020)

Together, these conferences cover a broad spectrum of distributed computing subjects, ranging from theoretical foundations and formal description techniques to systems research issues. As is customary, the event also included several plenary sessions in addition to the individual sessions of each conference, that gathered attendants from the three conferences. These included joint invited speaker sessions and a joint session for the best papers from the respective three conferences.

Associated with the federated event, two satellite events took place:

- The 13th International Workshop on Interaction and Concurrency Experience (ICE 2020)
- The First International Workshop on Foundations of Consensus and Distributed Ledgers (FOCODILE 2020)

I would like to thank the Program Committee chairs of the different events for their help and cooperation during the preparation of the conference, and the Steering Committee and Advisory Boards of DisCoTec and their conferences for their guidance and support. The organization of DisCoTec 2020 was only possible thanks to the dedicated work of the Organizing Committee, including Davide Basile and Francisco “Kiko” Fernández Reyes (publicity chairs), Antonis Achilleos, Duncan Paul Attard, and Ornela Dardha (workshop chairs), Lucienne Bugeja (logistics and finances), as well as all the students and colleagues who volunteered their time to help. Finally, I would like to thank IFIP WG6.1 for sponsoring this event, Springer’s *Lecture Notes in Computer Science* team for their support and sponsorship, EasyChair for providing the reviewing framework, and the University of Malta for providing the support and infrastructure to host the event.

# Preface

This volume contains the papers presented at the 20th IFIP International Conference on Distributed Applications and Interoperable Systems (DAIS 2020), sponsored by the IFIP (International Federation for Information Processing) and organized by the IFIP WG6.1. The DAIS conference series addresses all practical and conceptual aspects of distributed applications, including their design, modeling, implementation, and operation, the supporting middleware, appropriate software engineering methodologies and tools, as well as experimental studies and applications.

DAIS 2020 was meant to be held during June 15–19, 2020, in Valletta, Malta, as part of DisCoTec, the 15th International Federated Conference on Distributed Computing Techniques. However, due to the COVID-19 pandemic, the organizers decided to turn the conference into a virtual event to be held completely online.

There were 30 initial abstract registrations for DAIS, which were then followed by 17 full papers. Each submission was reviewed by up to three Program Committee (PC) members. The review process included an in-depth discussion phase, during which the merits of all papers were discussed by the PC. The committee decided to accept ten full papers, one short paper, and one invited paper.

Accepted papers address challenges in multiple application areas, including system support for machine learning, security and privacy issues, experimental reproducibility and fault-tolerance, as well novel networking approaches for future network generations. Researchers continue the trend of focusing on trusted execution environments, for instance in the case of database systems. Instead, we notice fewer research efforts devoted to blockchain topics.

The virtual conference, especially during these last months full of unpredictable events, was made possible by the work and cooperation of many people working in several committees and organizations, all of which are listed in these proceedings. In particular, we are grateful to the Program Committee members for their commitment and thorough reviews and for their active participation in the discussion phase, and all the external reviewers for their help in evaluating submissions. Finally, we also thank to the DisCoTec general chair, Adriano Francalanza, and the DAIS Steering Committee chair, Rui Oliveira, for their constant availability, support, and guidance.

June 2020

Anne Remke  
Valerio Schiavoni

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