

# Summary of the 14<sup>th</sup> International Conference on Global Software Engineering (ICGSE)

[Co-located with ICSE 2019]

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## ABSTRACT

The International Conference on Global Software Engineering, in its 14<sup>th</sup> iteration, continues to provide researchers and practitioners with a leading forum to share their research findings, experiences, and new ideas on diverse topics related to global software engineering. ICGSE 2019 was held in Montréal, Canada on May 25-26, in conjunction with the 41<sup>st</sup> International Conference on Software Engineering under the theme “*Succeeding in the Global Software Industry*”. Topics included were: distributed teams, methods and processes, business strategies, technologies supporting distributed cooperative work, education, and emerging technologies to support/improve/enhance GSE. Contributions presented at ICGSE tackled these topics providing concepts, evidence, and experiences.

## 1. INTRODUCTION

The main goal of the International Conference on Global Software Engineering series is to bring together researchers and practitioners to share their research findings, experiences and new ideas on diverse themes related to global software engineering. The 14<sup>th</sup> edition has been organized under the mission statement: *Succeeding in the Global Software Industry*.

Today’s software industry is more global and distributed than it has ever been before. The idea of developing major software products or IT services in one location or by one team belongs to the past. While Global Software Engineering (GSE) has become part of everyday life by now, succeeding in the global software industry remains challenging, with a considerable share of global projects still not meeting the expectations, especially regarding cost savings and time to market. Over the past decade, research on GSE has uncovered many challenges associated with operating over physical, temporal, and cultural distances. Albeit known, these distances are still causing severe breakdowns in communication, collaboration, and coordination among distributed teams.

### 1.1 Organization

The 2019 edition of ICGSE was held on May 25-26, 2019 in conjunction with the 41<sup>st</sup> *International Conference on Software Engineering*. The website of the conference, including also links to previous iterations, is available online<sup>1</sup>.

The conference was organized by Fabio Calefato (University of Bari) as general chair, Paolo Tell (IT University of Copenhagen) and Alpana Dubey (Accenture Labs, India) as program co-chairs, as well as, Sarah Beecham (Lero – The Irish Software Research Centre and University of Limerick), Marcelo Cataldo (Uber Technologies), and Tony Clear (Auckland University of Technology) as

experience report co-chairs. The doctoral symposium was managed by John Noll (University of East London and Lero), and the numerous industry liaisons were coordinated by V. S. Mani (Siemens). This year, regional industry liaisons were introduced with the goal of fostering the expansion of the ICGSE community by soliciting more and more varied participation of practitioners leveraging their professional contact networks. Finally, Yang Feng (University of California), Davide Fucci (University of Hamburg), and Pernille Lous served as proceedings chair, publicity and social media chair, and web master respectively. The members of the program committee of the main research track and the regional industry liaisons are listed in Table 1.

### 1.2 Key Figures

The 14<sup>th</sup> *International Conference on Global Software Engineering* saw an excellent number of submissions, which allowed an exciting program. Besides the two invited keynotes, in total we received 73 submissions across the different tracks. Out of these, we accepted 32 high-quality contributions:

**Research Paper Track (res):** 11 (26% acceptance rate)  
**Experience Report Track (exp):** 11  
**Journal First Presentation Track (jf):** 3  
**Industry Talk Track (ind):** 1  
**Doctoral Symposium (ds):** 2  
**Research Posters (pos):** 4

Attendance to the conference has also been very satisfying. In total, we had 52 registrations divided almost equally between academia and industry (48% and 52% respectively). As usual, we had participants from all over the world (18 countries, see Figure 1), with a very strong presence from Brazil (11), the USA (9), and India (5).



Figure 1: Overview of the country of origin of ICGSE 2019 participants.

<sup>1</sup>[www.icgse.org](http://www.icgse.org)

**Table 1: Program Committee Members and Industry Liaisons of ICGSE 2019**

Program Committee Members	
Akinori Ihara	Josiane Kroll
Alberto Avritzer	Juho Mäkiö
Alexander Nolte	Julian Bass
Anh Nguyen Duc	Jürgen Münch
Aurora Vizcaíno	Klaas-Jan Stol
Ayushi Rastogi	Leonardo Murta
Ban Al-Ani	Mahmood Niazi
Bedir Tekinerdogan	Mansoor Zahedi
Casper Lassenius	Marco Kuhrmann
Christian Bird	Maria Paasivaara
Cleidson de Souza	Martin Naedele
Daniela Cruzes	Nils Brede Moe
Daniela Damian	Norah Power
Darja Smite	Ricardo Britto
David Redmiles	Sabrina Marczak
Filippo Lanubile	Stefanie Betz
Igor Scaliante Wiese	Steve Fraser
Igor Steinmacher	Viktoria Stray
Ita Richardson	Yan Wang
Ivana Bosnić	Yi Wang
John Noll	
Industry Liaisons	
V. S. Mani	Nils Brede Moe
Deepak Shivdutt Kandpal	Paul Robinson
Elena Strabykina	Shinobu Saito
Marcia Costa	Yanal Mahameed
Martin Naedele	

## 2. SUMMARY OF THE PROGRAM

Table 2 provides an overview of the program of ICGSE 2019. The 2-day main event was preceded by the **doctoral symposium day**, which was organized in cooperation with the *International Conference on Agile Software Development* (XP2019). The **main event** comprised: two keynotes, one poster session, and six thematically coherent sessions including contributions from the research track, the experience report track, the industry talk track, as well as the newly introduced journal first track.

