Contents

Part I  System Innovation

Current Concurrency in Practice ............................ 3
Nel Wognum and Richard Curran

Concurrent Engineering in a New Perspective: Heading
for Seamless Engineering ................................. 15
Shuichi Fukuda

Business Design Support Method for E-Commerce Companies 27
Bernd Hollerit, Hideaki Miyata and Kenji Tanaka

Multidisciplinary Systems Concepts Applied to R&D Projects
Promoted by Brazilian Electricity Regulatory Agency (ANEEL) 39
João Adalberto Pereira and Osíris Canciglieri Júnior

Specification design of renewable energy management system
for recovery planning of Japanese coastal community
after tsunami disaster ................................. 51
Kentaro Kaji, Kenji Tanaka, Mitsunori Nanno, Yukihiro Miyamura,
Kazuki Shibata, Jing Zhang and Hideaki Miyata

An Optimization Method for Designing Ecological
and Economical Procurement Logistics System 63
Toshiaki Kurihara, Kenji Tanaka and Kazuki Maeda

Energy Management System of Houses and Apartments
with Electric Vehicles 73
Kazuki Maeda and Kenji Tanaka
Enhancing the Virtual Concurrent Engineering by Networks:
The VDC Use Case ......................................................... 85
Christoph Runde

The Leader Company’s Innovation Strategy and its role within the
Aerospace Industry in Sao Jose dos Campos – Brazil .................. 95
Javier Efrain Gonzales Alarcón and Geilson Loureiro

Part II  Requirements Engineering and and Variability Management

A Variant Management based Methodology for the
Requirements-Engineering Process of Mechanical Parts ............. 109
Ralf Gümmer, Christopher Junk and Georg Rock

Consistency Checking of Feature Mapping between Requirements
and Test Artefacts .......................................................... 121
Anastasia Cmyrev, Ralf Noerenberg, Daniel Hopp and Ralf Reissing

A Framework for Requirements Concurrent Engineering ............. 133
Marina M.N. Zenun and Geilson Loureiro

Formal Analysis Meets 3D-Visualization ............................... 145
Christopher Krauß and Andreas Nonnengart

Semantic integration of product data models for the verification
of product requirements .................................................. 157
R. Woll, H. Hayka, R. Stark, C. Geissler and C. Greisinger

Handling of Product Variety throughout Product Life-Cycle ........ 169
Sylvia Klawitter and Georg Rock

Part III  Knowledge-Based Engineering

Towards Boundary Discovery in Complex Systems..................... 183
Eric Simmon, Joe Chalfoun and Arthur Griesser

Concurrent Aerospace Thermoplastic Stiffened Panel Conceptual
Design and Cost Estimation using Knowledge Based Engineering ... 195
Xiaojia Zhao, Haiqiang Wang, Ricky Curran and Michel J.L. van Tooren

An Efficient CAD Methodology for Glove Box Design. ............... 219 Alain Biahmou

A concurrent engineering approach towards digital dentistry support. ........................................ 231 Teruaki Ito

Application of AMAAAD Methodology to KBS Development: A Case Study .......................................................... 243 Christian van der Velden, Cees Bil and Xinghuo Yu

Knowledge Retrieval for Project Management .......................... 255 Shinji Mochida

Enhancing Product Innovation by Implementing Intellectual Property Protection into the Virtual Product Creation ............ 267 Harald Liese, Stefan, Rulhoff and Josip Stjepandić

A Knowledge Lifecycle Model for Measurement of Knowledge Change ....................................................... 279 Wim J.C. Verhagen and Richard Curran

Extended KBE – Scenario of an Application Development .............. 291 J. Pokojski and K. Szustakiewicz

Fuzzy Logic Application in Performance-Based Contracting Process ................................................................. 303 Andre Pozzetti, Cees Bil and Graham Clark

Acquisition and Knowledge Representation in the Product Development Process with the Use of Augmented Reality ............ 315 Marcin Januszka and Wojciech Moczulski

