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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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Paolo Chiabert · Abdelaziz Bouras
Frédéric Noël · José Ríos (Eds.)

Product Lifecycle Management to Support Industry 4.0

15th IFIP WG 5.1 International Conference, PLM 2018
Turin, Italy, July 2–4, 2018
Proceedings

Editors

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Politecnico di Torino
Torino, Italy

Abdelaziz Bouras
Qatar University
Doha, Qatar

Frédéric Noël
INP Grenoble
Grenoble, France

José Ríos
Polytechnic University of Madrid
Madrid, Spain

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Preface

The rise of the Industry 4.0 paradigm is disruptively changing manufacturing environments: The increasing need for integration across value chains is highlighting the need for smart, powerful information systems. In this field, product lifecycle management (PLM) plays a key role: heterogeneous information concerning product ideation, design, manufacturing, support, recycling and many other trades has to be properly managed. Further, novel approaches such as product-service systems and circular economy are posing new challenges.

IFIP PLM 2018 marked the 15th anniversary of the conference, which continues its progress at an excellent rate both in terms of quality and quantity. The topics covered in the program include ontologies, knowledge and data models, product-service systems approaches, new product development, modular design and products, cyber-physical systems, building information modeling (BIM), educational approaches to PLM, production process simulation, digital factory, CAX tools, knowledge creation and management, the role of lean organization and studies on PLM maturity, adoption, and implementation.

The IFIP International Conference on Product Lifecycle Management (www.plm-conference.org) started in 2003 and since then it has been held yearly around the world and has facilitated the exchange and discussion of the most up-to-date information on product lifecycle management among professionals from academia and industry. This is the official conference of the IFIP Working Group WG 5.1 “Global Product Development for the Whole Lifecycle” (www.ifip-wg51.org), and IFIP PLM 2018 was held in Turin, Italy, during July 2–4, 2018.

One of the objectives of the conference is to provide a platform for experts to discuss and share their success in applying advanced concepts in their respective fields. The IFIP PLM 2018 conference included an outstanding technical program, with distinguished keynote speeches on current developments and future vision, with a special focus on BIM and the industry of the future, from Prof. Jennifer Whyte (Imperial College, London), Prof. André Stork (TU Darmstadt), Eng. Paolo Calefati (Prima Industrie, Italy), and Eng. Alberto Codrino (PLM Systems, Italy). Two insightful visits to manufacturing facilities were also organized: to the Maserati Levante final assembly line and Baladin brewery.

The conference also offered a great opportunity for young and aspiring researchers to present their research proposals and ongoing work during a dedicated PhD Workshop on the preconference day. This regular workshop is designed to support students in their networking activities and help them build their future community.

In line with the conference scientific sessions, IFIP PLM 2018 aimed at encouraging innovation and exchange with industry and digital service providers. A full day was dedicated to industry applications, highlighting some efforts and initiatives related to industry digitalization in the fields of Aerospace and Rail (Airbus, Avio GE, Hitachi Rail), Process and Product industries (TMC, COMAU, Siemens PLM Software, Electrolux),

ICT solutions for data exchange (TIM), digital constructions (Hansen Yuncken), automotive (FCA Group), as well as food and beverage (Baladin, Ferrero) sectors.

This book, organized in 12 chapters, is composed of selected enhanced papers presented at the IFIP PLM 2018 conference. Submissions followed a single-blind peer-review process. From a total of 82 submissions, 72 were accepted to be presented at the conference. This book is part of the IFIP *Advances in Information and Communication Technology* (AICT) series that publishes state-of-the-art results in the sciences and technologies of information and communication.

In addition to this conference, the *International Journal of Product Lifecycle Management* (IJPLM) is the official journal of the WG5.1 (www.inderscience.com/ijplm).

On behalf of the conference, we thank all the authors, session chairs, reviewers, and keynote speakers for their help and support in achieving a great conference. Our gratitude goes to Politecnico di Torino, to the sponsors PLM Systems, FCA Group, Siemens, Autodesk and Electrolux, as well as to Regione Piemonte and Comune di Torino for their great support.

We hope this book serves as a step forward in this exciting area of PLM and we look forward to meeting you at the next PLM conference in Moscow, Russia, during July 10–12, 2019 (www.plm-conference.org).

September 2018

Paolo Chiabert
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