Product-Focused Software Process Improvement

December 2-4, 2015 Bolzano - Bozen, Italy

16th International Conference on Product-focused Software Process Improvement (PROFES)
Workshop Processes, Methods and Tools for Engineering Embedded Systems (PROMOTE)
Workshop International Workshop on Human Factors in Software Development Processes (HuFo)
Workshop Software Startups: State of the Art and State of the Practice (SSU)
Tutorial User Experience: Do We Mean the Same? (Tutorial)

PROFES 2015 2-4.12.2015 rooms: D102, D103 pp. 10-13
PROMOTE 2.12.2015 room: D102 pg. 5
HuFo 2.12.2015 room: D103 pg. 6
SSU + Tutorial 2.12.2015 room: D002 pg. 7
Venue maps pp. 8-9, 14
Venue and logistic information

International week venue
University main building, piazza Università 1

Registration at
University main building, first floor in front of room D102, 8:00 – 9:00 everyday

Major distances from the conference venue

5-10 min walking distance from
Hotel Città – Stadt Hotel, Parkhotel Luna Mondschein, Hotel Scala Stiegl,
Main train station (in Italian ‘Bolzano-Bozen centrale’),
Major parking places (piazza Walther, Central Parking, Laurin)

10 min walking distance to
Castel Mareccio – Schloss Maretsch (Via Claudia De' Medici, 12)
PROFES 2015

Wednesday, December 2nd

8:00 - 9:00  Registration to Workshops
9:00 - 10:30  Session 1: PROMOTE 2015 - HuFo 2015 - SSU
10:30 - 11:00  Coffee break
11:00 - 12:30  Session 2
12:30 - 14:00  Lunch  Cafetteria
14:00 - 15:30  Session 3
15:30 - 16:00  Coffee break
16:00 - 17:30  Session 4
17:30 - 18:30  PROFES15 Welcome Reception  F6

Thursday, December 3rd

8:00 - 9:00  Registration
9:00 - 9:30  Conference Welcome
10:30 - 11:00  Coffee break
11:00 - 12:20  session Left: Lessons learned from industry-research collaborations  session Right: Instruments to improve the software development process  rooms D102/D103
12:30 - 14:00  Lunch  Cafetteria
14:00 - 15:20  session Left: Requirements, features, and release management  session Right: Practices of modern development processes  rooms D102/D103
15:20 - 15:50  Coffee break
15:50 - 17:00  session Left: Process variability  session Right: Human factors in modern software development  rooms D102/D103
17:15 - 18:00  Panel: The role of empirical research in Software Engineering
20:00  Conference Dinner at Castel Mareccio/Schloss Maretsch
<table>
<thead>
<tr>
<th>Time</th>
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<tbody>
<tr>
<td>8:00 - 9:00</td>
<td>Registration</td>
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<tr>
<td>9:00 - 10:00</td>
<td><strong>Keynote</strong>: Janne Järvinen “Need for Speed – Transforming the software intensive industry for new digital economy” room D102</td>
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<td>15:15 - 15:45</td>
<td>Closing session, Best paper award, and PROFES2016</td>
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<tr>
<td>16:30 - 18:00</td>
<td>Visit to local Winery</td>
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</table>
## Workshops detailed program

