

1st IEEE International Conference on Industrial Cyber-Physical Systems ICPS2018

Special Session on “Interoperability Challenges for the Industrial Cyber-Physical Systems”

organized by

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Call for Papers

Scope of the Special Session

Cyber-physical Systems (CPS) are being deployed in various segments of the industry – from manufacturing to the energy sector, from electro-mobility to global logistics. Some of these systems utilize the concept of digital twins; others use the cyber-connectedness to process the data collected at the physical world real-time, and use the result in other systems. Whether the elements of such cyber-physical system of systems (CPSoS) are distributed locally or scattered at various sites and environments, interoperability issues arise. These issues become more severe with the rising expectations for Industry 4.0 solutions. This new concept and drive of the industry brings various legacy and future IT systems into the picture, which have been designed with minimal awareness towards CPS interoperability.

These interoperability challenges can originate from various roots. Depending on the dynamics, flexibility, and general requirements of the CPSoS, some or all challenges have to be addressed, and the related problems have to be solved. These challenges can include protocol-related issues, semantic matching, timing constraints, network-specific behaviors, Quality of Service (QoS) issues, security and safety constraints, not to mention issues that have economics- and legal-origins, among others. Another dimension of the problem space is being added by the heterogeneity of the technologies, often used for enabling CPSoS use cases. Those include sensors and actuators on embedded device at one end and powerful cloud backends at the other. Besides addressing the specific challenges individually in depth, the research community is working on frameworks and general concepts to allow gluing the best ideas together; in other words, the interworking of these concepts and technologies is an important issue to be covered.

A good quality paper may be considered for publication in IEEE Transactions on Industrial Informatics (TII) - subject to further rounds of review

This special session is co-organized by the European ECSEL research projects MANTIS, and Productive4.0.

Topics of interest include, but are not limited to

- Current and future trends in CPS interoperability
- Interoperability between standards
- Interworking between CPS systems
- Interoperability between legacy and IoT/SoS/CPS/SOA technologies
- Real-time issues and CPS interworking
- Resource allocation and QoS management challenges
- Security and Safety issues, triggered by interoperability
- Semantic interoperability- Architectures of Cyber-physical System of Systems
- Accounting and transaction settlement issues, smart contracts
- Frameworks and middlewares for CPS interoperability
- Case studies Results on system deployments

The authors of the accepted papers of this special session will be invited to submit an extended version of their works in a special issue of HTE/IEEE Infocommunications Journal in 2018.

Submissions Procedure

All the instructions for paper submission are included in the conference website

<http://icps2018.net/>

Deadlines:

Deadline for submission of papers:	22 Dec 2017	15 Feb 2018
Notification of acceptance of papers:	28 Feb 2018	10 Mar 2018
Final manuscripts due:	31 Mar 2018	

International Program Committee for the Special Session

Luis Lino Ferreira – ISEP, Portugal

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