Dear ICST 2015 Participant,

Welcome to the 8th edition of the IEEE International Conference on Software Testing, Verification and Validation. It is our great pleasure to host you this year in Graz. When strolling around the city center that is part of UNESCO's World Cultural Heritage you will see a lot of marvelous historical places, complemented by contemporary buildings like the Kunsthart (Graz Art Museum) with its enclosed Mur island (an accessible floating platform in the river Mur) that were built in 2003 to celebrate Graz serving as European Capital of Culture back then. The UNESCO City of Design Graz has always been open for novel ideas, contemporary architecture, arts and also design, never forgetting about its roots. Graz is not only a great place for arts and vacation, but is also a center of scientific endeavors. As early as 1585, Graz became a university town when the Universität Graz was founded. Also the oldest university of technology in Austria is located in Graz. The Technische Universität Graz was founded in 1811, and is still committed to excellence in research and teaching related to various technology-oriented fields and fostering strong connections with national as well as international industry and academia.

I sincerely hope that you will be enjoying ICST 2015. We have been working hard to offer you a great experience in Graz. Complementing our scientific program, there will be two social events. That is, the Welcome Reception will take place on Tuesday at the very conference venue, and on Wednesday we invite you to join us for the Banquet Dinner at the Alte Universität Graz.

It is our pleasure to host three excellent keynote speakers this year. With Mark Harman from University College London, and Helmut Veith from TU Wien, we have two excelling researchers that have been with the testing and verification community for a long time. Nick Green from Twitter will offer us new insights in the more practical view on our world of testing and verification, as experienced by major players in today's business. As will be evident from these keynotes, both, foundational research and evolvement of practical applications of testing, are essential for driving the advancement of our recent and important field in the domain of software engineering.
Attached to the conference are seven workshops targeting individual aspects of testing and quality assurance. I would like to thank the workshop chairs Mercedes G. Merayo and Eric Wong for their selection of this year’s workshops. My thanks go also to the workshop organizers and all the people involved in making the workshops the substantial contribution to ICST that they are. I am convinced that an excellent workshop program is a key asset of a successful conference, allowing not only for presenting research but also providing a comfortable environment for detailed discussions among participants on focused topics.

For ICST’s main research track, the program committee chaired by Gordon Fraser and Darko Marinov selected 32 papers for presentation out of 132 submissions. I would like to thank them for ensuring a fair and excellent reviewing process, which is certainly hard work for such a competitive conference as ICST. I am sure that every participant will find excellent papers catching their interest and stimulating new research that will lay the path for even more state-of-the-art ideas and solutions in testing, verification and validation. Complementing the main research track, we offer a track focusing on testing in practice that is chaired by Mihai Nica, Ina Schieferdecker and Tom Zimmerman. There is also a PhD Symposium, chaired by Arnaud Gottlieb and Sudipto Ghosh, and last but not least, a testing tools track chaired by Arcuri and Sigrid Eldh. Like the workshops, all these tracks have individual program committees and reviewing processes. I would like to thank all the respective program committee members and specifically their chairs for their hard work on selecting the papers.

My thanks go also to all the sponsors and supporters for their efforts and financial contributions. Last but not least, I would like to personally thank all the other people involved in carrying out ICST 2015, e.g., the members of the publicity committee chaired by Bernhard Aichernig, the financial chair Bernhard Peischl, the publication chair Birgit Hofer, the web chair Sina Shamshiri, and the members of the local organizing committee, for their passion, their involvement in discussions and their great and essential work.

I sincerely hope that you will enjoy ICST this year and that you will take a lot of new ideas back home with you. Thank you for coming and being part of ICST 2015, making it an event that we will all enjoy.

