
Aveiro, Portugal
3-6 May 2016
# Program

## Tuesday, May 3\(^{rd}\), 2016

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>09H00-19H00</td>
<td>Industry Day</td>
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## Wednesday, May 4\(^{th}\), 2016

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>08H00-09H00</td>
<td>Registration</td>
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<tr>
<td>09H00-09H30</td>
<td>Opening Session</td>
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</table>
| 09H30-10H30 | Keynote 1 : Deterministic Ethernet for Real-Time and Critical Applications  
            | Chair : Lucia Lo Bello                                      |
| 10H30-11H00 | Coffee Break                                               |
| 11H00-12H30 | TII-SS-1 : Wireless Networks I                            
            | Chair : Gianluca Cena                                      |
|         | Aerial Multi-hop Network Characterisation using COTS Multirotors  
            | Luis Pinto, Luis Almeida, Anthony Rowe and Andre Moreira  |
|         | TDMA versus CSMA/CA for wireless multi-hop communications: a comparison for soft real-time networking  
            | Qi Wang, Katia Jaffrès-Runser, Yongjun Xu, Jean-Luc Scharbarg, Zhulin An and Christian Fraboul  |
|         | Methods and Performance Aspects for Wireless Clock Synchronization in IEEE 802.11 for the IoT  
            | Aneeq Mahmood, Reinhard Exel, Henning Trsek and Thilo Sauter  |
| 12H30-14H00 | Lunch                                                      |
| 14H00-15H00 | TII-SS-2 : Wireless Networks II                            
<pre><code>        | Chair : Luis Almeida                                       |
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<thead>
<tr>
<th>Time</th>
<th>Session 1: Wireless Sensor Networks</th>
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<tr>
<td>15H00-15H30</td>
<td>Coffee Break</td>
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<tr>
<td>15H30-17H00</td>
<td><strong>Detecting Communication Blackout in Industrial Wireless Sensor Networks</strong></td>
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<tr>
<td></td>
<td>Simone Grimaldi, Mikael Gidlund, Tomas Lennvall and Filip Barac</td>
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<tr>
<td>15H30-17H00</td>
<td><strong>A Geometrical Approach to Compute Source Prioritization Based on Target Viewing in Wireless Visual Sensor Networks</strong></td>
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<td>Cristian Duran-Faundez, Daniel G. Costa, Vincent Lecuire and Francisco Vasques</td>
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<tr>
<td>15H30-17H00</td>
<td><strong>Soft real-time traffic communication in loaded wireless mesh networks</strong></td>
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<td>Jesus Aisa, Hossein Fotouhi, José Luis Villarroel and Luis Almeida</td>
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Thursday, May 5th, 2016

<table>
<thead>
<tr>
<th>Time</th>
<th>Session 2: Ethernet-based industrial communications</th>
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<tr>
<td>09H00-11H00</td>
<td>Coffee Break</td>
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<tr>
<td>11H00-11H30</td>
<td><strong>Application-Aware Industrial Ethernet Based on an SDN-Supported TDMA Approach</strong></td>
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<td>Eike Schweissguth, Peter Danielis, Christoph Niemann and Dirk Timmermann</td>
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<tr>
<td>11H00-11H30</td>
<td><strong>Dynamic Reconfiguration in HaRTES Switched Ethernet Networks</strong></td>
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<td>Mohammad Ashjaei, Yong Du, Luis Almeida, Moris Behnam and Thomas Nolte</td>
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<td>11H00-11H30</td>
<td><strong>Tight Worst-Case Response-Time Analysis for Ethernet AVB using Eligible Intervals</strong></td>
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<td>Jingyue Cao, Pieter Cuijpers, Reinder Bril and Johan Lukkien</td>
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<tr>
<td>11H00-11H30</td>
<td><strong>Consistent Sensor values on a Real-Time Ethernet Networks</strong></td>
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<td>Daniel Hallmans, Kristian Sandström, Thomas Nolte and Stig Larsson</td>
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<tr>
<td>11H00-11H30</td>
<td><strong>Worst-Case Timing Analysis of AeroRing- A Full Duplex Ethernet Ring for Safety-critical Avionics</strong></td>
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<td>Ahmed Amari, Ahlem Mifdaouii, Fabrice Frances and Jerôme Lacan</td>
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Keynote 2: Digitalization – The Fourth Industrial Revolution?

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<tr>
<td>11H30-12H30</td>
<td>Coffee Break</td>
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**Digitalization – The Fourth Industrial Revolution?**

Tomas Erik Lagerberg, ABB Corporate Research, Sweden

**12H30-14H00**

**Lunch**

**14H00-15H00**

**WiP - Session 1**

Chair: Martin Wollschlaeger

- **Experimental Validation of a Battery Model for Low-Power Nodes in Wireless Sensor Networks**
  Leonardo Rodrigues, Carlos Montez, Francisco Vasques and Paulo Portugal

- **Combining Spatial and Temporal Dynamic Scheduling Techniques on Wireless Vehicular Communications**
  Luis Silva, Paulo Pedreiras, Luis Almeida and Joaquim Ferreira

- **Investigations on Packet Delay Variations over the Wireless Channel**
  Aneeq Mahmood, Thomas Bigler and Thilo Sauter

- **Reliable Wireless Control - Wireless Connection in the Control Loop**
  Santiago Soler Perez Olaya, Stefan Mützler, Martin Wollschlaeger, Paolo Varutti and Thorsten Szczepanski