**PROMOTE 2015**  
**Room D 102**

### Wednesday, December 2nd

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
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<tbody>
<tr>
<td>9:00 - 10:30</td>
<td><strong>Session 1</strong></td>
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<tr>
<td>9:00 - 9:10</td>
<td>Welcome from the workshop chairs</td>
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<tr>
<td>9:10 - 10:30</td>
<td><strong>Keynote:</strong> Mining logs to predict system errors</td>
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<tr>
<td>B. Russo</td>
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<tr>
<td>10:30 - 11:00</td>
<td><strong>Coffee break</strong></td>
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<tr>
<td>11:00 - 12:30</td>
<td><strong>Session 2</strong></td>
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<tr>
<td>11:00 - 11:30</td>
<td>Performance Engineering for Industrial Embedded Data-Processing Systems</td>
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<tr>
<td>M. Hendriks, J. Verriet, T. Basten, M. Brasse, R. Dankers, R. Laan, A. Lint, H. Moneva, L. Somers, and M. Willekens</td>
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</tr>
<tr>
<td>11:30 - 12:00</td>
<td>Fault-prone Byte-code Detection Using Text Classifier</td>
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<tr>
<td>T. Fujiwara, O. Mizuno, and P. Leelaprute</td>
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</tr>
<tr>
<td>12:00 - 12:30</td>
<td>Variability management strategies to support efficient delivery of embedded systems</td>
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<tr>
<td>S. Teppola, P. Parviainen, J. Partanen, and P. Kettunen</td>
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<tr>
<td>12:30 - 14:00</td>
<td><strong>Lunch</strong></td>
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<tr>
<td>14:00 - 15:30</td>
<td><strong>Session 3</strong></td>
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<td>14:00 - 14:30</td>
<td>Using Cross-Dependencies during Configuration of System Families</td>
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<tr>
<td>C. Brink, P. Heisig, and S. Sachweh</td>
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<tr>
<td>14:30 - 15:30</td>
<td><strong>Discussion Topic:</strong> Technical Debt in Embedded Systems</td>
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<td>15:30 - 16:00</td>
<td><strong>Coffee break</strong></td>
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<tr>
<td>16:00 - 17:00</td>
<td><strong>Session 4</strong></td>
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<tr>
<td>16:00 - 16:30</td>
<td><strong>Discussion Topic:</strong></td>
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<tr>
<td>The Future of Embedded Systems in Industrial Context</td>
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<tr>
<td>16:30 - 17:00</td>
<td><strong>Final Conclusions on the Workshop</strong></td>
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</tbody>
</table>
### Workshops detailed program

**HuFo 2015**  
**Room D 103**

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**Wednesday, December 2<sup>nd</sup>**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
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</thead>
</table>
| 9:00 - 9:30   | Welcome speech, workshop introduction and self-introduction of participants:  
Throughout the presentation sessions, participants will be invited to take notes of ideas, comments and issues on in a shared online document |
| 9:30 - 10:30  | **Session 1**  
**A Meta-Ontology for Accurate Ontologies to Specify Domain Specific Experiments in Software Engineering**  
*W. Ferreira, M. T. Baldassarre, S. Soares and G. Visaggio*  
If Usability Evaluation and Software Performance Evaluation shook their hands: a perspective  
*T. Di Mascio, L. Tarantino and G. De Gasperis* |
| 10:30 - 11:00 | **Coffee break** |
| 11:00 - 12:30 | **Session 2**  
**Evaluating Mobile Malware by extracting User Experience-based features**  
*F. Mercaldo and C. A. Visaggio*  
**Information system software development with support for application traceability**  
*V. Đukić, I. Luković, M. Črepinšek, T. Kosar and M. Mernik*  
**A Qualitative Empirical Study in the Development of Multi-platform Mobile Applications** - *R. Francese, M. Risi, G. Scanniello and G. Tortora* |
| 12:30 - 14:00 | **Lunch** |
| 14:00 - 15:10 | **Session 3**  
**Characterising users through an analysis of on-line Technical Support forums** - *S. Gizaw, J. Buckley and S. Beecham*  
**Quantitative metrics for User Experience: a case study**  
*R. Capellini, F. Tassistro and R. Actis-Grosso*  
**Software Developers as Users: Developer Experience of a Cross-Platform Integrated Development Environment** - *K. Kuusinen* |
| 15:10 - 15:30 | **Preliminary discussion**  
Preliminary discussion on workshop's outcomes |
| 15:30 - 16:00 | **Coffee break** |
| 16:00 - 17:30 | **Plenary discussion and proposals for future developments + Closing**  
We read aloud the comments and notes on the shared document, discuss and list important keywords, identify challenges and topics and final remarks |
## Workshops detailed program

