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# Systems Modelling and Management

First International Conference, ICSMM 2020  
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Proceedings

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# Preface

## Objectives and Scope

Model-based approaches promote the use of models and related artefacts, such as simulation environments and experimental platforms, as central elements to tackle the complexity of building software-intensive systems. With the widespread use for large and diverse settings (including large ecosystems and multidisciplinary systems of systems such as embedded, cyber-physical, automation, production, medical, aerospace, and enterprise systems), the complexity, size, multiplicity, and variety of those artefacts has increased. This leads to challenges in the development and management of these heterogeneous systems, and calls for advanced modeling and model management approaches, along with supporting analytics techniques for the entire lifecycle of such systems. At the International Conference of Systems Modelling and Management (ICSMM), we aim to address these problems and propose novel solutions, promoting cross-fertilization across various modeling communities. The scope ranges from industrial reports and empirical analyses in the problem domain to novel cross-disciplinary approaches, e.g., exploiting techniques from model-based software/systems engineering, systems architectures, modeling and simulation, automated production systems, engineering design, data analytics, and machine learning. The topics of interest (non-exclusive) is as follows:

- Systems modeling and management for software-intensive systems such as embedded, cyber-physical, medical, and automotive systems
- Identification of open research challenges for systems modeling and management
- Empirical/case studies and industrial experiences for systems modeling and management
- Methods, tools, and datasets for systems modeling and management
- Multi-level/-paradigm/-disciplinary modeling, large-scale consistency checking, and (co-)evolution management for model-based systems
- Modeling and (co-)simulation for complex heterogeneous systems
- Modeling across different phases of system life cycle
- Model interoperability, synthesis, and linking of heterogeneous modeling artifacts, repositories, and toolchains
- Model repositories and mining for heterogeneous systems
- Data analytics and machine/deep learning for analyzing, adapting, and managing model-based systems
- Using models for problem exploration and decision making for the whole system life cycle
- Distributed computing and big data applications for systems modeling and management
- Clone, pattern, and aspect mining for systems models
- Visualization of large scale heterogeneous model-based systems

- Variability mining and management of model-based systems and model-driven product lines
- Intelligent techniques for automating modeling tasks
- Building and composing systems model management and analytics workflows, modeling-as-a-service for engineering complex systems

## Submissions and Reviewing Process

We welcomed submissions of the following types:

- Full and short research papers: full papers (max. 16 pages without references) presenting mature research results on systems modeling and management, and short papers (max. 8 pages without references) corresponding to work in progress or early results. These should be original papers not previously or simultaneously submitted elsewhere.
- Extended abstracts: short manuscripts (max. 4 pages without references) for new ideas, experience reports from practitioners, tools for systems modeling and management, and so on. These were presented in lightning talk sessions and do not form part of the proceedings.

In the open call for papers, we received 20 submissions, one of which was desk-rejected with respect to the scope. Each submission was reviewed single-blind by exactly three Program Committee (PC) members. After several rounds of discussion we agreed to accept 10 full papers and 3 short papers, based on their relevance to the conference scope and the reviews provided by PC members.

## Conference Proceedings

While the conference didn't take place physically or virtually (due to the COVID-19 situation), we invited the authors to either provide pre-recorded video presentations, or personally present their papers next year at ICSMM 2021 (to co-locate with STAF 2021). The conference proceedings, along with the video presentations where applicable, are published in this Springer *Communications in Computer and Information Science* (CCIS) volume. Further, we plan to invite extended versions of the papers for a special issue in the journal *Innovations in Systems and Software Engineering* (ISSE).

## Outlook

We consider ICSMM 2020 as a solid foundation for a promising series of conferences for modeling communities. We hope to realize the actual networking and cross-fertilization potential next year by holding a physical conference.

## **Acknowledgements**

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July 2020

Önder Babur  
Joachim Denil  
Birgit Vogel Heuser

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