

Advances in Intelligent Systems and Computing

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Series editor

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The series “Advances in Intelligent Systems and Computing” contains publications on theory, applications, and design methods of Intelligent Systems and Intelligent Computing. Virtually all disciplines such as engineering, natural sciences, computer and information science, ICT, economics, business, e-commerce, environment, healthcare, life science are covered. The list of topics spans all the areas of modern intelligent systems and computing such as: computational intelligence, soft computing including neural networks, fuzzy systems, evolutionary computing and the fusion of these paradigms, social intelligence, ambient intelligence, computational neuroscience, artificial life, virtual worlds and society, cognitive science and systems, Perception and Vision, DNA and immune based systems, self-organizing and adaptive systems, e-Learning and teaching, human-centered and human-centric computing, recommender systems, intelligent control, robotics and mechatronics including human-machine teaming, knowledge-based paradigms, learning paradigms, machine ethics, intelligent data analysis, knowledge management, intelligent agents, intelligent decision making and support, intelligent network security, trust management, interactive entertainment, Web intelligence and multimedia.

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Complex Systems Design & Management Asia

Smart Transportation: Proceedings
of the Third Asia-Pacific Conference
on Complex Systems Design & Management,
CSD&M Asia 2018

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Preface

Introduction

This volume contains the proceedings of the Third International Asia-Pacific Conference on “Complex Systems Design & Management” (CSD&M Asia 2018; see the conference Web site: <http://www.2018.csdm-asia.net> for more details).

The CSD&M Asia 2018 conference was jointly organized on December 6–7, 2018, at the National University of Singapore (NUS) by the two following founding partners:

1. CESAM Community managed by the Center of Excellence on Systems Architecture, Management, Economy & Strategy (CESAMES),
2. The National University of Singapore (NUS).

The conference also benefited from the permanent support of the two following departments to organize the conference: SMART, the Singapore-MIT Alliance for Research and Technology and SEC, the Singapore-ETH Centre.

We are grateful to many other institutions—academic and professional—that helped us a lot through their involvement during the one-year preparation of CSD&M Asia 2018: DSTA, IRT SystemX, ST Engineering, SUTD, Thales Solutions Asia, and also the International Council on Systems Engineering (INCOSE) who strongly supported our communication efforts.

Many thanks, therefore, to all of them.

Why a CSD&M Asia Conference?

Mastering complex systems requires an integrated understanding of industrial practices as well as sophisticated theoretical techniques and tools. This explains the creation of an annual *go-between* forum in the Asia-Pacific area dedicated to both academic researchers & industrial actors working on complex industrial systems

architecture, modeling & engineering. Facilitating their *meeting* was actually for us a *sine qua non* condition in order to nurture and develop in the Asia-Pacific region the new emerging science of systems.

The purpose of the conference on “Complex Systems Design & Management Asia” (CSD&M Asia) is exactly to be such a forum. Its aim, in time, is to become *the* Asia-Pacific academic–government–industrial conference of reference in the field of complex industrial systems architecture and engineering. This is a quite ambitious objective, that we think possible to achieve, based on the success of the CSD&M conference in Paris since 2010 and in Singapore in 2014 and 2016.

Our Core Academic—Industrial Dimension

To make the CSD&M Asia conference a convergence point for academic, government, and industrial communities interested in complex industrial systems, we based our organization on a principle of *parity* between academics, governmental agents, and industrialists (see the conference organization sections). This principle was first implemented as follows:

- Program Committee consisted of a mix between academics and governmental agents/industrialists,
- Invited Speakers came from numerous professional environments.

The set of activities of the conference followed the same principle. They indeed consist of a mixture of research seminars and experience sharing, academic articles, governmental and industrial presentations, etc. The conference topics cover the most recent trends in the emerging field of complex systems sciences and practices from an industrial, governmental, and academic perspective, including the main industrial and public domains (aeronautics & aerospace, defense & security, electronics & robotics, energy & environment, health & welfare services, media & communications, software & e-services, transport, technology & policy), scientific and technical topics (systems fundamentals, systems architecture & engineering, systems metrics & quality, systems modeling tools), and system types (transportation systems, embedded systems, software & information systems, systems of systems, artificial ecosystems).

The Third CSD&M Asia 2018 Edition

The CSD&M Asia 2018 edition received 20 submitted papers, out of which the Program Committee selected 9 regular papers to be published in the proceedings edited by Springer-Verlag. This corresponds to a 45% acceptance ratio which enables to guarantee the quality of the presentations.

Each submission was assigned to at least two Program Committee members, who carefully reviewed the papers. These reviews were managed using the EasyChair conference management system. Our sincere thanks go to Professor Peter Jackson from Singapore University of Technology and Design (SUTD), whose help was precious during this evaluation step.

We also invited eight outstanding speakers from various industrial, governmental, and scientific background, who gave a series of invited talks covering all the spectrum of the conference during the two days of CSD&M Asia 2018. The conference was organized around a common topic: “Smart Transportation”. Each day proposed mix invited keynote speakers’ presentations and contributed talks (papers accepted by the Program Committee following the call for papers).

August 2018

Michel Alexandre Cardin
Daniel Hastings
Peter Jackson
Daniel Krob
Pao Chuen Lui
Gerhard Schmitt

Acknowledgements

Finally, we would like to thank all members of the Program and Organizing Committees for their time, effort, and contributions to make CSD&M Asia 2018 a top-quality conference. Special thanks are addressed to the CESAM Community team (see <http://cesam.community/en>) and the National University of Singapore who permanently and efficiently managed all the administration, logistics, and communications of the CSD&M Asia 2018 conference.

The organizers of the conference are also grateful to all sponsors and partners without whom CSD&M Asia 2018 would simply not exist.

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Gerhard Schmitt

CESAMES Singapore
SMART, Singapore
SEC, Singapore

Program Committee Chair

Peter Jackson

SUTD, Singapore

Program Committee

The Program Committee consists of 21 members (academic, industrial, and governmental) who are personalities of high international visibility. Their expertise spectrum covers all the conference topics. The members of this committee are in charge of rating the submissions and selecting the best of them for the conference.

Chair

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Organizing Committee

The Organizing Committee consists of 11 members (academic, industrial, and governmental) in charge of the program and the logistical organization of the conference.

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Marta C. Gonzalez	Associate Professor, UC Berkeley College of Environmental Design, USA
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