With best regards,

Franz Wotawa
(General Chair)
General Chair
Franz Wotawa (TU Graz, Austria)

PC-Chairs
Gordon Fraser (Univ. of Sheffield, UK)
Darko Marinov (Univ. of Illinois, USA)

Testing in Practice Track Chairs
Mihai Nica (AVL, Austria)
Ina Schieferdecker (Fraunhofer, Germany)
Thomas Zimmermann (Microsoft Research, USA)

Workshop Chairs
Mercedes G. Merayo (UCM, Spain)
Eric Wong (Univ. of Texas, USA)

Ph.D. Symposium Chairs
Arnaud Gottlieb (SIMULA Research Labs, Norway)
Sudipto Ghosh (CSU, USA)

Testing Tools Chairs
Andrea Arcuri, Scienta, Norway, and University of LUX
Sigrid Eldh (Ericsson, Sweden)

Publicity Committee
Bernhard Aichernig, TU Graz, Austria (Chair)
Marcio Delamaro, Universidade de Sao Paulo, BRA
Alex Groce, Oregon State University, USA
Zheng Li, Beijing University of Chemical Technology, China
Corina Pasareanu, NASA, USA
Willem Visser, University of Stellenbosch, South Africa

Finance Chair
Bernhard Peischl (Softnet / TU Graz, Austria)

Publication Chair
Birgit Hofer, TU Graz, Austria

Web Chair
Sina Shamshiri, University of Sheffield, UK
Program Committee

Bernhard Aichernig, TU Graz, Austria
Nadia Alshahwan, University College London, UK
Paul Ammann, George Mason University, USA
Anneliese Andrews, University of Denver, USA
Andrea Arcuri, Scienta, Norway, and University of LUX
Tom Ball, Microsoft Research, USA
Bob Binder, System Verification Associates, LLC, USA
Lionel Briand, University of Luxembourg, Luxembourg
Jeffrey Carver, University of Alabama, USA
Byoungju Choi, Ewha Woman’s University, Korea
James Clause, University of Delaware, USA
Ian Craggs, IBM United Kingdom, UK
Christoph Csallner, University of Texas at Arlington, USA
Bojan Cukic, University of North Carolina at Charlotte, USA
Marcio Eduardo Delamaro, Universidade de Sao Paulo, BRA
Massimiliano Di Penta, Dept. of Engineering – Univ. of Sannio, Italy
Hyunsook Do, North Dakota State University, USA
Michael Felderer, University of Innsbruck, Austria
Vahid Garousi, Attilim University, Turkey
Arnaud Gotlieb, SIMULA Research Laboratory, Norway
Mark Grechanik, University of Illinois at Chicago, USA
Wolfgang Grieskamp, Google, USA
William G.J. Halfond, University of Southern California, USA
Toru Hasegawa, Osaka University, USA
Rob Hierons, Brunel University, UK
Florentin Ipate, University of Bucharest, Romania
Raghu Kacker, NIST, USA
Aditya Kanade, Indian Institute of Science, India
Sarfaraz Khurshid, The University of Texas at Austin, USA
Moonzoo Kim, KAIST, Korea
Bogdan Korel, Illinois Institute of Technology, USA
Rick Kuhn, NIST, USA
Yu Lei, University of Texas at Arlington, USA
Eda Marchetti, ISTI-CNR, Italy
Leonardo Mariani, University of Milano Bicocca, Italy
Wes Masri, American University of Beirut, Lebanon
Atif Memon, University of Maryland, USA
Tejeddie Mouelhi, University of Luxembourg, Luxembourg
Brian Nielsen, Aalborg University, Denmark
Manuel Oriol, ABB Corporate Research, Switzerland
Tom Ostrand, Rutgers University, USA
Mauro Pezze, University of Lugano, Switzerland
Lori Pollock, University of Delaware, USA
Marc Roper, University of Strathclyde, UK
Gregg Rothermel, University of Nebraska – Lincoln, USA
Abhik Roychoudhury, National University of Singapore, SGP
Per Runeson, Lund University, Sweden
Vasile Rus, The University of Memphis, USA
Junaid Haroon Siddiqui, UT Austin, USA
Saurabh Sinha, IBM Research, India
Mary Lou Soffa, University of Virginia, USA
Sara Sprenkle, Washington & Lee University, USA
Paul Strooper, The University of Queensland, Australia
Lin Tan, University of Waterloo, Canada
Nikolai Tillmann, Microsoft Research, USA
Paolo Tonella, Fondazione Bruno Kessler – IRST, Italy
Jan Tretmans, TNO – Embedded Systems Innovation, NL
T.H. Tse, The University of Hong Kong, Hong Kong
Tatsuhiro Tsuchiya, Osaka University, Japan
Mark Utting, University of Waikato, New Zealand
Program Committee (continued)

