

# WFCS 2010 Programme

**Wednesday, May 19, 2010**

8:00            **Registration**

8:30 – 8:45    **Opening session**

**Session Chair: Françoise Simonot-Lion, Nancy University / LORIA**

8:45 – 10:30 **Session 1: Wireless Communications**

**Session Chair: Elisabeth Uhlemann, Halmstad University**

8:45 – 9:20    Performance Indicators for Wireless Industrial Communication Networks

*Giovanni Gamba, Lucia Seno, Stefano Vitturi*

9:20 – 9:55    Predictable Real-Time Communications with Improved Reliability for IEEE 802.15.4 Based Industrial Networks

*Kristina Kunert, Elisabeth Uhlemann, Magnus Jonsson*

9:55 – 10:30 Channel Capture in Noisy Wireless Contention-Based Communication Environments

*Paulo Bartolomeu, Jose Fonseca*

10:30 – 11:00 **Coffee break**

11:00 – 12:45 **Session 2: Real-Time Ethernet I**

**Session Chair: Lucia Lo Bello, University of Catania**

11:00 – 11:35 Optimising PROFINET IRT for Fast Cycle Times: a Proof of Concept

*David Gunzinger, Cyrill Kuenzle, Andreas Schwarz, Hans Dermot Doran, Karl Weber*

11:35 – 12:10 On the Accuracy of the Distributed Clock Mechanism in EtherCAT  
*Gianluca Cena, Ivan Cibrario Bertolotti, Stefano Scanzio, Adriano Valenzano, Claudio Zunino*

12:10 – 12:45 A Layer-2 Multicast Forwarding Policy for a Generic Real-time Ethernet System

*Jahanzaib Imtiaz, Lukasz Wisniewski, Juergen Jasperneite, Karl Weber*

12:45 – 14:00 **Lunch break**

14:00 – 15:00 **Keynote**

**Session Chair: Andreas Willig, University of Canterbury, Christchurch**

Real-Time and wireless sensor networks: is there a possible match?

*Jean-Dominique Decotignie*

15:00 – 16:00 **WIP Session 1 Wireless Systems**

**Session Chair: Francisco Vasques, University of Porto**

Statistical Evaluation of the Service Time for IEEE 802.11g Networks in Industrial Applications

*Giovanni Gamba and Stefano Vitturi*

On the improvement of WirelessHART Access Points by means of Software Defined Radio

*Chiara Maria De Dominicis, Paolo Ferrari, Alessandra Flammini, Stefano Rinaldi and Emiliano Sisinni*

Clock Synchronization in Wireless LANs without Hardware Support

*Aneeq Mahmood, Georg Gaderer and Patrick Loschmidt*

VOA: Variable Offset Algorithm for the Optimization of Communication Efficiency in Wireless Sensor Networks

*Alex Pinto, Bruno Ferreira, Carlos Montez, Francisco Vasques and Paulo Portugal*

Link-Layer Retransmissions in IEEE 802.11g based Industrial Networks

*Ivan Dominguez-Jaimes, Lukasz Wisniewski, Henning Trsek and Juergen Jasperneite*

16:00 – 16:30 **Coffee break and Poster discussion**

16:30 – 18:15 **Session 3: Reliability and Security**

**Session Chair: Albert Treytl, Austrian Academy of Sciences**

16:30 – 17:05 On the Upper Bound of Transmission Unreliability in Memoryless Backoff Contention

*Marek Miskowicz, Dariusz Koscielnik*

17:05 – 17:40 Reliability Improvement Achievable in CAN-based Systems by Means of the ReCANcentrate Replicated Star Topology

*Manuel Barranco, Julian Proenza, Luis Almeida*

17:40 – 18:15 Automatic Analysis of Security Policies in Industrial Networks

*Manuel Cheminod, Ivan Cibrario Bertolotti, Luca Durante, Adriano Valenzano*

18:15 **Bus transfer from conference site to welcome reception**

**Thursday, May 20, 2010**

**8:30 – 10:15 Session 4: Real-Time Ethernet II**

**Session Chair: Luis Almeida, University of Porto**

- 8:30 – 9:05 A Distribute-Merge Switch for EtherCAT Networks  
*Gianluca Cena, Stefano Scanzio, Adriano Valenzano, Claudio Zunino*
- 9:05 – 9:40 Flexible, Efficient, and Robust Real-Time Communication with Server-Based Ethernet Switching  
*Rui Santos, Alexandre Vieira, Paulo Pedreiras, Arnaldo Oliveira, Luis Almeida, Ricardo Marau, Thomas Nolte*
- 9:40 – 10:15 On Optimal Communication Spanning Trees in Embedded Ethernet Networks  
*Joerg Sommer*

