11th IEEE International Conference on Global Software Engineering
Software Bridging Distances Between People

CONFERENCE PROGRAM
ORGANIZING COMMITTEE

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Filippo Lanubile, University of Bari, Italy
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Audris Mockus, University of Tennessee & Avaya Labs Research, USA
Juergen Muench, University of Helsinki, Finland
Leonardo Murta, Universidade Federal Fluminense, Brazil
Martin Naedele, ABB, Switzerland
Mahmood Niazi, King Fahd University of Petroleum and Minerals, Saudi Arabia
Alexander Nolte, University of Bochum, Germany
Martin Nordio, ETH Zurich, Switzerland
Maria Paasivaara, Helsinki University of Technology, Finland
Xin Peng, Fudan University, China
Rafael Prikладnicki, PUCRS, Brazil
Narayan Ramasubbu, University of Pittsburgh, USA
Ita Richardson, University of Limerick & Lero, Ireland
Anita Sarma, Oregon State University, USA
Leif Singer, University of Victoria, Canada
Darja Smite, Blekinge Institute of Technology, Sweden
Igor Steinmacher, Universidade Tecnológica Federal do Paraná, Brazil
Bedir Tekinerdогan, Wageningen University, Turkey
Paolo Tell, IT University, Denmark
Erik Trainer, Carnegie Mellon University, USA
Guilherme Travassos, Federal University of Rio de Janeiro, Brazil
Christoph Treude, University of São Paulo, Brazil
Giuseppe Valetto, Drexel University, USA
Rini Van Solingen, Delft University of Technology, Netherlands
Aurora Vizcaíno, Universidad de Castilla - La Mancha, Spain
Yi Wang, IBM Almaden Research Center, USA
Igor Wiese, Universidade Tecnológica Federal do Paraná, Brazil
Volker Wulf, University of Siegen, Germany
Mansooreh Zahedi, IT University of Copenhagen, Denmark
PARIS: Methods and Tools for Project/Architecture/Risk Management in Globally Distributed Software Development Projects
Tuesday, 9:00 - 12:30 | Room 5011
The goal of this workshop is to provide a forum for researchers and professionals interested in global software development to discuss and exchange ideas. In particular, this workshop takes the perspective of the practitioner and focuses on the techniques that will help software professionals to meet the unique challenges in a global development environment. Thus, the major goal of this workshop is to discuss novel methodologies for risk management for global software development. Additionally, we want to provide a platform bringing together researchers and practitioners in order to share their knowledge and requirements in the field of offshore software development.

GSE-Ed’16: Inaugural Workshop on Global Software Engineering Education
Tuesday, 9:00 - 5:30 | Room 6011
This workshop deals with contemporary issues in Computer Science and Software Engineering Education. Universities preparing students for the workplace are recognizing the need to provide courses that reflect some of the challenges of distributed development. This workshop will present research that facilitates course leaders embarking on GSE-Ed. We now solicit research papers on any aspect of GSD-Ed, ranging from problems experienced in the classroom and lessons learned, to frameworks providing a complete solution. While we encourage practical-experienced based papers, we also will consider papers that present a theoretical perspective.

T1: Scaling Agile to Large Globally Distributed Organizations
Tuesday, 2:00 - 5:30 | Room 5011
Prof. Casper Lassenius and Dr. Maria Paasivaara, Aalto University, Finland
The objective of this tutorial is to share our findings on a) Challenges and success factors for adopting agile to large-scale organizations, and b) Challenges and successful practices for scaling agile to large and globally distributed organizations.

Target Audience
The tutorial is aimed especially to practitioners who are planning to adopt or have adopted agile in their large, globally distributed organization or project. Researchers interested in the topic are also welcome.

Tutorial Level
Intermediate. The audience is expected to have basic knowledge on agile software development.

T2: What did you say? Mindful (Intercultural) Communication for Successful Projects
Tuesday, 2:00 - 5:30 | Room 4011
Frederick Zarndt, Global Connexions, USA
Expect to take away practical tools to understand your own cultural biases and in-class practice mindful communication with your colleagues from other cultures as well as your own. You will also learn about frameworks for understanding other cultures based on work by Geert Hofstede, Fons Trompenaars, and others as well as on the presenter’s own experiences.

Target Audience
Anyone can benefit, but especially those who frequently communicate with colleagues from other cultures.

T3: Issues, Challenges, and Opportunities in Open Source Software Development for Global Software Engineering
Wednesday, 9:00 - 12:30 | Room 6011,
Dr. Walt Scacchi, University of California, Irvine, USA
Expect to take away practical tools to understand The tutorial serves to introduce and educate software developers, system architects, project managers, educators, and others in the state of the art in open source software development processes, work practices, and project community dynamics. The focus is to examine and review results from empirical studies of OSSD that have appeared in the past 5-10 years.