Arie van Deursen, Delft University of Technology, Netherlands
Miroslav Velev, Aries Design Automation, USA
Helene Waeselynck, LAAS-CNRS, France
Neil Walkinshaw, University of Leicester, UK
Hironori Washizaki, Waseda University, Japan
Stephan Weissleder, Thales, Germany
Michael Whalen, University of Minnesota, USA
Tao Xie, University of Illinois at Urbana-Champaign, USA
Nina Yevtushenko, Tomsk State University, Russia
Xiangyu Zhang, Purdue University, USA

Testing in Practice Track Committee

Jacek Czerwonka, Microsoft
Mark Grechanik, University of Illinois at Chicago
Wolfgang Grieskamp, Google
Andrej Pietschker, Giesecke & Devrient
Brian Robinson, ABB
Markus Schacher, KnowGravity Inc.
Johannes Schauer, Osram
Stephan Weissleder, Thales
Justyna Zander, Berner & Mattner

Tool Track Committee

Christoph Csallner, University of Texas at Arlington
Shaukat Ali, Simula Research Laboratory
Shin Yoo, University College London
Adnan Causevic, Malardalen University
Valentin Dallmeier, Saarland University
Tanja E. J. Vos, Universidad Politécnica de Valencia
Manuel Oriol, ABB Corporate Research
Mike Papadakis, Luxembourg University
Tibor Csöndes, Ericsson Hungary
Claire Legoues, Carnegie Mellon
Francisco Gomes Oliveira Neto,
Universidade Federal de Campina Grande
Yue Jia, University College London
Hadi Hemmati, University of Manitoba
José Miguel Rojas, The University of Sheffield
Fabrizio Pastore, University of Luxembourg
Muhammad Zohaib Iqbal, National University of Computer & Emerging Sciences, Pakistan
Juan Pablo Galeotti, Saarland University
Welcome Reception
takes place in Congress Graz on April 14th at 6:00 pm

Banquet dinner

Wednesday, April 15th at 7:00 pm

Location:
Alte Universität, Hofgasse 14
(within a few minutes walking distance)

Floor plan ICST 2015 main conference
(see ICSTW 2015 floor plan workshop days)
<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:15</td>
<td>Registration</td>
</tr>
<tr>
<td>08:45</td>
<td>Welcome</td>
</tr>
<tr>
<td>09:00</td>
<td><strong>Keynote 1 - Mark Harman / Chair: G. Fraser</strong>&lt;br&gt; Achievements, open problems and challenges for search based software testing</td>
</tr>
<tr>
<td>10:30</td>
<td>Coffee Break</td>
</tr>
<tr>
<td>11:00</td>
<td><strong>Track 1 - Room Styria</strong>&lt;br&gt; Chair: H. Waeselynck&lt;br&gt; Test Generation 1&lt;br&gt; A. Panichella, F. M. Kifetew, P. Tonella&lt;br&gt; Reformulating Branch Coverage as a Many-Objective Optimization Problem&lt;br&gt; S. Mirshokraie, A. Mesbah, K. Pattabiraman&lt;br&gt; JSEFT: Automated JavaScript Unit Test Generation&lt;br&gt; S. Pouling, R. Feldt&lt;br&gt; Re-using Generators of Complex Test Data</td>
</tr>
<tr>
<td></td>
<td><strong>Track 2 - Room B</strong>&lt;br&gt; Static Analysis&lt;br&gt; Chair: A. Podgurski&lt;br&gt; Jing Xu, Yu Lei, R. Carver, D. Kung&lt;br&gt; A Lightweight, Static Approach to Detecting Unbounded Thread-Instantiation Loops&lt;br&gt; J. Midtgaard, A. Møller&lt;br&gt; QuickChecking Static Analysis Properties&lt;br&gt; S. Bardin, M. Delahaye, R. David, N. Kosmatov, M. Papadakis, Y. Le Traon, J. Marion&lt;br&gt; Sound and Quasi-Complete Detection of Infeasible Test Requirements</td>
</tr>
<tr>
<td>12:30</td>
<td>Lunch</td>
</tr>
<tr>
<td>Time</td>
<td>Track 1 - Room Styria</td>
</tr>
<tr>
<td>-------</td>
<td>-----------------------</td>
</tr>
</tbody>
</table>
| 15:30 | S. H. Jensen, S. Thummalapenta, S. Sinha, S. Chandra  
Test Generation from Business Rules  
E. Alégroth, E. Bache  
On the Industrial Applicability of TextTest: An Empirical Case Study  
P. Arcaini, A. Gargantini, P. Vavassori  
Generating Tests for Detecting Faults in Feature Models | see local announcements |
| 16:00 |  | Bug Bash |
| 18:00 | Welcome Reception |  |
### DAY 2 - Wednesday, April 15th

