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IFIP was founded in 1960 under the auspices of UNESCO, following the first World Computer Congress held in Paris the previous year. A federation for societies working in information processing, IFIP's aim is two-fold: to support information processing in the countries of its members and to encourage technology transfer to developing nations. As its mission statement clearly states:

IFIP is the global non-profit federation of societies of ICT professionals that aims at achieving a worldwide professional and socially responsible development and application of information and communication technologies.

IFIP is a non-profit-making organization, run almost solely by 2500 volunteers. It operates through a number of technical committees and working groups, which organize events and publications. IFIP's events range from large international open conferences to working conferences and local seminars.

The flagship event is the IFIP World Computer Congress, at which both invited and contributed papers are presented. Contributed papers are rigorously refereed and the rejection rate is high.

As with the Congress, participation in the open conferences is open to all and papers may be invited or submitted. Again, submitted papers are stringently refereed.

The working conferences are structured differently. They are usually run by a working group and attendance is generally smaller and occasionally by invitation only. Their purpose is to create an atmosphere conducive to innovation and development. Refereeing is also rigorous and papers are subjected to extensive group discussion.

Publications arising from IFIP events vary. The papers presented at the IFIP World Computer Congress and at open conferences are published as conference proceedings, while the results of the working conferences are often published as collections of selected and edited papers.

IFIP distinguishes three types of institutional membership: Country Representative Members, Members at Large, and Associate Members. The type of organization that can apply for membership is a wide variety and includes national or international societies of individual computer scientists/ICT professionals, associations or federations of such societies, government institutions/government related organizations, national or international research institutes or consortia, universities, academies of sciences, companies, national or international associations or federations of companies.

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Farhad Ameri · Kathryn E. Stecke ·
Gregor von Cieminski · Dimitris Kiritsis (Eds.)


Advances in Production Management Systems

Towards Smart Production
Management Systems


IFIP WG 5.7 International Conference, APMS 2019
Austin, TX, USA, September 1–5, 2019
Proceedings, Part II

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ISSN 1868-4238 ISSN 1868-422X (electronic)
IFIP Advances in Information and Communication Technology
ISBN 978-3-030-29995-8 ISBN 978-3-030-29996-5 (eBook)
<https://doi.org/10.1007/978-3-030-29996-5>

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This Springer imprint is published by the registered company Springer Nature Switzerland AG
The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

Preface

The revolution in the information and communication technology (ICT) is rapidly transforming our world. The manufacturing industry is not an exception and it has already gone through profound changes due to the technological advancements in information technology. The digitization of production systems has been the most influential trend in the manufacturing industry over the past few years. The concept of Cyber-physical Production System (CPPS) is now being increasingly adopted in various sectors of the manufacturing industry to promote further intelligence, connectivity, and responsiveness throughout in the product value chain. There are several enablers of the vision of digitized, cyber-enabled, sustainable, and smart production system, including big data analytics, artificial intelligence, virtual and augmented reality, digital twin, and Human-Machine Interaction (HMI). These are the key components of the fourth industrial revolution and the main research thrusts in smart manufacturing and Industry 4.0 research community. The core challenge is how to improve the effectiveness and efficiency of production systems and, at the same time, enhance their sustainability and intelligence. Also, redefining the role of human in the new generation of automated production systems is a major challenge faced by researchers and practitioners.

APMS 2019 in Austin, Texas brought together leading international experts from academia, industry, and government in the area of production systems to discuss globally pressing issues in smart manufacturing, operations management, supply chain management, and Industry 4.0. A large international panel of experts reviewed all the papers and selected the best ones to be included in these conference proceedings. The topics of interest in APMS 2019 included Smart Supply Networks, Knowledge-Based Product Development, Smart Factory and IIOT Data-Driven Production Management, Lean Production, and Sustainable Production Management.

The proceedings are organized in two parts:

- Production Management for the Factory of the Future (Volume 1)
- Towards Smart Production Management Systems (Volume 2)

The conference was supported by the International Federation of Information Processing (IFIP) and was organized by the IFIP Working Group 5.7 on Advances in Production Management Systems and Texas State University. We would like to thank all contributors for their high-quality work and for their willingness to share their innovative ideas and findings. We are also indebted to the members of the IFIP Working Group 5.7, the Program Committee members, and the Scientific Committee members for their support in the review of the papers. Finally, we appreciate the

generous support from our sponsors, namely, Texas State University - College of Science and Engineering, the University of Texas at Dallas - Naveen Jindal School of Management, AlphaNodus, and PennState Service Enterprise Engineering.

September 2019

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