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Alastair Walker · Rory V. O'Connor ·
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Systems, Software and Services Process Improvement

26th European Conference, EuroSPI 2019
Edinburgh, UK, September 18–20, 2019
Proceedings

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Preface

This textbook comprises the proceedings of the 26th Systems, Software and Services Process Improvement (EuroSPI) Conference, held during September 18–20, 2019, in Edinburgh, Scotland.

Previous 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 Alcala (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) 2016, in Ostrava (Czech Republic) in 2017, and in Bilbao (Spain) in 2018.

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 an, 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 a cooperation with the EU Blueprint for Automotive project DRIVES (2018–2021) where participants from leading automotive industry discuss and present skills for the Europe 2030 strategy in the automotive sector.

EuroSPI has established a joint newsletter with the European Certification and Qualification Association (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).

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: Visionary SPI Publications
- Section II: SPI and Safety and Security
- Section III: SPI and Assessments
- Section IV: SPI and Future Qualification and Team Performance
- Section V: SPI Manifesto and Culture
- Section VI: Selected Workshop Papers

Section I presents three papers addressing visionary topics in SPI. Section II presents four papers related to the issue of the context of SPI and safety and security. Section III presents three papers dealing with issues surrounding the topic of SPI and assessments. Section IV explores the issues of SPI and the future qualification, and team performance. Section V discusses the SPI manifesto and SPI culture.

Section VI presents selected keynotes from EuroSPI workshops concerning the future of SPI. From 2010 onwards, EuroSPI invites recognized key researchers to publish their findings about new future directions of SPI. These key messages are discussed in interactive workshops and help in creating 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 relate to the topic of “Digitalization of Industry, Infrastructure and E-Mobility.” 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 relate to the topic of “Functional Safety and Cybersecurity” and addresses best practices from the 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 that are 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 addresses recent innovations such as testing artificial intelligence systems and new service innovation models.

September 2019

Alastair Walker
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 2018 inclusive have been published by Springer in [2–15], respectively.

References

1. Messnarz, R., Tully, C. (eds.): Better Software Practice for Business Benefit – Principles and Experience, 409 pages. IEEE Computer Society Press, Los Alamitos (1999)
2. Richardson, I., Abrahamsson, P., Messnarz, R. (eds.): Software Process Improvement. LNCS, vol. 3792, p. 213. Springer, Heidelberg (2005)
3. Richardson, I., Runeson, P., Messnarz, R. (eds.): Software Process Improvement. LNCS, vol. 4257, pp. 11–13. Springer, Heidelberg (2006)
4. Abrahamsson, P., Baddoo, N., Margaria, T., Messnarz, R. (eds.): Software Process Improvement. LNCS, vol. 4764, pp. 1–6. Springer, Heidelberg (2007)
5. O'Connor, R.V., Baddoo, N., Smolander, K., Messnarz, R. (eds): Software Process Improvement. CCIS, vol. 16, Springer, Heidelberg (2008).
6. O'Connor, R.V., Baddoo, N., Gallego C., Rejas Muslera R., Smolander, K., Messnarz, R. (eds): Software Process Improvement. CCIS, vol. 42, Springer, Heidelberg (2009).
7. Riel A., O'Connor, R.V. Tichkiewitch S., Messnarz, R. (eds): Software, System, and Service Process Improvement. CCIS, vol. 99, Springer, Heidelberg (2010).
8. O'Connor, R., Pries-Heje, J. and Messnarz R., Systems, Software and Services Process Improvement, CCIS Vol. 172, Springer-Verlag, (2011).
9. Winkler, D., O'Connor, R.V. and Messnarz R. (Eds), Systems, Software and Services Process Improvement, CCIS 301, Springer-Verlag, (2012).
10. McCaffery, F., O'Connor, R.V. and Messnarz R. (Eds), Systems, Software and Services Process Improvement, CCIS 364, Springer-Verlag, (2013).
11. Barafort, B., O'Connor, R.V. and Messnarz R. (Eds), Systems, Software and Services Process Improvement, CCIS 425, Springer-Verlag, (2014).
12. O'Connor, R.V. Akkaya, M., Kemaneci K., Yilmaz, M., Poth, A. and Messnarz R. (Eds), Systems, Software and Services Process Improvement, CCIS 543, Springer-Verlag, (2015).
13. Kreiner, C., Poth, A., O'Connor, R.V., and Messnarz R. (Eds), Systems, Software and Services Process Improvement, CCIS 633, Springer-Verlag, (2016).
14. Stolfi, J, Stolfi, S., O'Connor, R.V., and Messnarz R. (Eds), Systems, Software and Services Process Improvement, CCIS 633, Springer-Verlag, (2017).
15. Larrucea, X., Santamaria, I., O'Connor, R.V., Messnarz, R. (Eds), Systems, Software and Services Process Improvement, CCIS Vol. 896, Springer-Verlag, (2018)

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