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STAF 2019 Co-Located Events Joint Proceedings: 1st Junior Researcher Community Event, 2nd International Workshop on Model-Driven Engineering for Design-Runtime Interaction in Complex Systems, and 1st Research Project Showcase Workshop co-located with Software Technologies: Applications and Foundations

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STAF 2019 Co-Located Events Proceedings

JRCE, MDE@DeRun and RPS

July 15 - 19, 2019
Eindhoven, The Netherlands

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Welcome Words from the Editors

This volume contains the technical papers presented at three satellite events collocated with the 2019 edition of the STAF (Software Technologies: Applications and Foundations) federation of conferences on software technologies. The workshops took place at place at the TU/e Science park of the Eindhoven University of Technology in Eindhoven, The Netherlands, during July 1519, 2019. The STAF 2019 conferences and satellite events brought together leading researchers and practitioners from academia and industry to advance the state of the art in practical and foundational advances in software technology. They address all aspects of software technology, from object-oriented design, testing, mathematical approaches to modeling and verification, transformation, model-driven engineering, aspect-oriented techniques, and tools. The satellite events provided a highly interactive and collaborative environment to discuss emerging areas of software engineering, software technologies, model-driven engineering, and formal methods.

The three satellite events whose papers are included in this volume are (organizers are indicated too):

- Junior Research Community Event (JRCE 2019), July 16-18, 2019
  Loli Burgueño (Open University of Catalonia, Spain & CEA LIST, France)
- 2nd International Workshop on Model-Driven Engineering for Design-Runtime Interaction in Complex Systems (MDE@DeRun 2019), July 15, 2019
  Hugo Bruneliere (IMT Atlantique, LS2N-CNRS & ARMINES, France)
  Romina Eramo (University of LAquila, Italy)
  Abel Gómez (Universitat Oberta de Catalunya, Spain)
- Research Project Showcase (RPS 2019), July 15, 2019
  Alessandra Bagnato (Softeam R&D, France)

We would like to thank each organizer and all the people who have contributed to the STAF JRC, RPS and MDE@DeRun events for the interesting topics and resulting talks, as well as the respective Program Committee members and external reviewers who carried out thorough and careful reviews, created the program of each event, and made the compilation of this high-quality volume possible. We also thank the paper contributors and attendees of all workshops. We would like to extend our thanks to all keynote speakers for their excellent presentations. We also thank the developers and maintainers of the EasyChair conference management system, which was of great help in handling the paper

submission, reviewing, and discussion for all satellite events, and in the preparation of this volume. Finally, we would like to thank the organizers of STAF 2019 for their help during the organization of all satellite events, as well as the Eindhoven University of Technology that hosted the workshops.

July 2019

Alessandra Bagnato
Hugo Bruneliere
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Junior Research Community Event (JRCE 2019)

The Junior Research Community Event provides a forum for junior researchers to interact with their fellows, showcase their research, exchange ideas and get feedback from senior researchers about how to continue their professional career: the different path they could follow, how to apply for research projects, how to supervise PhD students, the opportunities both academia and industry offer, or any other topic of interest.

All the submissions were reviewed by three members of the program committee and after a thorough process, three papers out of four were accepted to constitute the program. The three paper presentations took place together with the ECMFA/ICMT sessions and there was a keynote given by Prof. Alfonso Pierantonio from the University of LAquila, Italy.

We gratefully acknowledge the support of the contributors to the JRCE and express our great esteem to the keynote speaker and program committee members, whose names are listed below, for the time and effort they have put in reviewing papers.

The following members served in the international program committee:

Andreas Wortmann, RWTH Aachen University
Juan De Lara, Universidad Autónoma de Madrid
Gerson Sunyé, Université de Nantes
Adrian Rutle, Western Norway University of Applied Sciences
Davide Di Ruscio, University of LAquila
Dimitris Kolovos, University of York
Manuel Wimmer, Business Informatics Group, Vienna
Alessandra Bagnato, Softeam
Massimo Tisi, IMT Atlantique, LS2N
Luis Ferreira Pires, University of Twente
Fiona Polack, Keele University

Loli Burgueño
JRCE 2019 Organization Committee

2nd International Workshop on Model-Driven Engineering for Design-Runtime Interaction in Complex Systems (MDE@DeRun 2019)

