2016 IEEE World Conference on Factory Communication Systems (WFCS 2016)

Aveiro, Portugal
3-6 May 2016

Additional Copies of This Publication Are Available From:

2016 IEEE World Conference on Factory Communication Systems (WFCS)

COMMUNICATION in AUTOMATION

May 3-6, 2016, Aveiro, Portugal

<u>Program</u>

	Tuesday, May 3rd, 2016
09H00-19H00	**Industry Day**

	Wednesday, May 4th, 2016
08H00-09H00	**Registration**
09H00-09H30	**Opening Session**
09H30-10H30	**Keynote 1 : Deterministic Ethernet for Real-Time and Critical Applications** Chair : Lucia Lo Bello
	Deterministic Ethernet for Real-Time and Critical Applications *Wilfried Steiner, TTTech Computertechnik AG, Austria*
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** Chair : Luis Almeida

A Novel Divide-and-Conquer Approach for Resolving Ambiguities in Wireless Localization

Bernard P. B. Elwischger and Thilo Sauter

Experimental Characterization of Redundant Channels in Industrial Wi-Fi Networks

Gianluca Cena, Stefano Scanzio and Adriano Valenzano

15H00-15H30	**Coffee Break**

15H30-17H00	**Session 1 : Wireless Sensor Networks** Chair : Nader Moayeri

Detecting Communication Blackout in Industrial Wireless Sensor Networks

Simone Grimaldi, Mikael Gidlund, Tomas Lennvall and Filip Barac

A Geometrical Approach to Compute Source Prioritization Based on Target Viewing in Wireless Visual Sensor Networks

Cristian Duran-Faundez, Daniel G. Costa, Vincent Lecuire and Francisco Vasques

Soft real-time traffic communication in loaded wireless mesh networks

Jesus Aisa, Hossein Fotouhi, José Luis Villarroel and Luis Almeida

Thursday, May 5th, 2016

09H00-11H00	**Session 2 : Ethernet-based industrial communications** Chair : Christian Fraboul

Application-Aware Industrial Ethernet Based on an SDN-Supported TDMA Approach

Eike Schweissguth, Peter Danielis, Christoph Niemann and Dirk Timmermann

Dynamic Reconfiguration in HaRTES Switched Ethernet Networks

Mohammad Ashjaei, Yong Du, Luis Almeida, Moris Behnam and Thomas Nolte

Tight Worst-Case Response-Time Analysis for Ethernet AVB using Eligible Intervals

Jingyue Cao, Pieter Cuijpers, Reinder Bril and Johan Lukkien

Consistent Sensor values on a Real-Time Ethernet Networks

Daniel Hallmans, Kristian SandstrÖm, Thomas Nolte and Stig Larsson

Worst-Case Timing Analysis of AeroRing- A Full Duplex Ethernet Ring for Safety-critical Avionics

Ahmed Amari, Ahlem Mifdaoui, Fabrice Frances and Jerôme Lacan

11H00-11H30	**Coffee Break**

11H30-12H30	**Keynote 2 : Digitalization – The Fourth Industrial Revolution?** Chair : Pedro Fonseca

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 Mätzler, 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

	Friday, May 6th, 2016
09H30-11H00	**Session 3 : Industrial IoT and middleware** Chair : Jürgen Jasperneite
	A Modular Web Framework for Socio-CPS-Based Condition Monitoring
	Hans Fleischmann, Johannes Kohl and Joerg Franke
	Hybrid OPC UA and DDS: Combining Architectural Styles for the Industrial Internet
	Julius Pfrommer, Sten Grüner and Florian Palm
	Co-Operative Peer-to-Peer Systems for Industrial Middleware
	Ahmed Ismail and Wolfgang Kastner
11H00-11H30	**Coffee Break**
11H30-12H30	**Session 4 : Wireless Sensor Networks Simulation** Chair : Luis Lino Ferreira
	Routing Behavior across WSN Simulators: the AODV Case Study
	Ivan Minakov, Roberto Passerone, Alessandra Rizzardi and Sabrina Sicari
	A Simulation Framework for Industrial Wireless Networks and Process Control Systems
	Yongkang Liu, Richard Candell, Kang Lee, and Nader Moayeri
12H30-14H00	**Lunch**
14H00-15H00	**WiP - Session 2** Chair : Julián Proenza
	Flexible Factory Automation: Potentials of Contactless Transmission Systems, Combining State-of- the-Art Technologies
	Derk Wesemann, Roland Heß, Stefan Witte and Andreas Schmelter
	A First Qualitative Comparison of the Admission Control in FTT-SE, HaRTES and AVB
	Inés Álvarez, Luis Almeida and Julián Proenza

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**