

# **ICAS 2012**

## **Foreword**

The Eighth International Conference on Autonomic and Autonomous Systems (ICAS 2012), held between March 25-30, 2012 - St. Maarten, Netherlands Antilles, was a multi-track event covering related topics on theory and practice on systems automation, autonomous systems and autonomic computing.

The main tracks referred to the general concepts of systems automation, and methodologies and techniques for designing, implementing and deploying autonomous systems. Next tracks developed around design and deployment of context-aware networks, services and applications, and the design and management of self-behavioral networks and services. Also considered were monitoring, control, and management of autonomous self-aware and context-aware systems and topics dedicated to specific autonomous entities, namely, satellite systems, nomadic code systems, mobile networks, and robots. It has been recognized that modeling (in all forms this activity is known) is the fundamental for autonomous subsystems, as both managed and management entities must communicate and understand each other. Small-scale and large-scale virtualization and model-driven architecture, as well as management challenges in such architectures were considered. Autonomic features and autonomy requires a fundamental theory behind and solid control mechanisms. These topics give credit to specific advanced practical and theoretical aspects that allow subsystem to expose complex behavior. It was aimed to expose specific advancements on theory and tool in supporting advanced autonomous systems. Domain case studies (policy, mobility, survivability, privacy, etc.) and specific technology (wireless, wireline, optical, e-commerce, banking, etc.) case studies were targeted. A special track on mobile environments was intended to cover examples and aspects from mobile systems, networks, codes, and robotics.

Pervasive services and mobile computing are emerging as the next computing paradigm in which infrastructure and services are seamlessly available anywhere, anytime, and in any format. This move to a mobile and pervasive environment raises new opportunities and demands on the underlying systems. In particular, they need to be adaptive, self-adaptive, and context-aware.

Adaptive and self-management context-aware systems are difficult to create, they must be able to understand context information and dynamically change their behavior at runtime according to the context. Context information can include the user location, his preferences, his activities, the environmental conditions and the availability of computing and communication resources. Dynamic reconfiguration of the context aware systems can generate inconsistencies as well as integrity problems, and combinatorial explosion of possible variants of these systems with a high degree of variability can introduce great complexity.

Traditionally, user interface design is a knowledge-intensive task complying with specific domains, yet being user friendly. Besides operational requirements, design recommendations refer to standards of the application domain or corporate guidelines.

Commonly there is a set of general user interface guidelines; the challenge is due to a need for cross-team expertise. Required knowledge differs from one application domain to another, and the core knowledge is subject to constant changes and to individual perception and skills.

Passive approaches allow designers to initiate the search for information in a knowledge-database to make accessible the design information for designers during the design process. Active approaches, e.g., constraints and critics, have been also developed and tested. These mechanisms deliver information (critics) or restrict the design space (constraints) actively, according to the rules and guidelines. Active and passive approaches are usually combined to capture a useful user interface design.

All these points posed considerable technical challenges and make self-adaptable context-aware systems costly to implement. These technical challenges led the context-aware system developers to use improved and new concepts for specifying and modeling these systems to ensure quality and to reduce the development effort and costs.

**SYSAT** Advances in system automation

**AUTSY** Theory and Practice of Autonomous Systems

**AWARE** Design and Deployment of Context-awareness Networks, Services and Applications

**AUTONOMIC** Autonomic Computing: Design and Management of Self-behavioral Networks and Services

**CLOUD** Cloud computing and Virtualization

**MCMAC** Monitoring, Control, and Management of Autonomous Self-aware

**CASES** Automation in specialized mobile environments

**ALCOC** Algorithms and theory for control and computation

**MODEL** Modeling, virtualization, any-on-demand, MDA, SOA

**SELF** Self-adaptability and self-management of context-aware systems

**KUI** Knowledge-based user interface

**AMMO** Adaptive management and mobility

We welcomed technical papers presenting research and practical results, position papers addressing the pros and cons of specific proposals, such as those being discussed in the standard forums or in industry consortia, survey papers addressing the key problems and solutions on any of the above topics short papers on work in progress, and panel proposals.

We take here the opportunity to warmly thank all the members of the ICAS 2012 technical program committee as well as the numerous reviewers. The creation of such a broad and high quality conference program would not have been possible without their involvement. We also kindly thank all the authors that dedicated much of their time and efforts to contribute to ICAS 2012. We truly believe that, thanks to all these efforts, the final conference program consisted of top quality contributions.

We hope that ICAS 2012 was a successful international forum for the exchange of ideas and results between academia and industry and to promote further progress in autonomic and autonomous systems.

We are certain that the participants found the event useful and communications very open. The beautiful places of St. Maarten surely provided a pleasant environment during the conference and we hope you had a chance to visit the surroundings.

### **ICAS 2012 Chairs**

Michael Bauer, The University of Western Ontario - London, Canada

Radu Calinescu, Aston University, UK

Michael Grottke, University of Erlangen-Nuremberg, Germany

Bruno Dillenseger, Orange Labs, France