

CTS 2013 PREFACE

Welcome to the 2013 International Conference on Collaboration Technologies and Systems (CTS 2013). During the conference, attendees will see and interact with a broad spectrum of methodologies and technologies that relate to cooperation, coordination, communication, and collaboration at both the client and backend (cloud) levels. This year's conference presents a wide array of papers, posters, workshops, panels, demonstrations, exhibits, presentations, and tutorials addressing a broad range of topics including sensors, robots, people, and social networks, big data, biology knowledgebase, groupware, citizen science, crowd sourcing, human-computer interaction, visualization, virtual environments, user interfaces, gaming, e-learning, e-business, e-health, emergency response, knowledge management, decision making using clouds, global grids, P2P, multi-agent systems, mobile clients, wearable devices, Web 2.0, with resilience, trust and security, and related human and socio-technical collaboration issues.

Today's computer and information technologies see dramatic progress in both lightweight clients and megascale backend systems (clouds) supporting them. This supports seamless and borderless information delivery and services for anyone, anywhere, and anytime. The international free flow of information is having huge socio-political impacts on countries where strict censorship and limits on information and news exchange had been traditionally and culturally accepted. World-wide, people expect unlimited access to information within and across cultures. Social networking continues to expand, even at the enterprise level, and businesses are struggling to devise policies on the appropriate use of applications such as Facebook, Twitter, blogs, and texting. The desire for mobile and pervasive connectivity is pushing expansion of an ever growing wired and wireless high speed backbone that globally combines computing, sensing, and communication technologies. Annually, new classes of mobile devices are added to the traditional desktop, notebook computers, tablet PCs, and netbooks. Most recently multi-modal touch screen devices, pioneered by Apple's iPhone™ and iPad™ with comparable importance of Android-based systems, have significantly improved the ease of use of personal collaboration instruments. The new mobile devices provide immediate access to people, email, entertainment and knowledge and have created a marketplace for hundreds of thousands of new applications. The Internet of Things captures the growing importance of sensor swarms; often attached to one's smartphone or wristwatch. These applications are enabled by backend clouds but their utility depends on their value to people.

Underlying infrastructure such as cloud computing, service oriented architectures, and smart networks and grids offer the vision of resources (networks, computational servers, storage, etc.) as a service with greater ease to collaborate and while also lowering cost. At the same time, there are increasing challenges for privacy and security as we attempt to understand how to handle trust in complex systems and how to measure trustworthiness in human to human, human to machine, machine to human, and machine to machine collaboration.

CTS is the premier international research conference in the major areas related to collaboration, communication and their underlying technologies. It offers an exceptional opportunity to interact with world class researchers in collaboration and related arenas and discuss the results of the best research in the domain. The conference gives us insight into what collaboration is today and what 21st century collaboration will be based on technologies now in research and development. We hope you enjoy and learn from the tremendous exchange of ideas and concepts that will be presented in this year's conference sessions.

Geoffrey Fox and Waleed W. Smari
CTS 2013 Conference Co-Chairs
Bloomington, Indiana and Dayton, Ohio, USA
April 2013

CTS 2013 PROGRAM MESSAGE

On behalf of the Organizing and International Technical Program Committees, we are delighted to present these proceedings of the 2013 International Conference on Collaboration Technologies and Systems (CTS 2013) and its program. This year is the 14th anniversary of the CTS conferences. We are pleased to have this milestone and look forward to continuous contributions to the community and bringing the state-of-the-art in research and development in this domain.

The conference this year is held May 20-24, in San Diego, California, USA. The meeting provides a dynamic forum to address, explore, and exchange information, knowledge, and experiences in the state-of-the-art collaborative enterprises, their modeling and simulation, design and use, and impact. The goal of CTS meetings is to bring together researchers, scientists, engineers, practitioners, educators, and students from many nations and backgrounds to share and exchange their insights, breakthroughs, and research results about various aspects of collaboration systems and technologies; to discuss challenges encountered in government, industry, and academe; and to seek new and innovative solutions. Additionally, we hope that the Conference will provide opportunities for many open technical interchanges in individual and group settings on key technology issues. It is our hope that the Conference will provide opportunities for future collaborations among the participants.