Target Audience
Software developers, system architects, project managers, program managers, and others who anticipate the acquisition, adoption, implementation, or integration of OSS systems, components, processes, practices or project communities in current/future system development efforts.

T4: Distributed Development – Lessons from Industry
Wednesday, 9:00 - 12:30 | Room 5011
Christof Ebert, Vector Consulting Services, Germany
This tutorial by renowned industry expert Christof Ebert summarizes concrete experiences and guidance from industry. It looks to techniques and tools for successfully handling global software development and sourcing. This tutorial specifically addresses industry persons who want to ramp up fast on best practices in GSE.

Target Audience
Software engineers, team leads, project managers, line managers, experts and managers from procurement / sourcing and quality, consultants.

Tutorial Level
Basic – Intermediate.
In this talk Sanjay will discuss how SAP, a large global software company, is experimenting with a radically different innovation concept called HanaHaus which was successfully launched in the Silicon Valley under his leadership. The idea and vision for HanaHaus was conceptualized by Dr. Hasso Plattner, Co-founder and Chairman of SAP, to create an ecosystem to foster a vibrant culture of technology, innovation and entrepreneurship beyond the boundaries of SAP.

**BIOGRAPHY.** Sanjay Shirolé is a Vice President at the SAP Innovation Center Silicon Valley where he heads the SCALE effort. Sanjay and his team help build and launch new products for early adopter customers. Before joining SAP, Sanjay spent over 15 years as an entrepreneur successfully founding and leading two software startups in the Silicon Valley, including Xora, a global leader in mobile, cloud based, location aware workforce management solutions. He is very passionate about entrepreneurship, especially as it relates to the democratization of technology for small and medium businesses. He continues to mentor and provide advice to technology entrepreneurs worldwide.

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**THURS, AUG 4 | Chair: Marco Gerosa, University of São Paulo, Brazil**

**Margaret-Anne Storey, Professor of Computer Science, University of Victoria, Canada**

**To Bot or Not: How Bots Can Support Collaboration in Software Development**

**ABSTRACT.** Software development stakeholders require a constellation of tools to support their communication, collaboration and coordination activities. But poor tool integration can lead to gaps in knowledge flow, or worse, to an overabundance of shared communication and information. The software development community is witnessing the rise of “social bots” to integrate diverse development and communication tools and to address the challenge of information overload. A bot is a conversational user interface that can automate rote or tedious tasks. It may fetch or share information, extract and analyze data, detect and monitor events and activities in communication and social media, connect developers with each other or with other tools, or it may provide feedback on individual and collaborative development tasks. Some bots are emerging as important team members, providing support for individual and team task management and for the automation of dev-ops and customer support. However, the rapid adoption of bots and the platforms that support them brings possible drawbacks. Designing effective platforms for bots is challenging and bots may introduce alienation among stakeholders or lead to other technical challenges. In this talk, I will discuss the emerging role of bots in software development and describe some of the advantages and challenges that may lie ahead.

**BIOGRAPHY.** Dr. Margaret-Anne Storey is a Professor of Computer Science and the Director of the Software Engineering program at the University of Victoria. She holds a Canada Research Chair in Human and Social Aspects of Software Engineering. Her research goal is to understand how technology can help people explore, understand, and share complex information and knowledge. She evaluates and applies techniques from knowledge engineering, social software, and visual interface design to applications such as collaborative software development, program comprehension, biomedical ontology development, and learning in Web-based environments.

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**FRI, AUG 5 | Chair: David Redmiles, University of California, Irvine**

**Andrew Begel, Senior Researcher, Microsoft Research, USA**

**The ABCs of Software Engineering: Affect, Biometrics, and Cognition**

**ABSTRACT.** Researchers have long investigated how people read, write, and speak about software on their computers to identify the skills, education, and practices needed need to acquire expertise and perform development duties effectively and efficiently. However, until now the methods used to study developer comprehension, expression, and communication have been limited and coarse-grained because there was no way to identify what a developer thought or felt unless it was expressed out loud.