- **Towards a unified approach for worst-case analysis of Tilera-like and KalRay-like NoC architectures**
  Hamdi Ayed, Jean-Luc Scharbarg, Jerôme Ermont and Christian Fraboul

- **Towards Automated Deployment of IEC 61131-3 Applications on Multi-Core Systems**
  Saad Mubeen, Matthias Becker, Xiaosha Zhao, Lingjian Gan, Moris Behnam and Thomas Nolte

- **OPC UA Hardware Offloading Engine as dedicated peripheral IP Core**
  Chris Paul Iatrou and Leon Urbas

- **A generic dependability layer for building automation networks**
  Lukas Krammer, Wolfgang Kastner and Thilo Sauter

- **Experimental Assessment of Using Network Coding and Cooperative Diversity Techniques in IEEE 802.15.4 Wireless Sensor Networks**
  Odilson T. Valle, Gerson Fernando Budke, Carlos Montez, Alex Pinto, Fernando Hernandez, Francisco Vasques, Fabian Vargas and Eduardo Gatti

**15H00-15H30**

**Coffee Break and Poster Session 1**

**15H30-17H00**

**TII-SS-3 : Industrial Communication Systems**

Chair: Thomas Nolte

- **An innovative approach to Rate Adaptation in IEEE 802.11 real-time industrial networks**
  Federico Tramarin, Stefano Vitturi and Michele Luvisotto
**Combining reliability and timeliness in industrial wireless networks: an experimental assessment**  
Gianluca Cena, Stefano Scanzio, Lucia Seno, Adriano Valenzano and Claudio Zunino

**Improving the Flexibility of the Ethernet Powerlink PollResponse Chaining Mechanism**  
Mladen Knezic, Branko Dokic and Zeljko Ivanovic

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<tr>
<th>Time</th>
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<tr>
<td>09H30-11H00</td>
<td>Session 3: Industrial IoT and middleware</td>
<td>Jürgen Jasperneite</td>
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<td>A Modular Web Framework for Socio-CPS-Based Condition Monitoring</td>
<td>Hans Fleischmann, Johannes Kohl and Joerg Franke</td>
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<td>Hybrid OPC UA and DDS: Combining Architectural Styles for the Industrial Internet</td>
<td>Julius Pfrommer, Sten Grüner and Florian Palm</td>
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<td>Co-Operative Peer-to-Peer Systems for Industrial Middleware</td>
<td>Ahmed Ismail and Wolfgang Kastner</td>
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<tr>
<td>11H00-11H30</td>
<td>Coffee Break</td>
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<tr>
<td>11H30-12H30</td>
<td>Session 4: Wireless Sensor Networks Simulation</td>
<td>Luis Lino Ferreira</td>
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<td>Routing Behavior across WSN Simulators: the AODV Case Study</td>
<td>Ivan Minakov, Roberto Passerone, Alessandra Rizzardi and Sabrina Sicari</td>
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<tr>
<td>12H30-14H00</td>
<td>Lunch</td>
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<tr>
<td>14H00-15H00</td>
<td>WiP - Session 2</td>
<td>Julián Proenza</td>
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<td>A First Qualitative Comparison of the Admission Control in FTT-SE, HaRTES and AVB</td>
<td>Inés Álvarez, Luis Almeida and Julián Proenza</td>
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First Implementation and Test of a Node Replication Scheme on top of the Flexible Time-Triggered Replicated Star for Ethernet
Alberto Ballesteros, Sinisa Derasevic, David Gessner, Francisca Font, Inés Álvarez, Manuel Barranco and Julián Proenza

Designing fault-diagnosis and reintegration to prevent node redundancy attrition in highly reliable control systems based on FTT-Ethernet
Sinisa Derasevic, Manuel Barranco and Julián Proenza

Scheduling of PROFINET IRT Communication in Redundant Network Topologies
Lukasz Wisniewski, Verena Wendt, Juergen Jasperneite and Christian Diedrich

Towards a TDMA-based Real-Time Extension for the Constrained Application Protocol
Björn Konieczek, Martin Kasparick, Michael Rethfeldt, Frank Golatowski and Dirk Timmermann

Extending publish/subscribe mechanisms to SOA applications
Michele Albano, Luis Ferreira and José Sousa

Analysis of Realizing a Future Industrial Network by Means of Software-Defined Networking (SDN)
Dominik Henneke, Lukasz Wisniewski and Jürgen Jasperneite

On Providing Real-Time Guarantees in Cloud-based Platforms
Meng Liu, Moris Behnam, Thomas Nolte, Kristian Sandström and Cezar Chiru

15H00-15H30  Coffee Break and Poster Session 2

15H30-16H45  Session 5: Communications in Industrial Embedded systems and smart grids
Chair: Pieter Cuijpers

A Dependency-Graph Based Priority Assignment Algorithm for Real-Time Traffic over NoCs with Shared Virtual-Channels
Meng Liu, Matthias Becker, Moris Behnam and Thomas Nolte

Performance impact of IPsec in resource-limited smart grid communication
Bernd Hirschler and Thilo Sauter

Simulation Models for IEC 61850 Communication in Electrical Substations Using GOOSE and SMV Time-critical Messages
Héctor León, Carlos Montez, Marcelo Stemmer and Francisco Vasques

16H45-17H15  Closing Session