Contents

Knowledge Sharing, Re-use and Preservation

Industrial Knowledge Management Tools Applied to Engineering Education ................................................................. 3
   Joel Sauza-Bedolla, Carlo Rosso, Gianluca D’Antonio, Paolo Chiabert, and Vittorio Romagnoli

Enhancing Domain Specific Sentiment Lexicon for Issue Identification ............................................................... 13
   Madhusudanan N, B. Gurumoorthy, and Amaresh Chakrabarti

Knowledge Management and Big Data: Opportunities and Challenges for Small and Medium Enterprises (SME) .......................................................... 22
   Patrick Mbassegue, Ma-Lorena Escandon-Quintanilla, and Mickaël Gardoni

Ergonomic Considerations in Product Design Through PLM Technologies .......................................................... 32
   Carolina Marroquín, Melisa Gaviria, and Ricardo Mejia-Gutiérrez

KBE-PLM Integration Schema for Engineering Knowledge Re-use and Design Automation ........................................... 43
   Jullius Cho, Thomas Vosgien, Thorsten Prante, and Detlef Gerhard

On the Use of Process Mining and Machine Learning to Support Decision Making in Systems Design .......................................................... 56
   Widad Es-Soufi, Esma Yahia, and Lionel Roucoules

Collaborative Development Architectures

Static Product Structures: An Industrial Standard on the Wane ................................................................. 69
   Stefan Kehl, Carsten Hesselmann, Patrick D. Stiefel, and Jörg P. Müller

A Lightweight Approach to Manage Engineering Parameters in Mechatronic Design Processes ........................................... 79
   Lukas Weingartner, Peter Hehenberger, Michael Friedl, Andreas Kellner, Stefan Boschert, and Roland Rosen

Improvement of Multidisciplinary Integration in Design of Complex Systems by Implementing Knowledge-Based Engineering .......................................................... 89
   Chen Zheng, Matthieu Bricogne, Julien Le Duigou, Peter Hehenberger, Sandor Vajna, and Benoît Eynard
Interoperability and Systems Integration

Flat Versus Hierarchical Information Models in PLM Standardization Frameworks .......................................................... 121
Sylvere Krima and Joshua Lubell

An Onto-Based Interoperability Framework for the Connection of PLM and Production Capability Tools ........................................ 134
Maxime Lafleur, Walter Terkaj, Farouk Belkadi, Marcello Urgo, Alain Bernard, and Marcello Colledani

Model-Based Engineering for the Integration of Manufacturing Systems with Advanced Analytics .................................................. 146
David Lechevalier, Anantha Narayanan, Sudarsan Rachuri, Sebti Foufou, and Y. Tina Lee

Proposal of a Model-Driven Ontology for Product Development Process Interoperability and Information Sharing ........................................ 158
Anderson Luis Szejka, Osiris Canciglieri Júnior, Eduardo Rocha Loures, Hervé Panetto, and Alexis Aubry

Lean Product Development and the Role of PLM

A Modular Approach for Lean Product Development (LPD) Based on System Engineering .......................................................... 171
Dao Yin and Xinguo Ming

Lean Product Development and the Role of PLM .............................................. 183
Monica Rossi, Laura Cattaneo, Julien Le Duigou, Stéphane Fugier-Garrel, Sergio Terzi, and Benoît Eynard

PLM-Based Approach for Integration of Product Safety in Lean Development .............................................................. 193
Christophe Danjou, Julien Le Duigou, Magali Bosch, and Benoît Eynard

The Role of Manufacturing Execution Systems in Supporting Lean Manufacturing .......................................................... 206
Gianluca D’Antonio, Joel Sauza Bedolla, Akmal Rustamov, Franco Lombardi, and Paolo Chiabert
PLM and Innovation

Virtual Twins as Integrative Components of Smart Products ......................... 217
  Michael Abramovici, Jens Christian Göbel, and Philipp Savarino