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:15</td>
<td>Registration</td>
</tr>
<tr>
<td>09:00</td>
<td>Keynote 2 - Helmut Veith / Chair: F. Wotawa</td>
</tr>
<tr>
<td></td>
<td>Perspectives on White-Box Testing: Coverage, Concurrency, and Concolic Execution</td>
</tr>
<tr>
<td>10:30</td>
<td>Coffee Break</td>
</tr>
<tr>
<td>11:00</td>
<td>Track 1 - Room Styria</td>
</tr>
<tr>
<td></td>
<td>Model Checking &amp; SAT Solving Chair: P. Ammann</td>
</tr>
<tr>
<td></td>
<td>H. Zhang, T. Aoki, Y. Chiba</td>
</tr>
<tr>
<td></td>
<td>Yes! You Can Use Your Model Checker to Verify OSEK/VDX Applications</td>
</tr>
<tr>
<td></td>
<td>K. C. Castillos, H. Waeselynck, V. Wiel</td>
</tr>
<tr>
<td></td>
<td>Show Me New Counterexamples: A Path-Based Approach</td>
</tr>
<tr>
<td></td>
<td>A. Yamada, T. Kitamura, C. Artho, Eun-Hye Choi, Y. Oiwa, A. Biere</td>
</tr>
<tr>
<td></td>
<td>Optimization of Combinatorial Testing by Incremental SAT Solving</td>
</tr>
<tr>
<td>11:00</td>
<td>Track 2 - Room B</td>
</tr>
<tr>
<td></td>
<td>Test Analysis Chair: J. Tretmans</td>
</tr>
<tr>
<td></td>
<td>D. Di Nardo, F. Pastore, L. Briand</td>
</tr>
<tr>
<td></td>
<td>Generating Complex and Faulty Test Data Through Model-Based Mutation Analysis</td>
</tr>
<tr>
<td></td>
<td>T. Pankumhang, M. Rutherford</td>
</tr>
<tr>
<td></td>
<td>Iterative Instrumentation for Code Coverage in Time-Sensitive Systems</td>
</tr>
<tr>
<td>11:00</td>
<td>Track 3 - Room A</td>
</tr>
<tr>
<td></td>
<td>PhD Symposium</td>
</tr>
<tr>
<td></td>
<td>see local announcements</td>
</tr>
<tr>
<td>12:30</td>
<td>Lunch</td>
</tr>
<tr>
<td>13:30</td>
<td>Track 1 - Room Styria</td>
</tr>
<tr>
<td></td>
<td>Test Generation 2 Chair: Y. Le Traon</td>
</tr>
<tr>
<td></td>
<td>Z. Bai, G. Shu, A. Podgurski</td>
</tr>
<tr>
<td></td>
<td>NUMFL: Localizing Faults in Numerical Software Using a Value-Based Causal Model</td>
</tr>
<tr>
<td></td>
<td>T. Huuhtanen, J. Itkonen, C. Lassenius</td>
</tr>
<tr>
<td></td>
<td>Combining Algebraic and Domain Testing to Design Adequate Test Cases for Signal Processing Algorithms</td>
</tr>
<tr>
<td>13:30</td>
<td>Track 2 - Room B</td>
</tr>
<tr>
<td></td>
<td>Testing Tools Chair: J. Tretmans</td>
</tr>
<tr>
<td></td>
<td>T. Kobashi, N. Yoshioka, H. Kaiya, T. Okubo, M. Yoshizawa, H. Washizaki, Y. Fukazawa</td>
</tr>
<tr>
<td></td>
<td>TESEM: A Tool for Verifying Security Design Pattern Applications by Model Testing</td>
</tr>
<tr>
<td></td>
<td>B. K. Aichernig, H. Brandl, E. Jöbstl, W. Krenn, R. Schlick, S. Tiran</td>
</tr>
<tr>
<td></td>
<td>MoMuT::UML - Model-based Mutation Testing for UML</td>
</tr>
<tr>
<td>13:30</td>
<td>Track 3 - Room A</td>
</tr>
<tr>
<td></td>
<td>PhD Symposium</td>
</tr>
<tr>
<td></td>
<td>see local announcements</td>
</tr>
</tbody>
</table>
## Track 1 - Room Styria
- **Test Generation 2**
  - Chair: Y. Le Traon
  - T. Yu and M. B. Cohen
  - Guided Test Generation for Finding Worst-Case Stack Usage in Embedded Systems