**Software Startups: State of the Art and State of the Practice (SSU)**  
Room D 002

### Wednesday, December 2nd

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Details</th>
</tr>
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</table>
| 9:00 - 10:30  | Session 1: Software Startup Challenges and Solutions | Keynote speech: Software startup research  
Presentation of initial roadmap of software startup research and paper presentation and discussion:  
Ways to Cross the Rubicon: Pivoting in Software Startups  
*H. Terho, S. Suonsyrjä, A. Karisalo and T. Mikkonen*  
On the feasibility of startup models as a framework for research on competence needs in software startups  
*P. Seppänen, K. Liukkunen and M. Oivo* |
| 10:30 - 11:00 | Coffee break | |
| 11:00 - 12:30 | Session 2: New Perspectives on Software Startup | Towards a Software Tool Portal to Support Startup Process  
*H. Edison, D. Khanna, S. S. Bajwa, V. Brancaleoni and L. Bellettati*  
What can software startuppers learn from the artistic design flow?  
Experiences, reflections and future avenues  
*J. Risku and P. Abrahamsson*  
Designing a Maturity Model for Software Startup Ecosystem  
*D. Cukier, F. Kon and N. Krueger*  
A Conceptual Framework of Lean Startup Enabled Internal Corporate Venture  
*H. Edison* |
| 12:30 - 14:00 | Lunch | |
| 14:00 - 15:30 | Session 3: Completing Roadmap of Software Startup Research |  |
| 15:30 - 16:00 | Coffee break | |
| 16:00 - 17:30 | Session 4: TUTORIAL - User Experience (UX) and Software Startups |  |
Ground floor map
First floor map
# Main Conference detailed program

## Thursday, December 3rd

<table>
<thead>
<tr>
<th>Time</th>
<th>Session Left – room D102</th>
<th>Session right – room D103</th>
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</thead>
<tbody>
<tr>
<td>11:00-12:20</td>
<td>Lessons learned from industry-research collaborations - Session chair: S. di Martino</td>
<td>Instruments to improve the software development process - Session chair: J. Järvinen</td>
</tr>
<tr>
<td></td>
<td><strong>Full paper:</strong> Strategic Ecosystem Management: A multi-case study in the B2B domain</td>
<td><strong>Full paper:</strong> Software Process Improvement Implementation Risks: A Qualitative Study based on Software Development Maturity Models Implementations in Brazil</td>
</tr>
<tr>
<td></td>
<td><em>H. H. Olsson and J. Bosch</em></td>
<td><em>E. Dutra and G. Santos</em></td>
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<td></td>
<td><strong>Full paper:</strong> Challenges of structured reuse adoption – Lessons learned - V. Bauer</td>
<td><strong>Full Paper:</strong> SINIS: A Method to Select Indicators for IT Services - B. Trinkenreich, G. Santos and M. Barcellos</td>
</tr>
</tbody>
</table>

Keynote speaker: Dieter Rombach

**The Maturing of Empirical Studies: Towards Industrial Benefits**

Measurement and empirical studies have matured over the past decades. This includes the combination of quantitative and qualitative studies, the combination of controlled experiments and case studies, or the closer cooperation between academia and industry. This presentation surveys the achievements over the past decades, and proposes possible agendas for the future. The survey of achievements will be illustrated via concrete examples. Finally, the strategy of Fraunhofer ISE in Germany and Fraunhofer CESE in the US for measurement and facts based cooperation with industry is outlined.
12:30 - 14:00 Lunch

14:00 - 15:20

**Session Left – room D102**
Requirements, features, and release management - Session chair: B Gallina

**Full paper:** Quantitative Requirements Prioritization – a case study - E. Johansson, D. Bergdahl, J. Bosch and H. H. Olsson


**Full paper:** A Case Study on Artefact-based RE Improvement in Practice - D. M. Fernández and S. Wagner

**Session right – room D103**
Practices of modern development processes - Session chair: K. Kati

**Full paper:** Artefacts in Agile Software Development - G. Wagenaar, R. Helms, D. Damian and S. Brinkkemper

15:20 - 15:50 Coffee break

15:50 - 17:00

**Session Left – room D102**
Process variability - Session chair: V. Bauer


**Research Preview Paper:** Modeling Variability in Software Process with EPF Composer and SMartySPEM: a Qualitative Study - J. Dias and E. Oliveira Jr

**Session right – room D103**
Human factors in modern software development - Session chair: D. Pfahl

**Full Paper:** What Motivates Software Engineers Working in Global Software Development? - S. Beecham and J. Noll

**Research Preview Paper:** Empower a Team’s Product Vision with LEGO Serious Play - D. Pichlis, S. Hofemann, M. Raatikainen, J. Sorvettula and C. Stenholm

**Research Preview Paper:** Early Product Design in Startups: Towards a UX Strategy - L. Hokkanen, K. Kuusinen and K. Väänänen