This year, and despite the continuation of the challenging times, the CTS Conference is run with parallel sessions over a period of four days, including one full day of parallel tutorials. For the fifth year, we have full day parallel sessions on all days of the conference to accommodate the number of presentations we have this year. As in previous years' successful meetings, the Conference continues to enjoy excellent growth and a diverse program. The Proceedings contains papers on many timely and emerging topics. We received a good number of submissions and the quality of the overall manuscripts pool was excellent. There was a total of 153 paper submissions to main and all other tracks from 37 countries. The top five countries with most submissions were: the USA with about 36%, followed by Italy (9.6%) France (7.4%), Germany (4.8%), and Saudi Arabia (4%). In the main track, each manuscript underwent a minimum of four rigorous reviews plus two independent evaluations. It was a challenge to select papers for inclusion in the proceedings. The acceptance rate this year was about 34.21% (26 papers were accepted in the main track out of 76 submitted). Sixty-one manuscripts were accepted in the symposia, workshops and special sessions, 8 invited talks, 4 poster papers, 3 doctoral dissertation colloquium abstracts, and 6 research posters abstracts. The Conference had ten symposia, workshops and special sessions, all with rigorously reviewed papers (a minimum of three reviews per manuscript). Each of the symposia, workshops and special sessions handled their papers separately but maintained similar standards for paper evaluation and acceptance as much as possible. These proceedings include a total of 104 contributions (regular papers, short papers, poster papers, extended abstracts, etc.), both invited and accepted from the submissions. The program's technical papers represent works from academia, research laboratories, government, practitioners, and industry.

The five-day final program is strong and diverse. It consists of an opening remarks session, four keynote speeches, a plenary session, four tutorial sessions, three demo sessions, twenty-five technical sessions, a posters session, three panel sessions, a Doctoral Dissertation Colloquium (DDC) session, a conference reception, a luncheon and a banquet dinner, three meet & greet sessions, nine short breaks, exhibits, and three other social events, including full-day excursions to Balboa Park, the San Diego Zoo, and the San Diego Safari Park. For the fourth time, we have three doctoral dissertation presentations as part of the DD Colloquium. We hope that the DDC will provide a useful mentoring opportunity to our future researchers and leaders. Throughout the program, students continue to be involved in various activities.

We would like to thank first all the participants and authors who submitted works and papers to the CTS Conference this year. The program is built from their hard work and contributions. We also wish to thank the many people who helped make this Conference happen successfully: our Keynote Speakers Loren Terveen, Gerhard Fischer, Victoria Bellotti, and Cindy Pickering; our Plenary Speaker Robert Neches; our Invited

Speakers: Rachid Alami, Yunana Chen, Cory Knobel, Peter M. Kogge, Jeffrey W. Nichols, Milind Tabe, and Eric R Wade; our Symposia, Workshops and Special Sessions Organizers: Marc Smith, Flavio Villanustre, Trish McCall, Geoffrey Fox, Eli Blevis, Muhammad Anan, Syed Misbahuddin, Musa Ayyash, Goce Trajcevski, Wei Chen, Edmund Durfee, Myriam Abramson, Robert Neches, Selma Šabanović, Cindy L. Bethel, Adriana Tapus, Eric Meisner, Connie White, Tammy Karlgaard, Murray E. Jennex, Joel Aud, James C. Hagen, Antonio Navarro Martín, Alex Mu-Hsing Kuo, Danilo Pani, Haibin Zhu, Joan Reynaud, Marc Pasquet, Bechir Hamdaoui, Ammar Rayes, Sergiu Dascalu, Francesco Bellotti, C. Shaun Longstreet, Carolina Islas Sedano, Bill Kapralos, Claudia Diamantini, Domenico Potena, J. Cecil, Sanjay Kumar Madria, and Mark Linderman; our Tutorials presenters: Marc A. Smith, Michele Missikoff, Matthew J. Bietz, Cory Knobel, Katie Pine, and Sanjay Kumar Madria; our Demo Sessions presenters: Mary Galvin, Lutz Gericke, and John Hamilton; Panel Sessions moderators and panelists: Aditya Sehgal, Jacob Spoelstra, Nikolaos Vasiloglou, Radhika Subramanian, Mary Czerwinski, Gerhard Fischer, Loren Terveen, Kathleen A. Kramer, Christopher Clarke, Shelley Y. Hawkins, Gordon K. Lee, Rex E. Gantenbein; and last but not least our Doctoral Dissertation Colloquium contributors: Charalampos Chelmis, Rabia Noor Enam, and Laura Genga.

We also wish to recognize the contributions of our Advisory Committee members who provided us with excellent suggestions and advice whenever needed. Our superb collection of papers and presentations was possible through the diligent work of the International Technical Program Committees. The ITPC co-chairs, members and reviewers did an exceptional job and we are grateful for their help in reviewing and evaluating the paper submissions. We also recognize the contribution and support of the CTS 2013 exhibitors and sponsors who made many of the Conference's activities possible. Last but not least, we wish to thank all members of the Organizing Committee and student assistants without whom this conference would not have been possible.

On behalf of the organizers, the ITPC and all those who made CTS 2013 a reality, we hope you find this volume of value, thought provoking and interesting, as have been the case in the past years.

Thank you and we look forward to seeing all of you at our CTS 2014 conference.

Waleed W. Smari and Geoffrey C. Fox
CTS 2013 Organizing Committee Co-Chairs
Dayton, Ohio, and Bloomington, Indiana, USA
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