The world has changed. With the introduction of low-cost, widely available, high-fidelity biometric sensors, we can now more directly observe a software developer’s cognitive and affective (emotional) processes. The ABCs of Software Engineering is a set of techniques that modernize classic approaches to program comprehension and human interaction by combining (A) principles governing the influence of human *affect* on behavior, (B) *biometric* sensors, and (C) models of *cognition* informed by advances in cognitive neuroscience. Technologies like electroencephalography (EEG), electro-dermal activity sensors (EDA), capacitive sensors, and eye trackers can reveal a software developer’s internal emotional states, for example identifying when the developer is confused, frustrated, surprised, stressed, fatigued, or in a highly productive flow state. These affective states can be correlated with code quality, software complexity, social software development, and effective communication — the same software outcomes already correlated with developer activities in other research areas such as mining software repositories (MSR) and cooperative and human aspects of software engineering (CHASE). By developing a better understanding of what programmers think and feel when they create and maintain software, we can design tools and interventions to improve their productivity and reduce the impact of their errors.

**BIOGRAPHY.** Andrew Begel is a Senior Researcher in the VIBE group at Microsoft Research. Andrew studies software engineers to understand how communication, collaboration and coordination behaviors impact their effectiveness in collocated and distributed development. He then builds software tools that incentivize problem-mitigating behaviors. Andrew’s recent work focuses on the intersection of social computing and software engineering, and on the use of biometrics to better understand how software developers do their work.
Conference Sessions

Session 1: People, Teams, and Organizations

Wednesday, 4:15 - 5:45 | ROOM 6011
Chair: Marcos Borges, Universidade Federal do Rio de Janeiro, Brazil

“Hiring in the Global Stage: Profiles of Online Contributions”
Anita Sarma, Oregon State University, USA
Xiaofan Chen, Neweredy Enterprise Group Limited, New Zealand
Sandeep Kuttal, University of Tulsa, USA
Laura Dobbish, Carnegie Mellon University, USA
Zhendong Wang, University of Nebraska–Lincoln, USA

“Organizational Behavior Engineering for Sustainable Global Software Development” (Industry paper)
Debi Prasad Mahapatra and Dharmesh Khara
Siemens Technology and Services Private Limited, India

“Towards Adopting Alternative Workforce for Software Engineering”
Alpana Dubey, Gurdeep Virdi, Mani Suma Kuriakose, Veenu Arora
Accenture Technology Labs, India

“Communication Challenges and Strategies in Distributed DevOps” (short paper)
Elisa Diel, PUCRS Porto Alegre, Brazil
Sabrina Marczak, PUCRS Porto Alegre, Brazil
Daniela Cruzes, SINTEF, Norway

“Enabling knowledge sharing in agile virtual teams”
(Industry paper)
Nils Brede Moe, SINTEF, Norway
Daniela Soares Cruzes, SINTEF, Norway
Tor Erlend Faegri, SINTEF, Norway
Jan Edvard Faugstad, DNV GL, Norway

Session 2: Collaboration and Crowdsourcing

Thursday, 11:00 - 12:30 | ROOM 6011
Chair: Aurora Vizcaíno, University of Castilla-La Mancha, Spain

Paolo Tell, IT University of Copenhagen, Denmark
Muhammad Ali Babar, IT University of Copenhagen, Denmark

Leticia Machado, Josiane Kroll, Sabrina Marczak, Rafael Prikladnicki
Pontificia Universidade Católica do Rio Grande do Sul (PUCRS), Porto Alegre, Brazil

“Dynamics of Software Development Crowdsourcing”
Alpana Dubey, Accenture Technology Labs, India
Kumar Abhinav, IIIT-Delhi, India
Sakshi Taneja, IIIT-Delhi, India
Gurdeep Virdi, Accenture Technology Labs, India
Anurag Dwarkanathan, Accenture Technology Labs, India
Alex Kass, Accenture Technology Labs, USA
Mani Suma Kuriakose, Accenture Technology Labs, India

“Communication between Developers and Testers in Distributed Continuous Agile Testing”
Daniela S. Cruzes, Nils Brede Moe, Tore Dyba
SINTEF, Norway

“Agile Workbench: Tying People, Process, and Tools in Distributed Agile Delivery” (Industry paper)
Vibhu Saujanya Sharma and Vikrant Kaulgud
Accenture Technology Labs, India

Session 3: Process Improvement and Agility

Thursday, 2:00 - 3:30 | ROOM 6011
Chair: Nils Brede Moe, SINTEF, Norway

“How does Software Process Improvement address Global Software Engineering?”
Marco Kuhrmann, University of Southern Denmark, Denmark
Philipp Diebold, Fraunhofer IESE, Germany
Juergen Muench, Reutlingen University, Germany
Paolo Tell, IT University of Copenhagen, Denmark

“System testing optimization in a globally distributed software engineering team” (Industry paper)
Tulasi Anand, Chittoor Reddy, V. S. Mani
Siemens Technology and Services Pvt. Ltd., India

“Challenges in Adapting Agile Testing in Legacy Global Configurator Product” (Industry paper)
Rajeev Kumar Gupta, Prabhulinga Manikreddy, Abhinandan Gv.
Siemens Technology and Services Private Limited, India

