



## SMC 2014 Special Session Call for Papers Intelligent Real-Time Automation and Agent-based Systems

<http://www.smc2014.org>

### Special Session organizer

**Dr. Thomas Strasser**

Senior Scientist  
Electric Energy Systems  
Energy Department  
AIT Austrian Institute of  
Technology  
Vienna, Austria  
[thomas.i.strasser@ieee.org](mailto:thomas.i.strasser@ieee.org)

### Co-organizer(s):

**Dr. Pavel Vrba**

Research Group Leader  
Intelligent Systems Group  
Department of Cybernetics  
Faculty of Electrical Eng.  
Czech Technical University  
in Prague, Czech Republic  
[pavel.vrba1@gmail.com](mailto:pavel.vrba1@gmail.com)

**Dr. Alois Zoitl**

Research Group Leader  
Industrial Automation  
fortiss GmbH  
Munich, Germany  
[alois.zoitl@fortiss.org](mailto:alois.zoitl@fortiss.org)

**Dr. Carlos C. Insaurralde**

Lecturer  
Institute of Sensors, Signals  
and Systems  
Heriot-Watt University  
Edinburgh, UK  
[C.C.Insaurralde@hw.ac.uk](mailto:C.C.Insaurralde@hw.ac.uk)

**Prof. Vladimír Marik**

Director of Czech Institute  
of Informatics, Robotics,  
and Cybernetics (CIIRC)  
Czech Technical University  
in Prague, Czech Republic  
[marik@labe.felk.cvut.cz](mailto:marik@labe.felk.cvut.cz)

### Introduction

The automation level in the manufacturing domain, power and energy systems as well as logistics applications increase steadily resulting in a higher system complexity. Actuators, sensors and control devices from different vendors have to work together with supervisory control and management systems, often in heterogeneous communication environments. The management and automation software used in these areas has to deal more and more with a complex structure of distributed and autonomously acting devices.

Recent trends in research and development indicate that these devices are becoming increasingly intelligent so that they can perform tasks autonomously, and are usually equipped with computing resources. In order to master the complexity of such highly interconnected and collaborative devices that can be considered as “Distributed Intelligent Systems,” advanced methods and concepts encompassing their life cycle of planning/engineering, operation, and reconfiguration/adaptation are needed.

This special session focuses on the following recent research results, trends, and practical developments of intelligent real-time automation and agent-based system.

### Indicative Topics/Areas

- Concepts and architectures for distributed intelligent systems (advanced system engineering concepts like model-driven development and component-based design)
- Cyber-physical systems in industrial automation
- Collaborative objects and systems
- Architectures for autonomous systems
- High-level coordination control concepts (multi-agent and holonic systems, service-oriented architectures)
- Low-level real-time control concepts (IEC 61131-3, IEC 61499-based control, application of SOA principles)
- Self-organization, self-adaptation, self-healing, and other self-\* properties
- Proof-of-concept and practical applications of distributed and autonomous concepts in manufacturing, power and energy (smart grids) and logistics environments
- Simulation, test and validation concepts
- Improved reconfiguration, dynamic adaptation, and reusability concepts and methods
- Application development practices and experiences
- Standardization activities in the domain of distributed and autonomous systems
- Future trends in distributed automation and control systems

### Important Dates

April 7, 2014: Deadline for submission of full-length papers

May 25, 2014: Acceptance/rejection notification

July 9, 2014: Final camera-ready papers due in electronic form

### Submission

Manuscripts for a Special Session should NOT be submitted in duplication to any other regular or special sessions and should be submitted to SMC 2014 main conference online submission system on SMC 2014 conference website.

All submitted papers of Special Sessions have to undergo the same review process (three completed reviews per paper). The technical reviewers for each Special Session paper will be members of the SMC 2014 Program Committee and qualified peer-reviewers to be nominated by the Special Session organizers.

The IEEE SMC Technical Committee on Distributed Intelligent Systems (TC-DIS) supports this special session.