## **PROCEEDINGS**

OF THE

## 5th International Workshop on

# Real Time Networks RTN'06

Dresden, Germany, July 4, 2006 in conjunction with the 18<sup>th</sup> ECRTS



Jean-Dominique Decotignie (ed.) Swiss Center for Electronics and Microtechnology Neuchâtel, Switzerland

- ii -

### **PROCEEDINGS**

OF THE

## 5th International Workshop on

# Real Time Networks RTN'06

Dresden, Germany, July 4, 2006 in conjunction with the 18<sup>th</sup> ECRTS



#### Chairman:

Jean-Dominique Decotignie

Swiss Center for Electronics and Microtechnology Neuchâtel, Switzerland

#### Chairman

Jean-Dominique Decotignie, Swiss Center for Electronics and Microtechnology, Neuchâtel, Switzerland, jean-dominique.decotignie@csem.ch

#### **Program Committee**

Kemal Akkaya, Southern Illinois University, USA.

Marco Caccamo, University of Illinois at Urbana-Champaign, USA.

Tian He, University of Minnesota Twin City, USA.

Joerg Kaiser, Otto-von-Guericke-University of Magdeburg, Germany.

Christos Koulamas, Industrial Systems Institute, Greece.

Lucia Lo Bello, University of Catania, Italy.

Julián Proenza, Universitat de les Illes Balears, Spain.

Françoise Simonot-Lion, INPL Ecole des Mines de Nancy, France.

Eduardo Tovar, Polytechnic Institute of Porto, Portugal

#### Foreword

The fifth issue of the workshop on real-time networks took place in the wonderful city of Dresden. These post-conference proceedings profit from some updates of the presented papers as well as from a flavour of the discussions held. Besides the cultural aspects, we had a very active and lively workshop with 18 participants in a small room that made the interaction even closer. Discussions were quite animated and the opportunity to get a much better insight on many topics. I hope that, as a reader, you will have as fun as we had during the workshop.

I would like to thank all the persons who made this workshop a success. First the local organisers in Dresden, in particular Hermann Härtig, who attracted us in their wonderful city and who did a great job to facilitate my task. Second, all the members of the program committee who read the contributions and made the program that you have in front of you. I also would like to thank those members of the program committee who could join us for the workshop. They were a lot in the quality of the discussions. Finally, my thanks go the authors and the rapporteurs without whom this workshop would not exist.

A new issue of the workshop is under way and I hope that reading these proceedings will be an incentive to join us in Pisa.

Jean-Dominique Decotignie Centre Suisse d'Electronique et de Microtechnique Neuchâtel, Switzerland.

## Table of Content

Session 1 - Automotive Applications (Chair: Christos Koulamas, Rapporteur : Jean-Dominique Decotignie)
Session summary,
Applying Real-Time Network Research in the Automotive Industry:  Lessons Learned and Perspectives,
Session 2 - Old Problems revisited (Chair: Luis Almeida, Rapporteur: Björn Andersson)
Session summary,
Message response time analysis for ideal controller area network (CAN) refuted
Session 3 - Wireless Networks (Chair: Lucia Lo Bello, Rapporteur: Christos Koulamas)
Session summary,
Adaptive Leases in Wireless Sensor Networks
Using a Prioritized MAC Protocol to Efficiently Compute Aggregated Quantities
Improving the IEEE 802.15.4 Slotted CSMA/CA MAC for Time- Critical Events in Wireless Sensor Networks

# Session 4 – Quality of Service (Chair: Eduardo Tovar, Rapporteur: Anis Koubâa)

Session summary,	!3
Enhanced Ethernet Switching for Flexible Hard Real-Time Communication	15
R. Marau, P. Pedreiras, L. Almeida	
The network capability model of UPnP-QoS v3, an interoperable QoS framework for admission control and scheduled access	!9
Facilitating subsystem integration by decoupling priority and identifier in CAN messages	55

- viii -