# Preface

This volume contains the papers presented at the International Workshop on Formal Methods for Industrial Critical Systems and Automated Verification of Critical Systems (FMICS-AVoCS), which was held in Pisa, Italy, September 26–28, 2016. FMICS-AVoCS 2016 combines the 21st International Workshop on Formal Methods for Industrial Critical Systems and the 16th International Workshop on Automated Verification of Critical Systems.

The aim of the FMICS workshop series is to provide a forum for researchers who are interested in the development and application of formal methods in industry. In particular, FMICS brings together scientists and engineers that are active in the area of formal methods and interested in exchanging their experiences in the industrial usage of these methods. The FMICS workshop series also strives to promote research and development for the improvement of formal methods and tools for industrial applications.

The aim of the AVoCS workshop series is to contribute to the interaction and exchange of ideas among members of the international research community on tools and techniques for the verification of critical systems. The subject is to be interpreted broadly and inclusively. It covers all aspects of automated verification, including model checking, theorem proving, SAT/SMT constraint solving, abstract interpretation, and refinement pertaining to various types of critical systems that need to meet stringent dependability requirements (safety-critical, business-critical, performance-critical, etc.).

The topics of interest include, but are not limited to:

- Design, specification, refinement, code generation, and testing of critical systems based on formal methods
- Methods, techniques, and tools to support automated analysis, certification, debugging, learning, optimization, and transformation of critical systems, in particular distributed, real-time systems, and embedded systems
- Automated verification (model checking, theorem proving, SAT/SMT constraint solving, abstract interpretation, etc.) of critical systems
- Verification and validation methods that address shortcomings of existing methods with respect to their industrial applicability (e.g., scalability and usability issues)
- Tools for the development of formal design descriptions
- Case studies and experience reports on industrial applications of formal methods, focusing on lessons learned or identification of new research directions
- Impact of the adoption of formal methods on the development process and associated costs
- Application of formal methods in standardization and industrial forums

This year we received 24 submissions. Each of these submissions went through a rigorous review process in which each paper was reviewed by at least three researchers from a strong Program Committee of international reputation. We selected 11 full papers

and 4 short papers for presentation during the workshop and inclusion in these proceedings. The workshop also featured keynotes by Thomas Arts (QuviQ AB, Gothenburg, Sweden), Silvia Mazzini (Intecs SpA, Pisa, Italy), and Jan Peleska (Universität Bremen, Germany). We hereby thank the invited speakers for having accepted our invitation.

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Finally, we would like to thank the Program Committee members and the external reviewers, listed below, for their accurate and timely reviewing, all authors for their submissions, and all attendees of the workshop for their participation.

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