Linking Modular Product Structure to Suppliers’ Selection Through PLM Approach: A Frugal Innovation Perspective ............................. 227
  Farouk Belkadi, Ravi Kumar Gupta, Ekaterini Vlachou, Alain Bernard, and Dimitris Mourtis

PLM in the Food Industry: An Explorative Empirical Research in the Italian Market ................................................................. 238
  Claudia Pinna, Marco Taisch, and Sergio Terzi

GIS-Oriented Lifecycle Management for Sustainability ......................... 248
  Kiyan Vadoudi, Florian Bratec, and Nadège Troussier

PLM Tools

Automatic Assembly Design for Engineering-to-Order Products Based on Multiple Models and Assembly Features ......................... 261
  Iraklis Chatziparasidis and Nickolas S. Sapidis

SDM Framework as a Support for Decision-Making Traceability in Design of Experiments Process ........................................ 275
  Farouk Belkadi, Luca Dall’Olio, Gilles Besombes, and Alain Bernard

Interoperability Improvement in a Collaborative Dynamic Manufacturing Network ................................................................. 286
  Emna Moones, El Mouloudi Dafaoui, El Mhamedi Abderrahman, Nicolas Figay, and Ali Koudri

Lathe Machining in the Era of Industry 4.0: Remanufactured Lathe with Integrated Measurement System for CNC Generation of the Rolling Surfaces for Railway Wheels ......................................................... 296
  Ionuț Ghionea, Adrian Ghionea, Daniela Cioboata, and Saša Ćuković

Design of Handle Elevators and ATR Spectrum of Material Manufactured by Stereolithography ................................................................. 309
  Diana-Irinel Băilă, Ionuț-Gabriel Ghionea, Oana-Catalina Mociou, Saša Ćuković, Mihaela-Elena Ulmeanu, Cristian-Ioan Tarbă, and Livia-Veronica Lazăr

Establishing Semantic Equivalences in Aircraft Ontology to Enable Semantic Interoperability ................................................................. 319
  B. Damayanthi Jesudas and B. Gurumoorthy
Cloud Computing and PLM Tools
Integration of Mobile Device Features in Product Data Management Systems ............................................. 331

Jens Michael Hopf

Implementation of Machining on the Cloud: A Case Study in PLM Environment ........................................... 341
Saurav Bhatt, Frédéric Segonds, Nicolas Maranzana, Améziane Aoussat, Vincent Frerebeau, and Damien Chasset

Cloud Based Meta Data Driven Product Model .......................................................... 356
Arun Kumar Singh, B. Gurumoorthy, and Latha Christie

Knowledge-Based Application of Liaison for Variant Design ...................................................... 365
Shantanu Kumar Das and Abinash Kumar Swain

Traceability and Performance
Traceability in Product Supply Chain: A Global Model ............................................................. 377
Dharmendra K. Mishra, Aicha Sekhari, Sebastien Henry, and Yacine Ouzrout

Processing and Visual Analyze of Heterogeneous and Multidimensional Data in Biomedical PLM Context ............................................... 385
Marianne Allanic, Pierre-Yves Hervé, Alexandre Durupt, Marc Joliot, Philippe Boutinaud, and Benoit Eynard

Product Development and PLM Performance Measures: A Multiple-Case Study in the Fashion Industry ...................................................... 399
Elisa d’Avolio, Romeo Bandinelli, and Rinaldo Rinaldi

Mobile Manipulator Performance Measurement Towards Manufacturing Assembly Tasks ................................................ 411
Roger Bostelman, Sebti Foufou, Steve Legowik, and Tsai Hong Hong

Building Information Modeling
Building Lifecycle Management System for Enhanced Closed Loop Collaboration ......................................... 423
Sylvain Kubler, Andrea Buda, Jérémy Robert, Kary Främling, and Yves Le Traon