Session 4: Architecture and System Development

Thursday, 4:00 - 5:30 | ROOM 6011
Chair: Paolo Tell, IT University of Copenhagen, Denmark

“How does Software Process Improvement address Global Software Engineering?”
Marco Kuhrmann, University of Southern Denmark, Denmark
Philipp Diebold, Fraunhofer IESE, Germany
Juergen Muench, Reutlingen University, Germany
Paolo Tell, IT University of Copenhagen, Denmark

Roopa Mandi, Siemens Technology and Services Pvt. Ltd., India
V. S. Mani, Siemens Technology and Services Pvt. Ltd., India
Stefan Halwas, Siemens AG, Germany

“Using architectural constraints to drive software component reuse while adding and enhancing features” (Industry paper)
Susmita Vaikar, Siemens Technology and Services Pvt. Ltd., India
Madan Mohan Jha, Siemens Technology and Services Pvt. Ltd., India
Felix Brunner, Siemens Schweiz AG, Switzerland
Session 5: Models, Definitions, Frameworks, and Taxonomies

Friday, 9:00 - 10:00 | ROOM 6011
Chair: Fabio Calefato, University of Bari, Italy

“Global Software Engineering – Evolution and Trends”
Christof Ebert, Vector Consulting Services, Germany
Marco Kuhrmann, University of Southern Denmark, Denmark
Rafael Prikladnicki, Pontificia Universidade Católica do Rio Grande do Sul (PUCRS), Porto Alegre, Brazil

“A Specialized Global Software Engineering Taxonomy for Effort Estimation”
Ricardo Britto, Emilia Mendes, Claes Wohlin
Blekinge Institute of Technology, Sweden

“Communication in Distributed Software Development: A Preliminary Maturity Model” (short paper)
Ivaldir Farias Junior, UFPE Recife, Brazil
Sabrina Marczak, PUCRS Porto Alegre, Brazil
Rodrigo Santos, UFRJ Rio de Janeiro, Brazil
Hermano Moura, UFPE Recife, Brazil

“Shared knowledge in virtual teams: A preliminary framework” (short paper)
Tor Erlend Fægri, SINTEF ICT, Norway
Nils Brede Moe, University of Oslo, Norway
Viktoria Gulliksen Stray, SINTEF ICT, Norway

“A Global Teaming Model for Global Software Development Governance: A Case Study”
John Noll, Lero, the Irish Software Engineering Research Centre, University of Limerick, Ireland
Sarah Beecham, Lero, the Irish Software Engineering Research Centre, University of Limerick, Ireland
Ita Richardson, Lero, the Irish Software Engineering Research Centre, University of Limerick, Ireland
Clodagh Nic Canna, Ocuco Ltd., Ireland

Short papers and Doctoral Symposium students are also invited to show posters at the poster session on Thursday.
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<td>9:00 - 10:30</td>
<td>Workshop GSE-Ed’16: Inaugural Workshop on Global Software Engineering</td>
<td>Workshop PARIS: Methods and Tools for Project/Architecture/Risk Management in Globally Distributed Software Development Projects</td>
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<td>11:00 - 12:30</td>
<td>GSE-Ed - Session II</td>
<td>PARIS - Session II</td>
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<td>2:00 - 3:30</td>
<td>GSE-Ed - Session III</td>
<td>Tutorial T1 - Scaling Agile to Large Globally Distributed Organizations</td>
<td>Tutorial T2 - What did you say? Mindful (Intercultural) Communication for Successful Projects</td>
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<td>GSE-Ed - Session IV</td>
<td>T1 - Session II</td>
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<td>5:30 - 6:30</td>
<td>Welcome Reception on 6th floor patio</td>
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<td>9:00 - 10:30</td>
<td>Tutorial T3 - Issues, Challenges, and Opportunities in Open Source Software Development for Global Software Engineering</td>
<td>Tutorial T4 - Distributed Development – Lessons from Industry</td>
<td>Doctoral Symposium</td>
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<td>2:00 - 3:45</td>
<td>Plenary and Keynote Session: Sanjay Shirolé “A New Vision of Innovation”</td>
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<td>Conference Session 1 People, Teams, and Organizations</td>
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<td>7:00 - 9:30</td>
<td>Banquet Dinner at Newport Dunes</td>
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<td>Conference Session 4 Architecture and System Development</td>
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<td>5:30 - 6:45</td>
<td>Poster Session and Reception</td>
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<td>Plenary and Keynote Session: Andrew Begel “The ABCs of Software Engineering: Affect, Biometrics, and Cognition”</td>
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