

# Contents

## SPI and VSEs

Towards the Integration of Security Practices in the Software Implementation Process of ISO/IEC 29110: A Mapping . . . . .	3
<i>Mary-Luz Sánchez-Gordón, Ricardo Colomo-Palacios, Alex Sánchez, Antonio de Amescua Seco, and Xabier Larrucea</i>	
Incorporating Innovation Management Practices to ISO/IEC 29110 . . . . .	15
<i>Ricardo Eito-Brun</i>	

## SPI and Process Models

Exploring Software Process Variation Arising from Differences in Situational Context . . . . .	29
<i>Paul M. Clarke, Rory V. O'Connor, David Solan, Peter Elger, Murat Yilmaz, Adam Ennis, Mark Gerrity, Sean McGrath, and Ryan Treanor</i>	
How to Elicit Processes for an ISO-Based Integrated Risk Management Process Reference Model in IT Settings? . . . . .	43
<i>Béatrix Barafort, Antoni-Lluís Mesquida, and Antònia Mas</i>	

## SPI and Safety

HMI Requirements Creation, as the Collaboration Work of Human and Machine in the Safety-Critical System . . . . .	61
<i>Masao Ito</i>	
Integration of the 4+1 Software Safety Assurance Principles with Scrum . . . .	72
<i>Osama Doss, Tim Kelly, Tor Stålhane, Børge Haugset, and Mark Dixon</i>	
Towards Systematic Compliance Evaluation Using Safety-Oriented Process Lines and Evidence Mapping . . . . .	83
<i>Timo Varkoi, Timo Mäkinen, Barbara Gallina, Frank Cameron, and Risto Nevalainen</i>	

## SPI and Project Management

Improving Project Portfolio Management (PPM) for Improvement Projects . . . . .	99
<i>Jan Pries-Heje, Peter Møller Jakobsen, Morten Korsaa, and Jørn Johansen</i>	

Coverage of ISO/IEC 29110 Project Management Process of Basic Profile  
by a Serious Game . . . . . 111  
*Alejandro Calderón, Mercedes Ruiz, and Rory V. O'Connor*

**SPI and Implementation**

Improving Model Inspection Processes with Crowdsourcing: Findings  
from a Controlled Experiment. . . . . 125  
*Dietmar Winkler, Marta Sabou, Sanja Petrovic, Gisele Carneiro,  
Marcos Kalinowski, and Stefan Biffl*

A Metric for Evaluating Residual Complexity in Software . . . . . 138  
*Michael Krisper, Johannes Iber, Christian Kreiner,  
and Markus Quaritsch*

The Potential of Self-Adaptive Software Systems in Industrial  
Control Systems . . . . . 150  
*Johannes Iber, Tobias Rauter, Michael Krisper, and Christian Kreiner*

Towards Increased Efficiency and Confidence in Process Compliance . . . . . 162  
*Julieth Patricia Castellanos Ardila and Barbara Gallina*

**SPI Issues**

Systematic Literature Reviews of Software Process Improvement:  
A Tertiary Study . . . . . 177  
*Arif Ali Khan, Jacky Keung, Mahmood Niazi, Shahid Hussain,  
and He Zhang*

Overcoming Public Speaking Anxiety of Software Engineers  
Using Virtual Reality Exposure Therapy . . . . . 191  
*Merve Denizci Nazligul, Murat Yilmaz, Ulas Gulec, Mert Ali Gozcu,  
Rory V. O'Connor, and Paul M. Clarke*

**SPI and Automotive**

Towards Dependability Engineering of Cooperative Automotive  
Cyber-Physical Systems . . . . . 205  
*Georg Macher, Eric Armengaud, Daniel Schneider, Eugen Brenner,  
and Christian Kreiner*

An Analysis of the Commonality and Differences Between ASPICE  
and ISO26262 in the Context of Software Development. . . . . 216  
*Pedro Oliveira, André L. Ferreira, Daniel Dias, Tiago Pereira,  
Paula Monteiro, and Ricardo J. Machado*

**Selected Key Notes and Workshop Papers**

**GamifySPI**

Deploying a Gamification Framework for Software Process Improvement:  
Preliminary Results . . . . . 231  
*Eduardo Herranz, Ricardo Colomo-Palacios, and Abdullah Al-Barakati*

