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Preface

We are glad to introduce the proceedings of the 16th International Conference on the Economics of Grids, Clouds, Systems, and Services (GECON 2019). GECON 2019 was held on September 17–19, 2019, hosted by the University of Leeds, Great Britain. The conference, held annually, is now firmly established as a place of convergence among economics and computer science researchers, with the ultimate aim of building a strong multidisciplinary community in the increasingly important areas of future ICT systems and economics.

Nowadays, economics plays a pervasive role in the ICT world and is essential in strategic decisions concerning the development of new technologies. It influences its deployment, rollout plans, and is concerned in everyday operations and resource allocation optimization. However, the relationship between ICT and economics is really a two-way one, since the development of technologies such as blockchain is going to change the way economic transactions are carried out. A conference such as GECON, therefore, plays a leading role due to its blending of skills and knowledge from both worlds.

We received 48 submissions in response to our call for papers. Each paper was peer-reviewed by at least three members of the international Program Committee (PC). Based on significance, novelty, and scientific quality, we selected 12 full papers (a 25% acceptance rate), which are included in this book. Additionally, 10 shorter work-in-progress papers and 4 extended abstracts describing the work shown on posters during the conference were integrated in the volume.

The full papers were organized around four themes:

- Blockchain Technology and Smart Contracts;
- Resource, Service and Communication Federations;
- Economic Assessment, Business & Pricing models;
- Resource Management.

The work-in-progress papers gathered around the following themes:

- Cost-Based Computing Allocation;
- Blockchain and Network Function Virtualization Technologies;
- Economic Models for Cyber-Physical Systems, Industry 4.0 & Sustainable Systems.

Keynotes

This year's GECON featured three keynotes, evenly distributed across the three days of the conference, addressing topics that span social, economic and financial issues in the ICT world.

The first day speaker was Prof. Aad Van Moorsel, from the University of Newcastle, UK.

Prof. Van Moorsel's keynote "Benchmarks and Models for Blockchain: The Incentives Layer" dealt with the mechanisms, protocols and software architecture associated with fees, costs, and other considerations that either entice or discourage participants to the blockchain scheme, i.e. the so-called incentives layer.

The keynote speaker on the second day was Prof. Dieter Kranzlmüller, from Ludwig Maximilians Universität, Munich, Germany, where he is Head of the Munich Network Management Team.

His keynote "Economic Observations of the Leibniz Supercomputing Centre" is concerned with his appointment at the Leibniz Supercomputing Center, whose task includes providing generic IT-

services for sciences, including everything from the desktop of the scientist via arbitrary cloud services to the large-scale high performance computers. While scientific output is typically considered as a key performance indicator, his talk focussed on the economic aspects of the center and its energy efficiency, which play a key role in determining its future sustainability.

The speaker on the third and final day was Dr. Paul Townend, co-founder and CTO of Edgetic.

His keynote “Data Center Growth, Challenges, and Inefficiencies in a Connected World” focussed on data centers as the engine of smart cities and highly connected mobile devices, addressing the economic and environmental consequences of their ever-growing power consumption. The talk examined a range of holistic solutions to manage both the complexity and inefficiencies of data centers, reporting a case study of a data center facility located in northern Sweden.

Acknowledgments

Any conference is the fruit of the work of many people, and GECON is no exception. In particular, we wish to thank the authors, whose papers make up the body of the conference, the members of the PC and the reviewers, who devoted their time to review the papers on a tight time schedule. We wish to thank the invited speakers, for bringing new viewpoints and inputs to the GECON community. Furthermore, we would like to thank Alfred Hofmann, Anna Kramer and the whole team at Springer, which continues an established tradition of publishing GECON proceedings in its renowned LNCS series. Finally, we wish to thank the attendees, whose interest in the conference is the main driver for its organization.

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