Finite Element Analysis Process in Design Engineering: Best Practice .............................................................. 327 Essam Shehab, Denis Yatta, Mofreh Hamed and Ahmad Wasim

Computer-Aided Bicycle Design and Analysis System ............... 339 Hanmin Lee, Seongwhan Park and Jeongho Han
Key performance indicators for design and engineering 341
Nicolai Beisheim and Florian Stotz

Part IV  Value Engineering and Operations

Towards a Usage Driven Maintenance Concept:
Improving Maintenance Value 355
Tom Stuivenberg, Adel A. Ghobbar, Tiedo Tinga and Richard Curran

Location Quotient EIO-LCA Method for Carbon
Emission Analysis 367
Amy J.C. Trappey, Charles V. Trappey, Penny H.Y. Liu,
C.T. Hsiao, Jerry J.R. Ou and Kevin W.P Chen

Preproduction Process Estimation By The Means
Of Fuzzy Statements 379
Leonid Kamalov, Alexander Pokhilko, Oleg Kozintsev
and Sergey Ryabov

Motivation and Approach to Establish a Comprehensive
Community in Project Engineering 387
J. Goetz, M. Brossog and J. Franke

A Process Model Representation for Supporting
Concurrent Engineering 399
German Urrego-Giraldo and Gloria L. Giraldo

A Value Scan Methodology to Improve Industrial Operations 411
E.J. Schut, S. Kosman and R. Curran

Manufacturing Cost Modelling for Aerospace
Composite Applications 425
Essam Shehab, Weitao Ma and Ahmad Wasim

Concurrent Engineering Implementation in a Cellular
Service Provider 435
Hassaan Anwar Khan and Irfan Anjum Manarvi
Part V Decision Making Contexts in Engineering Design

A Decision Support Tool for Strategic Engine Maintenance Planning and Life Limited Parts .......................... 449
Adel A. Ghobbar, Eric Cator and Angel F. Mayordomo

A proposed method for Design for Eco-Finance .................. 463
E.L. Rosamond and W.M. Cheung

Adapting the ‘Iron Triangle’ to Develop a Framework for Reverse Manufacturing Decision Support Tools ............... 475
P.A. Goodall, E.L. Rosamond, L.M. Justham and J.A. Harding

ADEA – a multiagent system for design activity analysis ........ 485
Alain-Jérôme Fougères, Denis Choulier and Egon Ostrosi

Decision Support Tool for Concurrent Engineering in Space Mission Design .............................................. 497
Meenakshi Deshmukh, Volker Schaus, Philipp M. Fischer, Dominik Quantius, Volker Maiwald and Andreas Gerndt

A Proposal on a Method for Multi-Criteria Decision-Making of Eco-Business Options ................................ 509
Yoon-Young Chun, Shinsuke Kondoh, Nozomu Mishima and Kun-Mo Lee

Decision-Making Support for Selection of Design Ideas at the Early Phase of Structural Design ...................... 521
Masato Inoue, Yoon-Eui Nahm, Kenji Tanaka and Haruo Ishikawa

A Study on Evaluation of Organizational Performance considering the Workers and Facilities ....................... 533
Taiga Mitsuyuki, Kazuo Hieketa, Hiroyuki Yamato and Kazuki Haijima

