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# Systems, Software and Services Process Improvement

25th European Conference, EuroSPI 2018  
Bilbao, Spain, September 5–7, 2018  
Proceedings

*Editors*

Xabier Larrucea  
Tecnalia Bizkaia  
San Sebastián  
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Izaskun Santamaria  
Tecnalia Bizkaia  
San Sebastián  
Spain

Rory V. O'Connor  
School of Computing  
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Dublin  
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Richard Messnarz  
I.S.C.N. GesmbH  
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# Preface

## **Systems, Software and Services Process Improvement – 25th European Conference, EuroSPI<sup>2</sup> 2018, September 5–7, 2018**

This textbook comprises the proceedings of the 25th EuroSPI Conference, held during September 5–7, 2018 in Bilbao, Spain.

At EuroSPI 2018 new workshop communities were formed based on the cooperation with the EU Blueprint for Automotive project DRIVES (2018–2021) and the medical device industry. Therefore, we have extended the scope of the conference from software process improvement and systems, software and service-based process improvement, as well as systems and product improvement, to include and cover the whole life cycle of products. Since 2008, EuroSPI partners have packaged SPI knowledge in job role training and established a European certification association ([www.ecqa.org](http://www.ecqa.org)) to transport this knowledge Europe wide using standardized certification and exam processes.

Conferences were held in Dublin (Ireland) in 1994, in Vienna (Austria) in 1995, in Budapest (Hungary) in 1997, in Gothenburg (Sweden) in 1998, in Pori (Finland) in 1999, in Copenhagen (Denmark) in 2000, in Limerick (Ireland) in 2001, in Nuremberg (Germany) in 2002, in Graz (Austria) in 2003, in Trondheim (Norway) in 2004, in Budapest (Hungary) in 2005, in Joensuu (Finland) in 2006, in Potsdam (Germany) in 2007, in Dublin (Ireland) in 2008, in Alcalá (Spain) in 2009, in Grenoble (France) in 2010, in Roskilde (Denmark) in 2011, in Vienna (Austria) in 2012, Dundalk (Ireland) in 2013, in Luxembourg in 2014, in Ankara (Turkey) 2015, in Graz (Austria) in 2016, and in Ostrava (Czech Republic) in 2017.

EuroSPI is an initiative with the following major action lines <http://www.eurospi.net>:

- Establishing an annual EuroSPI conference supported by software process improvement networks from different EU countries.
- Establishing a social media strategy with groups in LinkedIn, Facebook, Twitter and online statements, speeches, and keynotes on YouTube, and a set of proceedings and recommended books.
- Establishing an effective team of national representatives (from each EU country) growing step by step into more countries of Europe.
- Establishing a European Qualification Framework for a pool of professions related to SPI and management. This is supported by European certificates and examination systems.

EuroSPI has established a joint newsletter with the European Certification and Qualification Association ([www.eurospi.net](http://www.eurospi.net), in the menu “About EuroAsiaSPI”), the SPI Manifesto (SPI = Systems, Software and Services Process Improvement), a set of social media groups including a selection of presentations and keynotes freely available on YouTube, and access to job role-based qualification through the European Certification and Qualification Association ([www.ecqa.org](http://www.ecqa.org)).

A typical characterization of EuroSPI is reflected in a statement made by a company: “... the biggest value of EuroSPI lies in its function as a European knowledge and experience exchange mechanism for SPI and innovation.”

Since its initiation in 1994 in Dublin, the EuroSPI initiative has outlined that there is not a single silver bullet with which to solve SPI issues, but that you need to understand a combination of different SPI methods and approaches to achieve concrete benefits. Therefore, each proceedings volume covers a variety of different topics, and at the conference we discuss potential synergies and the combined use of such methods and approaches. These proceedings contain selected research papers under six headings:

- Section I: SPI Context and Agility
- Section II: SPI and Safety Testing
- Section III: SPI and Management Issues
- Section IV: SPI and Assessment
- Section V: SPI and Safety Critical
- Section VI: Selected Keynotes and Workshop Papers

Section I presents three papers related to the issue of the context of SPI and the agile context in particular, and the impact context has on the software process. Section II explores the issues of both safety and testing from an SPI perspective. Section III presents three papers dealing with issues surrounding the topic of management issues as it relates to SPI, including change management, knowledge management, and project management. Section IV discusses issues surrounding assessment of software process, including cultural awareness and improvement planning. Section V explores the theme of safety-critical software from an SPI viewpoint and also combining safety and security.

Section VI presents selected keynotes from EuroSPI workshops concerning the future of SPI. From 2010 onwards, EuroSPI invites recognized key researchers to publish their thoughts about new future directions of SPI. These key messages are discussed in interactive workshops and help create SPI communities based on new topics.

The first set of papers relates to the GamifySPI workshop and explores Gamification and Persuasive Games for Software Process Improvement, Information Technology, and Innovation Management. The second collection of papers relates to the topic of SPI in Industry 4.0 – The Digitalization of Design and Manufacturing and elaborates a set of best practices and success factors for the implementation of industry 4.0. The third collection of papers surrounds the topic of Best Practices in Implementing Traceability. The fourth collection discusses the topic of Good and Bad Practices in Improvement with key contributions from European initiatives, which developed best practices for SPI. The fifth collection of papers relates to the topic of Functional Safety and addresses best practices from automotive industry to cope with cyber security and

functional safety. The sixth collection addresses experiences with Agile and Lean and examines a series of success factors and examples of being lean and agile. The seventh collection of papers addresses the topic of Standards and Assessment Models and examines different ISO standards and assessment models will be introduced, explained, and discussed. The eighth collection of papers addresses Team Skills and Diversity Strategies and examines a variety of organizational and human factors as they relate to SPI. The ninth set of papers deals with the critical domain of SPI in Medical Device Industry. Finally the tenth set of papers covers Empowering the Future Infrastructure and specifically skills and improvements needs.

September 2018

Xabier Larrucea  
Izaskun Santamaria  
Rory V. O'Connor  
Richard Messnarz

## Recommended Further Reading

In [1] the proceedings of three EuroSPI conferences were integrated into one book, which was edited by 30 experts in Europe. The proceedings of EuroSPI 2005 to 2017 inclusive have been published by Springer [2–14].

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EuroSPI established an international committee of selected well-known experts in SPI who are willing to be mentioned in the program and to review a set of papers each year. The list below represents the Research Program Committee members. EuroSPI also has a separate Industrial Program Committee responsible for the industry/experience contributions.

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