Complex systems are now predominant in several domains such as automotive, health-care, aerospace, industrial control, and automation. Such systems call for modern engineering practices such as Modeling/MDE to tackle advances in productivity and quality of these now Cyber-Physical Systems (CPSs). However, the proposed solutions need to be further developed to scale up for real-life industrial projects and to provide significant benefits at execution time. To this intent, one of the major challenges is to work on achieving a more efficient integration between the design and runtime aspects of the concerned systems: The system behavior at runtime has to be better matched with the original system design in order to be able to understand critical situations that may occur, as well as corresponding potential failures in design. Methods and tools already exist (many of them not model-based) for monitoring system execution and performing measurements of runtime properties. However, they do not usually allow a relevant integration with (and/or traceability back to) design models. Such a feedback loop from runtime is highly relevant at design time, the most suitable level for system engineers to analyze and take impactful decisions accordingly.

The MDE@DeRun workshop of STAF 2019 provides a venue where researchers and practitioners on model-driven/model-based techniques and architectures for complex systems can meet, disseminate and exchange ideas or challenges, identify current/future key issues and explore possible solutions related to the above-mentioned family of problems.

We would like to mention that this years edition of the MDE@DeRun workshop notably included a special keynote by Professor Manuel Wimmer (Johannes Kepler University Linz, Austria) untitled From Design-Time to Runtime and Back Again with Liquid Models. It also included an invited talk by Dr Hugo Bruneliere untitled A Model-based Framework for Continuous Development and Runtime Validation of Complex Systems: MegaM@Rt2 EU Project Results.

In addition, each one of the following 3 papers was reviewed by three different reviewers from the program committee and, according to the received reviews as well as following discussions, accepted to be presented at the workshop

The following members served in the international program committee:

Alessandra Bagnato, Softeam
Simona Bernardi, Universidad de Zaragoza
Alessio Bucaioni, Malardalen University
Jordi Cabot, ICREA - Universitat Oberta de Catalunya
Federico Ciccozzi, Malardalen University
Cristóbal Costa-Soria, ITI Instituto Tecnologico de Informatica
Martin Gogolla, University of Bremen
Juergen Dingel, Queen's School of Computing
Davide Di Ruscio, University of L'Aquila

Sébastien Gérard, CEA LIST
Jesús Gorronogoitia Cruz, Atos Spain SA
Frédéric Jouault, ERIS, ESEO-TECH
Jose Meseguer, Universidad de Zaragoza
Saad Mubeen, Malardalen University
Gerson Sunyé, University of Nantes & LS2N - CNRS
Massimo Tisi, IMT Atlantique & LS2N - CNRS
Andrey Sadovykh, Innopolis University
Aitor Urbieta, IKERLAN

Hugo Bruneliere, Romina Eramo and Abel Gómez
MDE@DeRun 2019 Organization Committee

Research Project Showcase (RPS 2019)

Today's collaborative research projects act as a bridge between research (e.g., academia) and practitioners (e.g., industries). Within collaborative projects, the research community can share ideas in real industrial environments while, at the same time, can raise the need for new and different research inspired by the needs of the industry.

The Research Project Showcase of STAF 2019 provides an opportunity for researchers involved in ongoing and/or recently completed research projects (national, European and international) related to the topics of the conference to present their projects and disseminate the objectives, deliverables, or outcome.

The RPS Workshop will include the presentation of 8 different projects, each one of the corresponding eight accepted papers were reviewed by two different reviewers from the program committee and, according to the received reviews as well as following discussions, accepted to be presented at the workshop.

The following members served in the international program committee:

Silvia Mazzini, Intecs
Massimo Tisi, IMT Atlantique, LS2N (UMR CNRS 6004)
Dimitrios Soudris, National Technical University of Athens
Filippo Lanubile, University of Bari
Davide Taibi, Tampere University of Technology
Tolga Ensari, Istanbul University
Giacomo Valente, University of LAquila
Antonio Garcia-Dominguez, Dept. of Computer Science, Aston University
Per Håkon Meland, SINTEF Digital
Davide Di Ruscio, University of LAquila
Luigi Pomante, University of LAquila
Bernhard Rumpe, RWTH Aachen University
Gianna Reggio, DISI, Universita di Genova
Alin Stefanescu, University of Bucharest
Ana Cavalli, Institut Mines Telecom/Telecom SudParis
Stephane Maag, Institut / Telecom SudParis
Spyros Mouzakitis, National Technical University of Athens
Violeta Damjanovic-Behrendt, Salzburg Research

Alessandra Bagnato
RPS 2019 Organization Committee