ProDecAdmin: A Game Scenario Design Tool for Software Project  
Management Training . . . . . 241  
*Alejandro Calderón, Mercedes Ruiz, and Rory V. O'Connor*

State of the Use of Gamification Elements in Software  
Development Teams . . . . . 249  
*Mirna Muñoz, Luis Hernández, Jezreel Mejia,  
Gloria Piedad Gasca-Hurtado, and María Clara Gómez-Alvarez*

Examining Reward Mechanisms for Effective Usage of Application  
Lifecycle Management Tools . . . . . 259  
*Çağdaş Üsfekes, Murat Yilmaz, Eray Tuzun, Paul M. Clarke,  
and Rory V. O'Connor*

CHANGCE-Thinking – A Ludic Kick-Off to Chance Orientation . . . . . 269  
*Peter Witzgall, Peter Kapfhammer, Eva-Maria Trenz, Teresa Kiechle,  
Tobias Gebler, and Adrian Indefrey*

Toward an Assessment Framework for Gamified Environments . . . . . 281  
*Gloria Piedad Gasca-Hurtado, María Clara Gómez-Alvarez,  
Mirna Muñoz, and Jezreel Mejia*

InnoTEACH – Applying Principles of Innovation in School. . . . . 294  
*Richard Messnarz, Borut Likar, Jürgen Mack, Evelyn Schröttner,  
Damjan Ekert, Maria Hartyanyi, Urska Mrgole, and Janos Szabo*

A Game Toolbox for Process Improvement in Agile Teams . . . . . 302  
*Antoni-Lluís Mesquida, Jovana Karać, Miloš Jovanović,  
and Antônia Mas*

Gamification and Affordances: How Do New Affordances Lead  
to Gamification in a Business Intelligence System? . . . . . 310  
*Tobias Christian Fischer*

**SPI in Industry 4.0**

A Design Process Approach to Strategic Production Planning  
for Industry 4.0. . . . . 323  
*Andreas Riel and Martina Flatscher*

Industry 4.0 as Digitalization over the Entire Product Lifecycle: Opportunities in the Automotive Domain . . . . .	334
<i>Eric Armengaud, Christoph Sams, Georg von Falck, Georg List, Christian Kreiner, and Andreas Riel</i>	
Chances for Virtual and Augmented Reality Along the Value Chain . . . . .	352
<i>Sonja Hammerschmid</i>	
Supporting the Integration of New Security Features in Embedded Control Devices Through the Digitalization of Production . . . . .	360
<i>Tobias Rauter, Johannes Iber, Michael Krisper, and Christian Kreiner</i>	
A Conceptual Mixed Realities (AR/VR) Capability Maturity Model – With Special Emphasis on Implementation. . . . .	372
<i>Sonja Hammerschmid, Gerhard Kormann, Thomas Moser, and Michael Reiner</i>	
 <b>Best Practices in Implementing Traceability</b>	
Graceful Integration of Process Capability Improvement, Formal Modeling and Web Technology for Traceability . . . . .	381
<i>Miklós Biró, Felix Kossak, József Klespitz, and Levente Kovács</i>	
 <b>Good and Bad Practices in Improvement</b>	
The SPI Manifesto Revisited . . . . .	401
<i>Eva Breske and Tomas Schweigert</i>	
Documentation of Improvement Competences. . . . .	411
<i>Jørn Johansen, Karsten Kristensen Back, Morten Korsaa, Jan Pries-Heje, and Tomas Schweigert</i>	
Experiences with SQIL – SW Quality Improvement Leadership Approach from Volkswagen . . . . .	421
<i>Richard Messnarz, Maik Sehr, Ingrid Wüstemann, Joachim Humpohl, and Damjan Ekert</i>	
 <b>Safety and Security</b>	
Need for the Continuous Evolution of Systems Engineering Practices for Modern Vehicle Engineering . . . . .	439
<i>Richard Messnarz, Alexander Much, Christian Kreiner, Miklos Biro, and Jenny Gorner</i>	

Automotive Quality Universities – AQU – Integration of Modular Content into the Higher Education Studies . . . . . 453  
*Svatopluk Stolf, Jakub Stolf, Miran Rodic, Mitja Truntic, Christian Kreiner, and Richard Messnarz*