### 2.1 Keynotes

Continuing the tradition, ICGSE 2019 had two prestigious keynote speakers representing both academia and industry.

After the first day opening, Prof. Pernille Bjørn affiliated with the University of Copenhagen (Denmark) and the University of Washington (USA) delivered the first keynote entitled “*Equity when Software Development takes place in a Globalized World*.” In her talk, Prof. Bjørn challenged the taken-for-granted assumptions in software engineering about available infrastructures and agile work practices that make global software development possible. Two longitudinal research projects informed the keynote: the former exploring tech start-up companies in occupied Palestine, the latter exploring global agile development in India. Through these cases, she discussed and reflected on core challenges and drew up a change agenda promoting equity when software development takes place in a globalized world.

After the second day opening, Shyam Thyagaraj, managing director at Accenture (Toronto, Canada), gave the second keynote entitled “*Towards Responsible Software Engineering: Managing*

**Table 2: Overview of the program of ICGSE 2019 showcasing the distribution of the contributions from the different tracks over the thematic sessions.**

Joint Doctoral Symposium	
Opening	
Keynote	by Maria Paasivaara
Presentations	Presentations of research proposals by Ph.D. students from both ICGSE and XP
Roundtable	Plenary discussion moderated by organizers
Day 1	
Opening	
Keynote	“ <i>Equity when Software Development takes place in a Globalized World</i> ” by Pernille Bjørn
Session 1	<i>Managing human resources</i> (1 res, 2 exp, 1 jf)
Session 2	<i>Business strategy</i> (2 res, 2 exp)
Session 3	<i>Methods and processes 1</i> (1 res, 2 exp, 1 ind, 1 jf)
Day 2	
Opening	
Keynote	“ <i>Towards Responsible Software Engineering: Managing Ethics in Global Software Development</i> ” by Shyam Thyagaraj
Poster session	The six contributions were pitched through a lighting talk format before moving to the posters
Session 1	<i>Methods and processes 2</i> (1 res, 3 exp)
Session 2	<i>Technology</i> (3 res, 1 exp)
Session 3	<i>Teaching / Skills</i> (3 res, 1 jf)
Closing	

*Ethics in Global Software Development.*” Focusing on the importance of ethics in responsible organizations, Mr. Thyagaraj highlighted how codes of ethics are often defined at very high levels and emphasized how software development projects introduce several new scenarios that require more specific recommendations, a situation that is only exacerbated in globally distributed software development teams. Drawing upon examples from a number of globally distributed projects, in which Accenture successfully addressed challenges related to ethics management, he demystified aspects of ethics that are going to become more and more important in the future.

### 2.2 The Thematic Sessions

Given the significant number of submissions, the program for this year edition was organized in six thematic sessions collecting contributions from the various tracks (see Table 2), which are hereafter briefly described.

**Managing human resources.** The human aspect in software engineering has always been a theme that attracted contribution to ICGSE. This year is no exception. R. Britto presented their research results based on an industrial case study on the performance evolution of new comers in large-scale distributed projects [1]. S. Thomas reported her ethnographic investigation of the work of computer vision engineers describing how this has changed over the years due to the global distribution [2]; and, I. Marin presented their insight on the introduction of the machine learning canvas to support communication across the different stakeholders taking part in project involving data science [3]. Finally, M. Gerosa summarized his research on the onboarding of newcomers in open source projects that was reported in [4].

**Business strategy.** The business perspective and the impact of strategic decisions in global endeavors was the focus of this session. O. Uludag presented their work on the adoption of large-

scale scrum in the German automotive industry [5]. R. Gupta reported on the implication of the adoption of continuous delivery and DevOps in a globally distributed product team working within the healthcare domain [6]; and S. Saito reflected on the implication of outsourcing the operation of specific business processes [7]. Finally, D. Šmite presented their research work on the cost of offshore outsourcing [8].

**Methods and processes I and II.** Methods and processes continued to be a significant topic of interest in our community, so much so that two sessions were devoted to it. Starting with J. Bass reporting on the results presented in [9], the session continued with an industry talk by D. Durham titled “*Embracing uncertainty and change with lean methods and disciplined software systems engineering*”. Later, A. Aggarwal reported their experience on the effectiveness of using product line engineering to shorten release cycles [10], and E. Silva on the importance of dogfooding in the mobile industry [11]. Finally, S. Marczak presented their research on how tasks on the TopCoder—the software crowdsourcing platform—are documented [12]. The second session started with M. Viaggiato presenting their research on the different implementation of software development practices in different domains [13], and was followed by three experience reports: C. Godoy introduced the blueprint model as a new approach to Scrum [14]; P. Robinson described communication networks in his agile distributed teams [15]; while A. Scandaroli presented their insights on the use of behavior-driven development [16].