17:15 - 18:00 Panel: The role of empirical research in Software Engineering

20:00 Conference Dinner at Castel Mareccio/Schloss Maretsch
### Main Conference detailed program

**Friday, December 4th**

<table>
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<tr>
<th>Time</th>
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<tr>
<td>08:00 - 9:00</td>
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<td>9:00 - 10:00</td>
<td><strong>Keynote speaker: Janne Järvinen</strong></td>
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<td></td>
<td>Need for Speed – Transforming the software intensive industry for new digital economy</td>
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<td></td>
<td>Abstract: The internet is and increasingly will be the first truly global platform for the digital economy that will enable significant new business, economic and social opportunities. The complexity and competition around the new internet infrastructure, services and business environment will increase dramatically and will fundamentally change the way software will be developed, deployed and used to reach business goals. Consequently, we are facing a fundamental systemic transformation towards a world where digital resources are constantly available online, and available for all to use. This keynote discusses experiences from Finnish N4S program (<a href="http://www.n4s.fi">www.n4s.fi</a>) that addresses these challenges introducing capabilities for real-time value delivery, deep customer insight and mercury business.</td>
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<tr>
<td>10:00 - 10:30</td>
<td>Coffee break</td>
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<tr>
<td>10:30 - 11:50</td>
<td><strong>Session Left – room D102</strong></td>
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<td></td>
<td>Effort and size estimation validated by professionals - Session chair: D. Rombach</td>
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<td><strong>Session right – room D103</strong></td>
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<td></td>
<td>Empirical generalisation - Session chair: M. Kuhrmann</td>
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<td></td>
<td>Full paper: An Empirical Study on Memory Bias Situations and Correction Strategies in ERP Effort Estimation - P. Erasmus and M. Daneva</td>
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<td>Research Preview Paper: Defining Continuous Planning through a Multiple-Case Study - T. Suomalainen</td>
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<td>Full Paper: Issue Dynamics in Github Projects - R. Kikas, M. Dumas and D. Pfahl</td>
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<tr>
<td>Time</td>
<td>Session Left – room D102</td>
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<tr>
<td>12:00 - 13:30</td>
<td><strong>Lunch</strong></td>
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<td>13:00 - 14:50</td>
<td><strong>Software reliability and testing in industry</strong> - Session chair: G. Reggio</td>
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<td><strong>Full paper:</strong> A Process for Risk-Based Test Strategy Development and Its Industrial Evaluation - R. Ramler and M. Felderer</td>
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<td>14:50 - 15:15</td>
<td><strong>Coffee break</strong></td>
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<td>15:15 - 15:45</td>
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<td><strong>Visit to local Winery</strong></td>
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Map to reach Castel Mareccio on foot
Message from the chairs

Welcome to Bozen-Bolzano, Italy for the 16th International Conference on Product-Focused Software Process Improvement (PROFES 2015).

In the beautiful alpine winter atmosphere, PROFES 2015 offers the opportunity for practitioners, researchers, and educators to present and discuss experiences, ideas, and innovations for the management and improvement of software development processes.

Janne Järvinen, Director of F-Secure plc (leader for information security), and Dieter Rombach, head of the Research Group for Software Engineering (AGSE) and Fraunhofer Institute for Experimental Software Engineering (IESE), Germany, are the two keynote speakers of the main conference.

The conference offers ten different parallel sessions on: lessons learned from industry-research collaborations; instruments to improve software development processes; requirements, features, and release management; practices of modern development processes; human factors in modern software development; effort and size estimation validated by professionals; empirical generalisation; and software reliability and testing in industry.

The call for papers of the main conference attracted 50 submissions, 18 of which were selected as full papers and ten as research preview papers.

This year also the three co-located workshops and two tutorials are remarkable. The workshop main topics concern: processes, methods, and tools for engineering embedded systems; human factors in software development processes; and software startups: state of the art and state of the practice. The tutorials focus on technologies to measure energy consumption of software applications and methods to understand user experience in the use of software.

We would like to thank the enthusiastic participation of our authors and the diligent effort of our reviewers, and the contribution of our sponsors. We would also like to gratefully acknowledge the untiring support of the local organisers, publicity chairs, and all the members of the Organising Committee who made the conference a success. A special thanks to the student volunteers, the Press and Event Management Office, and the Faculty of Computer Science of the Free University of Bozen/Bolzano, who kindly hosts the conference and provides all the facilities for its realisation.

