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Reliable Software Technologies – Ada-Europe 2009

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on Reliable Software Technologies
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Proceedings

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Preface

The 14th International Conference on Reliable Software Technologies – Ada-Europe 2009 – was part of a series of annual international conferences devoted to the promotion and advancement of all aspects of reliable software technologies. The objective of this series of conferences, which is run and sponsored by Ada-Europe, the European federation of national Ada societies, is to provide a forum to promote the development of reliable software both as an industrial technique and an academic discipline.

This edition marked a return to France by selecting the splendid venue of Brittany, a region marked by its history with a strong Celtic tradition and a remote situation at the western tip of the continent that was the initiator of many explorers of new worlds... and information and communication technologies.

Previous editions of the Reliable Software Technologies conferences were held in: Venice (Italy) in 2008, Geneva (Switzerland) in 2007, Porto (Portugal) in 2006, York (UK) in 2005, Palma de Mallorca (Spain) in 2004, Toulouse (France) in 2003, Vienna (Austria) in 2002, Leuven (Belgium) in 2001, Potsdam (Germany) in 2000, Santander (Spain) in 1999, Uppsala (Sweden) in 1998, London (United Kingdom) in 1997 and Montreux (Switzerland) in 1996.

The conference series chooses its yearly venue following two driving criteria: to celebrate the activity of one of its national member societies in a particular country and/or to facilitate the formation, or the growth, of a national community around all aspects of reliable software technologies.

This edition of the conference relied on the initiatives and the support of Ada-France, a national member of Ada-Europe: since the very beginning, the French academic and industrial communities have been active in the development and the use of Ada, and constitute highly active communities in reliable software technologies (the Turing award offered to Joseph Sifakis in 2007 certifies it). We can of course mention Jean Ichbiah's dedication and leadership in launching the Ada language, and his views are still acute. We dedicate this edition of the conference to his memory.

Following its usual style, the conference included a three-day technical program, where the papers contained in these proceedings were presented. Papers were received from all over the world (with several contributions from South-East Asia). The technical program was bracketed by two tutorial days where attendants had the opportunity to catch up on a variety of topics related to the fields covered by the conference, at both introductory and advanced levels. The technical program also included an industrial track, with contributions illustrating challenges faced and solutions devised by industry from both sides of the Atlantic. Furthermore, the conference was accompanied by an exhibition where vendors presented their products for supporting reliable software development.

Associated workshops were also organized: one was on AADL and another on software vulnerabilities.

The conference featured three distinguished keynote speakers, who delivered state-of-the-art information on topics of great importance, both for the present and the future of reliable software technologies:

- ISO JTC 1/SC 22/WG 23 Work on Programming Language Vulnerabilities by John Benito (Blue Pilot Consulting, USA)
- Fault Tolerance in Large Scale Distributed Systems by Pierre Sens (Université P. & M. Curie, France)
- Validation of Safety-Critical Systems with AADL by Peter Feiler (SEI, USA).

We would like to express our sincere gratitude to these distinguished speakers for sharing their insights with the conference participants.

Regular papers were submitted from as many as 19 different countries. The Program Committee worked hard to review them, and the selection process proved to be difficult, since many papers had received excellent reviews. The Program Committee eventually selected 18 papers for the conference and these proceedings. The final result was a truly international program with contributions from Argentina, Australia, China, France, Italy, Spain, Switzerland, the UK and the USA, covering a broad range of topics: High-Integrity, Testing, Education, Real-Time, MDE, MDE and AADL, Ensuring Software Integrity.

The industrial track of the conference also received valuable contributions from industry, and the Industrial Committee selected six of them for presentation in Brest:

- Flight Management System Validation Through Performance Analysis and Simulation, Véronique Fabre, Catherine Tesseidre (Thales Avionics Toulouse, France), Madeleine Faugère (Thales Research and Technology, France)
- Pattern-Based Refactoring Shrinks Maintenance Costs, John S. Harbaugh (The Boeing Company, USA)
- Couverture - Project Coverage - An Innovative Open Framework for Coverage Analysis of Safety Critical Applications, Matteo Bordin (AdaCore, France)
- ITEA SPICES: AADL Experimentation at Airbus, Pierre Gaufillet (Airbus, Toulouse, France), Sébastien Heim (CS, France), Hugues Bonnin (CS, France), Pierre Dissaux (Ellidiss, France)
- Region-Based Memory Management for Safety-Critical Systems, Tucker Taft, (SofCheck, USA)
- Generating Component-Based AADL Applications with MyCCM-HI and Ocarina, Thomas Vergnaud (Thales, France), Grégory Haïk (Thales, France), Jérôme Hugues (TELECOM ParisTech, France)

The conference also included an interesting selection of tutorials, featuring international experts who presented introductory and advanced material in the domain of the conference:

- Building Cross-Language Applications Using Ada, Quentin Ochem (France)
- An Introduction to Parallel and Real-Time Programming With Ada, John McCormick (USA)
- Software Fault Tolerance, Pat Rogers (USA)
- Software Measures for Building Dependable Software Systems, William Bail (USA)
- Modeling for Schedulability Analysis With the UML Profile for MARTE, Julio Medina (Spain) and Huascar Espinoza (France)
- SPARK - The Libre Language and Toolset for High-Assurance Software, Roderick Chapman (UK)
- Hard Real-Time and Embedded Systems Programming, Pat Rogers (USA)
- Designing Real-Time, Concurrent, and Embedded Software Systems Using UML and Ada, Rob Pettit (USA)
- Object-Oriented Programming in Ada 2005, Matthew Heaney (USA)
- Execution Time: Analysis, Verification, and Optimization in Reliable Systems, Ian Broster (UK)

We wish to extend our gratitude to these experts, for the work they put in preparing and presenting this material during the conference.

Reports on the tutorial program and the industrial track will all be published in issues of the *Ada User Journal* produced by Ada-Europe.

The 14th International Conference on Reliable Software Technologies – Ada-Europe 2009 was made possible through the generous support and diligent work of many individuals and organizations. A number of institutional and industrial sponsors also made important contributions and participated in the industrial exhibition. Their names and logos appear on the Ada-Europe 2009 website[1]. We gratefully acknowledge their support. A subcommittee composed of Dirk Craeynest, Jérôme Hugues, Yvon Kermarrec, Fabrice Kordon, Ahlan Marriott, Laure Petrucci, Erhard Plödereder, Jorge Real, and Frank Singhoff met in Paris to elaborate the final program selection. Various Program Committee members were assigned to shepherd some of the papers. We are grateful to all those who contributed to the technical program of the conference.

We would like to thank the members of the Organizing Committee for their valuable effort in taking care of all the details that needed attention for a smooth run of the conference. Jérôme Hugues did a superb job in organizing an attractive tutorial program. Frank Singhoff took on the difficult task of preparing the industrial track. We would also like to thank Dirk Craeynest, who worked very hard to make the conference prominently visible, and to all the members of the Ada-Europe Board for helping with the intricate details of the organization. Special thanks go to Yvon Kermarrec, Mickael Kerboeuf, Alain Plantec and Frank Singhoff, who took care of all details of the local organization.

Finally, we also thank the authors of the contributions submitted to the conference, and all the participants who helped in achieving the goal of the

[1] `http://www.ada-europe.org/conference2009.html`

conference: to provide a forum for researchers and practitioners for the exchange of information and ideas about reliable software technologies. We hope they all enjoyed the program as well as the social events of the 14th International Conference on Reliable Software Technologies – Ada-Europe 2009.

June 2009

Fabrice Kordon
Yvon Kermarrec

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