CBSE’13
Proceedings of the
16th ACM SIGSOFT Symposium on Component Based Software Engineering

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Welcome to CompArch 2013, the Federated Events on Component-Based Software Engineering and Software Architecture, held in Vancouver, Canada, on the campus of the University of British Columbia, which is located on the traditional land of the xʷməθkʷəy̓əm (Musqueam) people, or “people of the river grass”, on June 17 to 21st 2013.

The 4 main events composing CompArch are:

- QoSA’13: the 9th International ACM SIGSOFT Conference on Quality of Software Architectures
- CBSE’13: the 16th ACM SIGSOFT Symposium on Component Based Software Engineering
- WCOP’13: the 18th International Doctoral Symposium on Components and Architecture
- ISARCS’13: the 4th International ACM SIGSOFT Symposium on Architecting Critical Systems

We would like to thank those who helped us organize CompArch this year. In particular, we thank Ipek Ozkaya, who handled the publication with Lisa Tolles and her associates at Sheridan Communications and assembled the proceedings you are reading; David Fallesi, who took care with maestro of the event publicity; Ali Mesbab, whom we coaxed to accept the responsibility of the finances; Rich Hilliard, our dependable gran’ poobah of all web things; and our assistant, Clara Soyris, who handled the myriad of important details.

At ACM and ACM SIGSOFT, we want to thank for their support: Stephanie Sabal, Maritza Nichols, and Adrienne Griscti. And we got the backing of Will Tracz and Laura Dillon, past and current chairs of SIGSOFT.

At the University of British Columbia, we would like to thank the staff of Conference and Accommodation, in particular Lisa d’Alfonso and Amira Awad.

We also extend our thanks to the numerous organizations that have supported us in one way or another, in particular the institutions were we work: Mazaryk University, Karlsruhe Institute of Technology, NASA, Università degli studi dell’Aquila, Microsoft, the Software Engineering Institute, the University of Northwestern Switzerland, George Mason University, Krachten Engineering Services Ltd, Agile Vancouver, the Vancouver chapter of the IEEE Computer society, and the University of British Columbia.

We hope that you’ll find the overall program interesting, inspiring and that you will return home with plenty of new insights and connections into our community, that will lead you to further successes.

Philippe Kruchten
*CompArch 2013 General chair*

Sam Malek
*ISARCS’13 program chair*

Barbora Bühnová
Ralf Reussner
Clemens Szyperski
Wolfgang Weck
*WCOP’13 organisers*

Dimitra Giannakopoulou
Massimo Tivoli
*CBSE’13 program co-chairs*

Anne Koziolek
Robert Nord
*QoSA’13 program co-chair*
Welcome to the 16th International ACM Sigsoft Symposium on Component-Based Software Engineering – CBSE 2013! Since its early editions, CBSE has emerged as a flagship research event for the component community. It encompasses research (both theoretical and applied) that extends the state-of-the-art in component specification, composition and reuse, analysis, testing, and verification. Past themes for CBSE include “Components for Long-Lived Systems” (2012), “Components for Dynamic Environments” (2011), “Components beyond Reuse” (2010), and “Components for Large-Scale Systems of Systems and Ultra-Large Systems” (2009). The general theme of CBSE 2013 is “Components in the wild: from cyber-physical systems to the cloud!”.

The call for papers attracted 43 submissions from Europe (Italy, Sweden, Germany, France, Czech Republic, United Kingdom), Asia (Saudi Arabia, Iran, Thailand, China, Japan, India), America (Canada, United States, Brazil), and Australia. Each paper received three reviews. The Program Committee, after extensive discussions, decided to accept 20 papers (16 regular papers and 4 short papers) that cover a variety of topics, including Adaptable Components, Component Verification, Component Composition and Reuse, Component Design, Component Analysis, and Component Quality Assurance. We hope that the CBSE 2013 proceedings will serve as reference literature for academic researchers and practitioners working in the area of Component-Based Software Engineering.

CBSE 2013 is part of the federated event CompArch 2013 together with “QoSA 2013: 9th International ACM SIGSOFT Conference on the Quality of Software Architectures”, “ISARCS 2013: 4th International ACM SIGSOFT Symposium on Architecting Critical Systems”, and “WCOP 2013: 18th International Doctoral Symposium on Components and Architecture”. We thank the CompArch general chair Philippe Kruchten and the CompArch organization team for coordinating and setting up the various events.

Special thanks go to the authors of the submitted papers for their valuable contributions that allowed the CBSE 2013 program committee to put in place a very exciting program. We are grateful to the program committee members who actively worked on paper reviewing and provided the authors with comments that have been useful for improving the scientific content and quality of their papers.

We thank Lisa Tolles and her associates at Sheridan Communications for processing the papers in a timely manner. Finally, we thank the hosting university and our sponsor, ACM SIGSOFT, and EasyChair, for making our work as PC Chairs “easy”-er.

We hope that the CBSE 2013 program, and related proceedings, will be of interest for your research activities and work, and that your participation in the event will trigger constructive collaborations with researchers and practitioners who work within the international CBSE community.

Dimitra Giannakopoulou
CBSE’13 Program Chair
NASA Ames Research Centre, USA

Massimo Tivoli
CBSE’13 Program Chair
University of L’Aquila, Italy
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