We wish you a pleasant conference!

General chair: Pekka Abrahamsson
Program co-chairs: Markku Oivo & Barbara Russo
Proceedings chair: Luis Ricardo Corral Velazquez
Organizing co-chairs: Gabriele Bavota & Daniel Graziotin
Thanks to the program committees

Silvia Abrahão, Universidad Politecnica de Valencia (UPV) (Spain)
Soussuke Amasaki, Okayama Prefectural University (Japan)
Ulf Asklund, Lund University (Sweden)
Maria Teresa Baldassarre, Università degli Studi di Bari A. Moro (Italy)
Stefan Biffl, Technische Universität Wien (Austria)
Andreas Birk, Software.Process.Management (Germany)
Sjaak Brinkkemper, Universiteit Utrecht (Netherlands)
Luigi Buglione, Université du Québec (Canada)
Gerardo Canfora, University of Sannio (Italy)
Jeffrey Carver, University of Alabama (USA)
Marcus Ciolkowski, Kaiserslautern University of Technology (Germany)
Daniela S. Cruzes, SINTEF
Maya Daneva, University of Twente (Netherlands)
Oscar Dieste, Universidad Politécnica de Madrid (Spain)
Tore Dybå, University of Oslo (Finland)
Christof Ebert, University of Stuttgart (Germany)
David Falessi, Cal Poly (USA)
Michael Felderer, University of Innsbruck (Austria)
Marcela Genero, University of Castilla-La Mancha (Spain)
Daniel Graziotin, Free University of Bozen-Bolzano (Italy)
Noriko Hanakawa, Hannan University (Japan)
Jens Heidrich, Fraunhofer IESE (Germany)
Yoshiki Higo, Osaka University (Japan)
Frank Houdek, Ulm University (Germany)
Helena Holmström Olsson, Malmö University (Sweden)
Hajimu Iida, Nara Institute of Science and Technology (Japan)
Letizia Jaccheri, Politecnico di Torino (Italy)
Andreas Jedlitschka, Fraunhofer IESE (Germany)
Marco Kuhrmann, University of Southern Denmark (Denmark)
Constanza Lampasona, Fraunhofer IESE (Germany)
Casper Lassenius, Aalto University (Finland)
Christin Lindholm, Lund University (Sweden)
Ricardo Jorge Machado, University of Minho (Portugal)
Lech Madeyski, Wroclaw University of Technology (Poland)
Tomi Mannisto, University of Helsinki (Finland)
Mika Mäntylä, University of Oulu (Finland)
Jouni Markkula, University of Jyväskylä (Finland)
Kenichi Matsumoto, Reitaku University (Japan)
Emilia Mendes, Blekinge Institute of Technology (Sweden)
Daniel Méndez Fernández, Technische Universität München (Germany)
Maurizio Morisio, Politecnico di Torino (Italy)
Jürgen Münch, University of Helsinki (Finland)
Risto Nevalainen
Mahmood Niazi, King Fahd University of Petroleum and Minerals (Saudi Arabia)
Paolo Panaroni, INTECS (Rome)
Oscar Pastor, Universidad Politécnica de Valencia (Spain)
Kai Petersen, Blekinge Institute of Technology (Sweden)
Dietmar Pfahl, University of Tartu (Estonia)
Reinhild Plösch, Johannes Kepler Universität Linz (Austria)
Bruno Rossi, Free University of Bozen-Bolzano (Italy)
Martin Solari, Universidad ORT (Uruguay)
Klaas Stol, Lero (Greece)
Michael Stupperich, Daimler AG (Stuttgart)
Marco Torchiano, Politecnico di Torino (Italy)
Guilherme Travassos, University of Maryland (USA)
Adam Trendowicz, Fraunhofer IESE (Germany)
Burak Turhan, University of Oulu (Finland)
Rini van Solingen, Delft University of Technology (Netherlands)
Sira Vegas, Technical University Madrid (Spain)
Mathias Vierimaa
Stefan Wagner, University of Stuttgart (Germany)
Dietmar Winkler, Vienna University of Technology (Austria)
Krzysztof Wnuk, Blekinge Institute of Technology (Sweden)

Arrivederci a Bolzano – Auf wiederschehen in Bozen