Preface

On behalf of the Program Committee, we are pleased to present the proceedings of the 11th International Symposium on Formal Aspects of Component Software (FACS 2014).

Component-based software development is a paradigm that has been proposing sound engineering principles and techniques for coping with the complexity of software-intensive systems. However, many challenging conceptual and technological issues remain that require further research. Moreover, the advent of service-oriented and cloud computing has brought to the fore new dimensions, such as quality of service and robustness to withstand inevitable faults, which require established concepts to be revisited and new ones to be developed in order to meet the opportunities offered by those architectures. As software applications become themselves components of wider sociotechnical systems, further challenges arise from the need to create and manage interactions, which can evolve in time and space, and rely on the use of resources that can change in noncomputable ways.

FACS 2014 was about how formal methods can be used to make component-based development fit for the new architectures of today and the systems that are now pervading the socioeconomic world. Formal methods have provided foundations for component-based software through research on mathematical models for components, composition, and adaptation, and rigorous approaches to verification, deployment, testing, and certification. While those avenues still needed to be further explored, the time was also ripe to bring new techniques to the fore, such as those based on stochastic models and simulation.

FACS 2014 was the 11th in a series of events initially created as international workshops by the United Nations University - International Institute for Software Technology (UNU-IIST), in 2003 in Pisa. In 2011, the FACS events were promoted to the status of International Symposium, with events located in Oslo (2011), Mountain View (2012), Nanchang (2013). For this 11th event FACS returned to Italy, hosted in the University Residential Center of Bertinoro, where it has been colocated with the 11th International Conference on Integrated Formal Methods (iFM 2014).

We received 44 submissions from 26 countries, out of which the Program Committee selected 20 papers, including 2 application and experience papers, 3 tool papers, and 15 research contributions. All submitted papers were reviewed by at least three referees. To minimize the preconference delays, the conference version of these papers was distributed in electronic form to the participants. Here, we have revised versions of these original contributions, taking into account also comments received during the symposium. The authors of a selected subset of accepted papers have also been invited to submit extended versions of their papers to appear in a special issue of Elsevier's Science of Computer Programming journal.

We are proud to have been endorsed by the European Association of Software Science and Technology (EASST) to deliver an EASST best paper award to the paper

"Compositional Analysis Using Component-Oriented Interpolation" by Viet Yen Nguyen, Benjamin Bittner, Joost-Pieter Katoen, and Thomas Noll.

We would like to express our gratitude to all the researchers who submitted their work to the symposium, to all colleagues who served on the Program Committee, as well as the external reviewers, who helped us to prepare a high-quality conference program. Particular thanks to the invited speakers, Helmut Veith from Technical University of Vienna, Rocco De Nicola from IMT Lucca, and Jean-Bernard Stefani from INRIA Grenoble, for the willingness to present their research and to share their perspective on formal methods for component software at the conference. Papers recalling the talks by Rocco De Nicola and Jean-Bernard Stefani are included in the proceedings, while a paper summarizing Helmut Veith's talk can be found in the proceedings of iFM 2014.

Without the support of the general chair and of the local organizers at Bertinoro and at University of Bologna, this conference could not have happened. In particular, we are deeply indebted to Gianluigi Zavattaro, Jacopo Mauro, and Monica Michelacci for their help in managing all practical aspects of preparation of this event. We also thank the Department of Computer Science and Engineering – DISI, of the University of Bologna, for its sponsorship.

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Ivan Lanese
Eric Madelaine

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