A Meta-Model for Engineering Analysis in Product Design .......... 545
Egon Ostrosi, Denis Choulier and Martin Kurth
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multi-objective Optimization in the Conceptual Phase of Vehicle Development</td>
<td>559</td>
</tr>
<tr>
<td>Goran Šagi and Zoran Lulić</td>
<td></td>
</tr>
<tr>
<td>Improvement of Oilfield Services Quality through Concurrent Engineering Techniques</td>
<td>571</td>
</tr>
<tr>
<td>M. Tayyab Hanif, Irfan Anjum Manarvi and Kifayatullah Khattak</td>
<td></td>
</tr>
<tr>
<td>Service innovation in household appliances: an industrial case study</td>
<td>583</td>
</tr>
<tr>
<td>Margherita Peruzzini, Michele Germani and Claudio Favi</td>
<td></td>
</tr>
<tr>
<td>Fuzzy Functional Modelling in CAD Systems</td>
<td>595</td>
</tr>
<tr>
<td>Homam Issa, Egon Ostrosi, Michel Lenczner and Rabie Habib</td>
<td></td>
</tr>
<tr>
<td>Modularity Adoption in Product Development: A Case Study in the Brazilian Agricultural Machinery Industry</td>
<td>609</td>
</tr>
<tr>
<td>Rodrigo Mayer de Avila and Milton Borsato</td>
<td></td>
</tr>
<tr>
<td>Obsolescence Management of Commercial-Off-The-Shelf (COTS) in Defence Systems</td>
<td>621</td>
</tr>
<tr>
<td>Cees Bil and John Mo</td>
<td></td>
</tr>
<tr>
<td>Improving of CE with the Matrix of Functions and Functionalities</td>
<td>633</td>
</tr>
<tr>
<td>Žiga Zadnik and Jože Duhovnik</td>
<td></td>
</tr>
<tr>
<td>A Support System for Flight Service Management Based on Service Model</td>
<td>645</td>
</tr>
<tr>
<td>Wu Chen Xi and Kazuhiro Aoyama</td>
<td></td>
</tr>
<tr>
<td>Design of an Intelligent System to Improve Traditional Chinese Medicine Dispensing Practice</td>
<td>657</td>
</tr>
<tr>
<td>Shou-Yan Chou, Kwun-Ying Hwang and Shien-Chii Shieh</td>
<td></td>
</tr>
<tr>
<td>Improvement of Oil Tank for Design and Construction using Environmental friendly Materials through CE Techniques</td>
<td>667</td>
</tr>
<tr>
<td>Esike Nelson</td>
<td></td>
</tr>
</tbody>
</table>
Part VII Product Life Cycle Management

PLM used as a backbone for concurrent engineering in supply chain .......................................................... 681
Jože Tavčar, Urban Potočnik and Jože Duhovnik

Distribution and Integration of PDM Data across Systems in the New Product Development Process .................. 693
Thomas Mechlinski

Determining Concurrent Engineering Maturity Levels .................. 705
Can Cangelir and Şenay Karademir

Prognostic Enhancements on Health and Usage Monitoring Systems ................................................................. 717
Nick A. Heerink, Richard Curran, Tiedo Tinga and Adel A. Ghobbar

Computer Supported Quotation Preparation of Turned Components .......................................................... 729
Fredrik Elgh

Standardized formats for visualization – application and development of JT .......................................................... 741
Sebastian Handschuh, Rudolf Dotzauer and Arnulf Fröhlich

Cross Enterprise Change and Release Processes based on 3D PDF .......................................................... 753
Peter Pfalzgraf, Alain Pfoouga Bopoungo and Timo Trautmann

User supporting Assistances as a Prerequisite for developing tailored CIAs .................................................. 765
Robert Schulte, Marc Oellrich and Frank Mantwill

Integrating the CAD Worlds of Mechanics and Electronics with NEXTRA .......................................................... 777
Thomas Krebs and Blaženko Šegmanović

Globalized OEM and Tier-1 Processes at SKF .................. 789
Sergej Bondar, Leo Potjewijd and Josip Stjepandić
Part VIII  CE within the Digital Factory

Production with Virtual Machines and Plants .............................. 803
Nicolai Beisheim and Markus Kiesel

Enhancement of the Time Management in Production Planning Processes .................................................. 813
Stefan Rulhoff, Josip Stjepandić and Frank Stromberger

Standardized Communication in Simulation of Interacting Machine Tool Components .................................. 825
Volker Böß, Jan Brüning and Berend Denkena

