4th International Workshop on Assurance Cases for Software-Intensive Systems (ASSURE 2016)
1 Introduction

This volume contains the papers presented at the 4th International Workshop on Assurance Cases for Software-intensive Systems (ASSURE 2016), collocated this year with the 35th International Conference on Computer Safety, Reliability, and Security (SAFECOMP 2016), in Trondheim, Norway. As with the previous three editions of ASSURE, this year’s workshop aims to provide an international forum for presenting emerging research, novel contributions, tool development efforts, and position papers on the foundations and applications of assurance case principles and techniques. The workshop goals are to: (i) explore techniques to create and assess assurance cases for software-intensive systems; (ii) examine the role of assurance cases in the engineering lifecycle of critical systems; (iii) identify the dimensions of effective practice in the development/evaluation of assurance cases; (iv) investigate the relationship between dependability techniques and assurance cases; and, (v) identify critical research challenges towards defining a roadmap for future development.

2 Program

ASSURE 2016 began with an invited keynote talk by Clive Tomsett, Clinical Strategist at the Cerner Corporation, on healthcare and clinical safety. Eight papers were accepted this year, covering three themes: lifecycles, formal evidence and tool support, and applications.

Papers under the lifecycles theme considered topics such as the use of agile development processes in safety case creation, and processes to improve safety case maintenance time. The theme of formal evidence and tool support included papers that dealt with the use of model-checking of code, and the integration of those results into safety cases; safety case contracts that are aware of configuration issues, and tool support for achieving consensus in domains such as environmental safety. Finally, the applications theme comprised papers concerned with models for systems assurance; newer domains for the application of assurance cases such as synthetic biology; and the integration of medical device hazard analysis with safety case development.
Similar to the previous year’s workshop, ASSURE 2016 concluded with a panel discussion, comprising researcher and practitioner panelists discussing the role and application of safety cases to a contemporary and emerging problem: the increasing use of autonomy in safety-critical applications.

3 Acknowledgments

We thank all those who submitted papers to ASSURE 2016 and congratulate those authors whose papers were selected for inclusion into the workshop program and proceedings. For reviewing the submissions and providing useful feedback to the authors, we especially thank our distinguished Program Committee members

- Ersin Ancel, NASA Langley Research Center, USA
- Robin Bloomfield, City University, UK
- Reece Clothier, RMIT University, Australia
- Martin Feather, NASA Jet Propulsion Laboratory, USA
- Jérémie Guiochet, LAAS-CNRS, France
- Richard Hawkins, University of York, UK
- Tim Kelly, University of York, UK
- Yoshiki Kinoshita, Kanagawa University, Japan
- John Knight, University of Virginia, USA
- Helen Monkhouse, Protean Electric Ltd., UK
- Andrew Rae, Griffith University, Australia
- Roger Rivett, Jaguar Land Rover, UK
- John Rushby, SRI International, USA
- Mark-Alexander Sujan, University of Warwick, UK
- Kenji Taguchi, AIST, Japan
- Alan Wassying, McMaster University, Canada
- Sean White, Health and Social Care Information Centre, UK

as well as the additional reviewers:

- Nick Chozos, Adelard, UK
- Shuji Kinoshita, Kanagawa University, Japan
- Makoto Takeyama, Kanagawa University, Japan
- Rui Wang, LAAS-CNRS, France
- Hiroshi Watanabe, AIST, Japan

Their efforts have resulted in an exciting workshop program and, in turn, a successful third edition of the ASSURE workshop series. Finally, we thank the organizers of SAFECOMP 2016 for their support of ASSURE 2016.