**Technology.** As one of the plausible solutions to mitigate the negative impact of the distances in global distributed projects, contributions presenting technologies and their use are always present at ICGSE, and this year is no exception. V. Stray and N. B. Moe presented their research on the use of Slack to support communication in virtual teams [17]; K. Singi introduced us to their ShIFt framework designed to ensure the integrity of software across team boundaries [18]. G. Kanakis presented their research on a framework designed to support diverse collaboration modes [19]; finally, R. Filho presented the OSKB tool which was designed to support the consistent use of open source components in larger projects [20].

**Teaching / Skills.** We concluded the sessions with another topic dear to our community: teaching and the understanding of skill required in global endeavors. The session started with Beecham reenacting together with J. Noll, T. Clear, and D. Damian, the panel session on teaching global software engineering she moderated in 2017, which led to [21]. Following, V. Stray presented their research insights on the skills and tool knowledge required of software testers [22]. Y. Wang reported on their research on the connection between country stereotypes and trust [23], and I. Bosnić presented their research on how work is distributed in agile teams that was conducted by investigating student projects [24].

## 2.3 Journal First

For the first time, ICGSE 2019 has formed a partnership with IEEE Software to incorporate journal-first presentations into the conference program, thus providing ICGSE attendees with an additional offering in the Research Track. The journal first candidates were identified according to the process described as follows. First, Nicholas Kraft, the IEEE Software editorial board member overseeing the journal first tracks, identified 11 candidate papers potentially relevant for the venue; then, the general chair and the

two program chairs, agreed upon the top-3 papers, whose authors were invited to submit the ICGSE 2019 journal first track. Out of the three invitations, we received one submission by Igor Steinmacher, Christof Treude, and Marco Aurelio Gerosa for the paper “*Let me in: Guidelines for the Successful Onboarding of Newcomers to Open Source Projects*.” [4]

After that, we advertised on mailing lists and social media an open call for journal first submissions, with the deadline set for mid February. We received X in total, of which two were accepted, namely: Julian Bass and Andy Haxby “*Tailoring Product Ownership in Large-Scale Agile Projects: Managing Scale, Distance, and Governance*” [9]; Sarah Beecham, John Noll, Tony Clear, John Barr, Daniela Damian, and Walt Scacchi “*How Best to Teach Global Software Engineering? Educators are Divided*” [21].

## 2.4 Awards

The collaboration with the IEEE Software magazine went beyond Journal First presentations. In fact, we were able to introduce for the first time an IEEE Software-sponsored award that was assigned to the paper from the Experience Report Track with the highest relevance for industrial practices. With the support of Tao Xie (IEEE Software best paper award committee chair), the award committee (Sarah Beecham, Fabio Calefato, Marcelo Cataldo, Tony Clear, and Christof Ebert) selected the award recipient with the following process: (i) identified the four best paper as candidates based on quality and extent of practical relevance for Industry; (ii) asked the PC to rank the candidates on 4-point scale; (iii) computed the summed scores for each candidate; (iv) selected the winner after internal check. As such, the IEEE Software Best Industry Experience Report Award for the Experience Report track was presented by Ipek Ozkaya, IEEE Software Editor-in-Chief, to Ivan Marin for the paper “*Data Science and development team remote communication: the use of the Machine Learning Canvas*” [3].

Similarly, an ACM SIGSOFT-sponsored award for the best academic paper in the research track was also arranged. The award committee (Fabio Calefato, Alpina Dubey, and Paolo Tell) followed a process similar to the one described above. Eventually, the ACM SIGSOFT Distinguished Paper Award for the research track was presented by the general chair Fabio Calefato to Ricardo Britto, Darja Šmite, Lars-Ola Damm, and Jürgen Börstler for the paper “*Performance Evolution of Newcomers in Large-Scale Distributed Software Projects: An Industrial Case Study*” [1].

## 2.5 Special Issue

We have partnered with the Journal of Systems and Software (JSS) to organize a special issue on *Global Software Engineering: Challenges and Solutions*, to which we invite the submission from both academia and industry of extended papers accepted at ICGSE 2019 as well as original contributions. The issue is scheduled to appear in late 2020.

## 3. FUTURE

In 2020, ICGSE will go to Seoul, South Korea, and will again provide both industry and academic participants with interesting sessions, and room for discussion and networking opportunities. The deadlines are in the beginning of 2020. We are looking forward to another inspiring edition of ICGSE organized by Paolo Tell, Ricardo Britto, and Igor Steinmacher. Detailed information can be found at the ICGSE conference website ([www.icgse.org](http://www.icgse.org)).

## 4. ACKNOWLEDGMENTS

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