**10:15 – 10:45 Coffee break**

**10:45 – 12:45 WIP Session 2 System Level Issues**

**Session Chair: Juergen Jasperneite, Institute of Industrial IT**

- Factory-wide Predictive Maintenance in Heterogeneous Environments  
*Jakob Krause, Sebastian Cech, Frank Rosenthal, Andreas Gössling, Christin Groba and Volodymyr Vasyutynskyy*
- Distribution of MES Functionalities for Flexible Automation  
*Aleksey Bratukhin and Thilo Sauter*
- Network Asset Models on/in Intelligent Field Devices  
*Stefan Theurich, Robert Lehmann and Martin Wollschlaeger*
- Fieldbus Material Take-Off Estimation: Towards an Automated Cost Estimation of Fieldbus Installations  
*Falk Doherr, Thomas Schmidt and Leon Urbas*
- Using AI to Realize Energy Efficient Yet Comfortable Smart Homes  
*Wolfgang Kastner, Mario Kofler and Christian Reinisch*
- System-Level Design and Simulation of Automation Systems  
*Oliver Niggemann*
- A Proposal for Graphical Extension of TTCN-3 Graphical Presentation Format (GFT)  
*Barath Kumar, Michael Jaeger and Juergen Jasperneite*
- XML-based Web Service Generation for Microcontroller-based Sensor Actor Networks  
*Sebastian Käbisch, Daniel Peintner, Jörg Heuer and Harald Kosch*

Multicast Filtering in Industrial Ethernet Networks

*Linus Thrybom and Gunnar Prytz*

The case for Chain-Based Routing in Industrial Wireless Sensor Networks

*Emanuele Toscano and Lucia Lo Bello*

12:45 – 14:00 **Lunch break**

14:00 – 15:00 **Keynote**

**Session Chair: Julian Proenza, University of the Balearic Islands**

Industrial Networks – the way out of the labyrinth

*Hubert Kirrmann*

15:00 – 16:00 **WIP Session 3 Scheduling and Network Synchronization**

**Session Chair: Gianluca Cena, IEIIT-CNR / Politecnico di Torino**

Comparing Time-Triggered Ethernet with FlexRay: An Evaluation of Competing Approaches to Real-time for In-Vehicle Networks

*Till Steinbach, Franz Korf and Thomas Schmidt*

Towards Flexible Time Triggered Wireless Communications

*Paulo Bartolomeu and José Fonseca*

Integrating Hardware Limitations in CAN Schedulability Analysis

*Dawood Ashraf Khan, Reinder J. Bril and Nicolas Navet*

Distributed Synchronization Algorithm for Industrial Network

*JinHo Kim, Suk Hyun Seo, Jung Hoon Chun, Jae Wook Jeon, Young Youl Ha and Tae Jin Park*

Towards optimal priority assignment for probabilistic CAN-based systems

*Dorin Maxim and Liliana Cucu-Grosjean*

16:00 – 16:30 **Coffee break and Poster discussion**

16:30 – 18:15 **Session 5: System Modeling, Simulation and Testing**

**Session Chair: Thomas Nolte, MRTC / Mälardalen University**

16:30 – 17:05 Integrating Process Communication in Building Information Models with IFC and LON

*Boris Malinowski, Wolfgang Kastner*

17:05 – 17:40 Heterogeneous Co-Simulation Platform for the Efficient Analysis of FlexRay-based Automotive Distributed Embedded Systems

*Michael Karner, Martin Krammer, Stefan Krug, Eric Armengaud, Christian Steger, Reinhold Weiss*

17:40 – 18:15 Conformance Testing of Variable Driven Automata

*Omer Nguena Timo, Antoine Rollet*

18:15 **End of Day 2**

## Friday, May 21, 2010

### 8:45 – 10:30 **Session 6: Distributed Control Systems**

**Session Chair: Ivan Cibrario Bertolotti, IEIIT-CNR/Politecnico di Torino**

- 8:45 – 9:20 A Modbus Extension for Inexpensive Distributed Embedded Systems  
*Gianluca Cena, Marco Cereia, Ivan Cibrario Bertolotti, Stefano Scanzio*
- 9:20 – 9:55 Networked Control System (NCS) on a network CAN: on the Quality of Service (QoS) and Quality of Control (QoC) provided by different message scheduling schemes based on hybrid priorities  
*Xuan Hung Nguyen, Guy Juanole, Gerard Mouney, Christophe Calmettes*
- 9:55 – 10:30 Event-Based Control: Overview and Generic Model  
*Volodymyr Vasyutynskyy, Klaus Kabitzsch*

### 10:30 – 11:00 **Coffee break**

### 11:00 – 12:45 **Session 7: Network and Protocol Analysis**

**Session Chair: Thilo Sauter, Austrian Academy of Sciences**

- 11:00 – 11:35 A New AODV-Based Routing Protocol Adequate for Monitoring Applications in Oil & Gas Production Environments  
*Ivanovitch Silva, Luiz Affonso Guedes, Francisco Vasques*
- 11:35 – 12:10 DIVAN: A Network Calculator for the Off-line Performance Analysis of Virtual Automation Networks  
*Lixue Han, Juergen Jasperneite, Thomas Werner*
- 12:10 – 12:45 Secure Tunneling of High Precision Clock Synchronisation Protocols and other Time-Stamped Data  
*Albert Treytl, Bernd Hirschler, Thilo Sauter*

### 12:45 – 14:00 **Lunch break**

### 14:00 – 14:15 **Closing session**

**Session Chair: Thilo Sauter, Austrian Academy of Sciences**

14:15 **Conference end**