**Experiences with Agile and Lean**

Lean and Agile Software Process Improvement - An Overview and Outlook . . . . . 471  
*Alexander Poth, Susumu Sasabe, and Antônia Mas*

A New Approach: Not Agile vs. Traditional QM but Applying the Best of Both . . . . . 486  
*Mirko Drobietz and Alexander Poth*

Agile Development Offers the Chance to Establish Automated Quality Procedures . . . . . 495  
*Marc Kösling and Alexander Poth*

A Review on the Critical Success Factors of Agile Software Development. . . 504  
*Abdullah Aldahmash, Andy M. Gravell, and Yvonne Howard*

Agile Procedures of an Automotive OEM – Views from Different Business Areas . . . . . 513  
*Alexander Poth and Fabian Wolf*

Using a Statistical Method to Compare Agile and Waterfall Processes Performance. . . . . 523  
*Alexssander A. Siqueira, Sheila Reinehr, and Andreia Malucelli*

**Standards and Assessment Models**

Development of the 2nd Edition of the ISO 26262 . . . . . 535  
*Gerhard Griessnig and Adam Schnellbach*

Improvements in Functional Safety of Automotive IP Through ISO 26262: 2018 Part 11 . . . . . 547  
*Alison Young and Alastair Walker*

Using the ISO/IEC 27034 as Reference to Develop an Application Security Control Library. . . . . 557  
*Alexssander A. Siqueira, Sheila Reinehr, and Andreia Malucelli*

Analysis of the Practices for the CMMI-SVC in an ISO/IEC 20000-1 Certified Organization . . . . . 567  
*Ayşegül Ünal, Rabia Burcu Karaomer, and Onur Kaynak*

A Lightweight Software Process Assessment Approach Based on MDevSPICE® for Medical Device Development Domain . . . . . 578  
*Özden Özcan-Top and Fergal McCaffery*

The Current Status of the TestSPICE® Project . . . . . 589  
*Klaudia Dussa-Zieger, Mohsen Ekssir-Monfared, Tomas Schweigert, Michael Philipp, and Monique Blaschke*

Towards a Survival Analysis of Very Small Organisations . . . . . 599  
*Xabier Larrucea and Izaskun Santamaria*

**Team Skills and Diversity Strategies**

A Model to Integrate Highly Effective Teams for Software Development. . . . . 613  
*Mirna Muñoz, Luis Hernández, Jezreel Mejia, Adriana Peña, Nora Rangel, Carlos Torres, and Gabriele Sauberer*

Towards Developing a Software Process Improvement Strategy Through the Application of Ethical Concepts. . . . . 627  
*Harjinder Rahanu, Elli Georgiadou, Kerstin Siakas, and Margaret Ross*

Diversity and PERMA-nent Positive Leadership to Benefit from Industry 4.0 and Kondratieff 6.0 . . . . . 642  
*Gabriele Sauberer, Andreas Riel, and Richard Messnarz*

Do We Speak the Same Language? Terminology Strategies for (Software) Engineering Environments Based on the Elcat Model - Innovative Terminology e-Learning for the Automotive Industry . . . . . 653  
*Gabriele Sauberer, Blanca Nájera Villar, Jens R. Dreßler, Klaus-Dirk Schmitz, Paul M. Clarke, and Rory V. O'Connor*

Accessible Information and Accessibility Through ICT: A Mega Trend Creates the Need for Quality Certificates for Web Accessibility Professionals in Europe and Beyond . . . . . 667  
*Ronald Bieber, Klaus Höckner, and Gabriele Sauberer*

Team Members' Interactive Styles Involved in the Software Development Process. . . . . 675  
*Nora Rangel, Carlos Torres, Adriana Peña, Mirna Muñoz, Jezreel Mejia, and Luis Hernández*

**Author Index** . . . . . 687



<http://www.springer.com/978-3-319-64217-8>

Systems, Software and Services Process Improvement  
24th European Conference, EuroSPI 2017, Ostrava,  
Czech Republic, September 6–8, 2017, Proceedings  
Stolfa, J.; Stolfa, S.; O'Connor, R.V.; Messnarz, R. (Eds.)  
2017, XX, 688 p. 186 illus., Softcover  
ISBN: 978-3-319-64217-8