

Preface

Welcome to the proceedings of the International Conference on Reliability, Safety and Security of Railway Systems: Modelling, Analysis, Verification, and Certification (RSSRail 2016). We are very pleased that RSSRail 2016 is taking place in Paris during June 28–30, 2016.

This is the first international conference focusing on the reliability, safety, and security of railway systems. The conference is hosted by RATP (Régie Autonome des Transports Parisiens) and held in the main auditorium at their head office in Paris, adjacent to the Gare de Lyon railway station. The conference aims to bring together researchers and engineers interested in building critical railway applications and systems. This is a working conference in which research advances are discussed and evaluated by both researchers and engineers, focusing on their potential to be deployed in industrial settings.

Our aim is to hold a conference that will contribute to a range of key objectives. We feel that there is a pressing need to bring together researchers and developers working on railway system reliability, security, and safety to discuss how these requirements can be met in an integrated way. It is also vital to ensure that all advances in research (both in academia and industry) are driven by real industrial needs. This can help ensure that such advances are followed by industrial deployment. Another particularly important objective is to integrate research advances into the current development processes, and make them usable and scalable. Finally, a key goal is to develop advanced methods and tools that will ensure that the systems meet the requirements imposed by the standards and in building the arguments.

We hope that this conference will successfully contribute to all of these objectives.

The conference covers topics related to all aspects of reliability, safety, and security engineering for railway systems and networks, including:

- Safety in development processes and safety management
- Combined approaches to safety and security
- System and software safety analysis
- Formal modelling and verification techniques
- System reliability
- Validation according to the standards
- Safety and security argumentation
- Fault and intrusion modelling and analysis
- Evaluation of system capacity, energy consumption, costs, and their interplay
- Tool and model integration, and tool chains
- Domain-specific languages and modelling frameworks
- Model reuse for reliability, safety, and security

RSSRail 2016 attracted 36 submissions from 14 countries. Fifteen papers were accepted after a rigorous review process with each paper receiving at least three

reviews. These include nine technical papers, three industrial experience reports, and three PhD students' papers. They cover a number of topics, including failure analysis, interlocking verification, formal system specification and refinement, security analysis of ERTMS, safety verification, formalisation of requirements, proof automation, operational security, railway system reliability, risk assessment for ERTMS, and verification of EN-50128 safety requirements.

Three prominent researchers working on railway engineering — Robin Bloomfield from Adelard/City University (UK), Denis Sabatier from ClearSy, and Jan Peleska from University of Bremen/Verified Systems — kindly agreed to deliver keynote talks. The papers describing the research presented in the keynote talks are also included in this volume.

We would like to thank the Program Committee members and the additional reviewers for all their efforts. We are indebted to RATP for hosting our event in Maison de la RATP in Paris. We would like to acknowledge the help of Newcastle University staff: Joan Atkinson, Tom Anderson, Wayne Smith, and Dee Carr. We are grateful to Alfred Hofmann from Springer for supporting the publication of these proceedings in the LNCS series. But, most of all, our thanks go to all the contributors and the attendees of the conference for making this conference a success.

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