BIM Ecosystem Research: What, Why and How? Framing the Directions for a Holistic View of BIM ...................................................... 433
Vishal Singh
Comparing PLM and BIM from the Product Structure Standpoint

Conrad Boton, Louis Rivest, Daniel Forgues, and Julie Jupp

Big Data Analytics and Business Intelligence

On Applicability of Big Data Analytics in the Closed-Loop Product Lifecycle: Integration of CRISP-DM Standard

Elaheh Gholamzadeh Nabati and Klaus-Dieter Thoben

Big Data Analytics as Input for Problem Definition and Idea Generation in Technological Design

Ma-Lorena Escandón-Quintanilla, Mickaël Gardoni, and Patrick Cohendet

Toward an Extensive Data Integration to Address Reverse Engineering Issues

Jonathan Dekhtiar, Alexandre Durupt, Matthieu Bricogne, Dimitris Kiritsis, Harvey Rowson, and Benoit Eynard

Information Gathering in Closed-Loop PLM Systems - Social Networks as Models for the Internet of Things?

Marco Lewandowski and Klaus-Dieter Thoben

Information Lifecycle Management

Multi-party Interactive Visioneering Workshop for Smart Connected Products in Global Manufacturing Industry Considering PLM.

Satoshi Goto, Elio Trolio, Osamu Yoshie, and Kin'ya Tamaki

Understanding PLM System Concepts to Facilitate Its Implementation in SME: The Real Case Study of POULT

Laureline Plo, Vincent Robin, and Philippe Girard

Model of Monetarisation of the Non-availability of Intralogistics Systems for the Evaluation of System Design Alternatives

Friederike Rechl, Konstantin Krebs, and Willibald A. Günthner

Industry 4.0

Smart Manufacturing: Characteristics and Technologies

Sameer Mittal, Muztoba Ahmad Khan, and Thorsten Wuest

Role of Industrial Internet Platforms in the Management of Product Lifecycle Related Information and Knowledge

Karan Menon, Hannu Kärkkäinen, and Jayesh Prakash Gupta
Diverse Scope Coordination in Design Management .......................... 559
Shuichi Fukuda

Metrics, Standards and Regulation

Developing a Unified Product Lifecycle Management Value Model. ........ 569
Abram L.J. Walton, Michael W. Grieves, Darrel L. Sandall, and Matthew L. Breault

Identifying PLM Themes, Trends and Clusters Through Ten Years of Scientific Publications ..................................................... 579
Felix Nyffenegger, Louis Rivest, and Christian Braesch

Performance Analysis of CyberManufacturing Systems: A Simulation Study ................................................................. 592
Zhengyi Song and Young B. Moon

A Spatio-Temporal Product Lifecycle Network Representation ............. 606
Kumari Moothedath Chandran, Amaresh Chakrabarti, and Monto Mani

Product, Service and Systems

An IoT Fueled DSS for MOL Marine Auxiliaries Management. ............. 621
Moritz von Stietencron, Karl A. Hribernik, Carl Christian Røstad, Bjørnar Henriksen, and Klaus-Dieter Thoben

Lifecycle Management in the Smart City Context: Smart Parking Use-Case... 631
Ahmed Hefnawy, Taha Elhariri, Abdelaziz Bouras, Chantal Cherifi, Jeremy Robert, Sylvain Kubler, and Kary Främling

Error Generation, Inventory Record Inaccuracy (IRI) and Effects on Performance: A Dynamic Investigation .......................... 642
Wissam EL Hachem, Ramy Harik, and Joseph Khoury

Author Index ................................................................. 653
Product Lifecycle Management for Digital Transformation of Industries
13th IFIP WG 5.1 International Conference, PLM 2016, Columbia, SC, USA, July 11-13, 2016, Revised Selected Papers
Harik, R.; Rivest, L.; Bernard, A.; Eynard, B.; Bouras, A. (Eds.)
2016, XIV, 655 p. 241 illus., Hardcover
ISBN: 978-3-319-54659-9