Concurrent process planning and scheduling applied into production of turned parts .................................. 837
Jože Tavčar, Aleš Slak and Jože Duhovnik

Virtual & Augmented Environments for Concurrent Engineering - Concurrent Virtual ............................ 849
Christoph Runde, Florin Girbacia and Eugen Butila

A Proposed Novel Knowledge Framework for Remanufacturing Viability in a Modern Supply Chain ..................... 861
L.M. Justham, E.L. Rosamond, P.A. Goodall, P.P. Conway and A.A. West

A3 Thinking Approach to Support Problem Solving in Lean Product and Process Development ....................... 871
Norhairin Mohd Saad, Ahmed Al-Ashaab, Essam Shehab and Maksim Maksimovic

Qualitative assessment of business processes ........................................ 883
Viktoria Hrzek, Nils Macke and Enno Lükens

Part IX  Consumer-oriented Product Design & Development

An Investigation into Dynamic Multi-Sensory Product Experience Based on Online Shopping .......................... 897
Nai-Feng Chen, Chun-Hsien Chen, Li Pheng Khoo and Cuilin Foo

A Reasoning System to Support the Dental Implant Planning Process ......................................................... 909
Anderson Luis Szejka, Marcelo Rudek and Osiris Canciglieri Junior
A Framework for Process Science & Technology Applied to Concurrent Engineering

Germano de Souza Kienbaum, Luiz Alexandre da Silva, Geilson Loureiro, Alvaro Augusto Neto and Stewart Robinson

Model-Based System Concurrent Engineering

Giuliani Paulineli Garbi and Geilson Loureiro

Complex Systems Developed with System Concurrent Engineering

Andre Corsetti, Edson Alves Ribeiro, Giuliani Paulineli Garbi, Karina Zanta, Michele Medeiros and Geilson Loureiro

Stakeholder Analysis Process Using Cognitive Mapping

Brenda Carolina Lopez Villafranca and Geilson Loureiro

Soft Systems Methodology for Hard Systems Engineering - The Case of Information Systems Development at LIT/INPE/BRAZIL

Ana Claudia de Paula Silva and Geilson Loureiro

Overcoming the Interoperability Barrier in Mixed-Criticality Systems

Jörn Schneider

Towards A Formal Software Development in a Concurrent Engineering Environment: A Space System Case

Miriam C. Bergue Alves and Cynthia Feitosa Leal

Part XI Cloud Computing in CE

An Overview of the NIST Cloud Computing Program and Reference Architecture

Eric Simmon and Robert Bohn

A Model Driven Security Engineering Approach to Support Collaborative Tools Deployment over Clouds

W.F. Ouedraogo, F. Biennier and P. Ghodous

A Novel Approach to Ensure Interoperability Based on a Cloud Infrastructure

Malik Khalfallah, Mahmoud Barhamgi, Nicolas Figay and Parisa Ghodous
Ontology Enriched Framework for Cloud-based Enterprise Interoperability ................................. 1155
Ricardo Jardim-Goncalves, Adina Cretan, Carlos Coutinho, Moises Dutra and Parisa Ghodous

Part XII Web in CE

Agile Process Model and Practices in Distributed Environment .... 1169
Faiza Tahir and Irfan Anjum Manarvi

Web-based 3D Mediated Communication in Manufacturing Industry ........................................... 1181
Pekka Siltanen and Seppo Valli

Empowering end-users to manage business rules: the case of a graphical environment built for a telco ......... 1193
Catarina Ferreira da Silva, Levi Baptista, Paulo Rupino da Cunha and Paulo Melo
Concurrent Engineering Approaches for Sustainable Product Development in a Multi-Disciplinary Environment
Proceedings of the 19th ISPE International Conference on Concurrent Engineering
Stjepandic, J.; Rock, G.; Bil, C. (Eds.)
2013, XLVI, 1217 p. 574 illus. In 2 volumes, not available separately., Hardcover
ISBN: 978-1-4471-4425-0