## Track 2 - Room B
- **Testing Tools**
  - PLeTsPerf - A Model-based Performance Testing Tool

## Track 3 - Room A
- **PhD Symposium**
  - D. Honfi, A. Vörös, Z. Micskei
  - SEViz: A Tool for Visualizing Symbolic Execution

### 15:00 - 15:30 Coffee Break

### 15:30 - 17:00

<table>
<thead>
<tr>
<th>Track 1 - Room Styria</th>
<th>Track 2 - Room B</th>
<th>Track 3 - Room A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Panel</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| N. Li, A. Escalona, Y. Guo, J. Offutt
  - A Scalable Big Data Test Framework (30"") |
| T. Noguchi, H. Washizaki, Y. Fukazawa, A. Sato, K. Ota
  - History-Based Test Case Prioritization for Black Box Testing on a New Product using Ant Colony Optimization (30"") |
| M. Oriol
  - Testing Legacy Embedded Code: Landing on a Software Engineering Desert Island (15"") |
| S. Ali, T. Yue
  - U-Test: Evolving, Modelling and Testing Realistic Uncertain Behaviours of Cyber-Physical Systems (15"") |

### 19:00 Banquet Dinner
<table>
<thead>
<tr>
<th>Time</th>
<th>Track 1 - Room Styria</th>
<th>Track 2 - Room B</th>
<th>Track 3 - Room A</th>
</tr>
</thead>
<tbody>
<tr>
<td>11:00</td>
<td>GUI Testing</td>
<td>Testing Tools</td>
<td>Testing in Practice 2</td>
</tr>
<tr>
<td></td>
<td>Chair: A. Memon</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Classifying and Qualifying GIU Defects</td>
<td>Security Threat Identification and Testing</td>
<td>A Virtual Bank For Development And Testing (30&quot;)</td>
</tr>
<tr>
<td></td>
<td>Detection and Localization of HTML Presentation Failures Using Computer Vision-Based Techniques</td>
<td>Testing Web Applications Through Layout Constraints</td>
<td>Seamless Integration of Test Information Management and Calibration Data Management in the Overall Automotive Development Process (15&quot;)</td>
</tr>
<tr>
<td></td>
<td>S. Mahajan, W. G. J. Halfond</td>
<td>Testing in a large service based architecture, from unit testing to acceptance testing</td>
<td>Integrating Concolic Testing into an Industrial Embedded Software Development Workflow (15&quot;)</td>
</tr>
<tr>
<td>12:30</td>
<td>Lunch</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td>Track 1 - Room Styria</td>
<td>Track 2 - Room B</td>
<td>Track 3 - Room A</td>
</tr>
<tr>
<td>-------</td>
<td>-----------------------</td>
<td>------------------</td>
<td>------------------</td>
</tr>
<tr>
<td></td>
<td><strong>Track 2 - Room B</strong> Tool Demo</td>
<td><strong>Track 3 - Room A</strong> Testing in Practice 3</td>
<td>A. Santos, I. Correia Mobile Testing in Software Industry using Agile: Challenges and Opportunities (15&quot;)</td>
</tr>
<tr>
<td></td>
<td><strong>Track 1 - Room Styria</strong> Open SC Meeting</td>
<td>S. Mohacsi, M. Felderer, A. Beer A Case Study on the Efficiency of Model-Based Testing at the European Space Agency (15&quot;)</td>
<td>S. Puri-Jobi Test Automation of NFC ICs using Jenkins and NUnit</td>
</tr>
<tr>
<td>15:00</td>
<td><strong>Coffee Break</strong></td>
<td>R. Brenner, S. Wunder Scaled Agile Framework: Presentation and Real World Example</td>
<td>W. Vorraber, G. Lichtenegger, D. Neuchbacher, S. Vössner Designing sustainable information systems for organizations operating in safety critical environments</td>
</tr>
</tbody>
</table>