

2017 IEEE International Conference on Industrial Informatics

Special Session/ Organized Session on

“Evolution of Cyber Physical Production Systems and their Services”

organized by

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Call for Papers

Theme:

Industry 4.0 compliant systems (= Industrial Cyber Physical Systems - ICPS) need to adapt flexibly to new assets, i.e., new products during their life cycle, and new products are producible due to new technologies or new production facilities, what is requiring among others a high degree of re-configurability. A basic element of such systems is therefore evolving mechatronic components and systems (physical part) and their software including digitalized data and information (cyber part). ICPS and particularly Cyber-Physical Production Systems can be considered an interdisciplinary field of production engineering science, which aims to integrate and interconnect mechanical engineering, electrical engineering/electronics, control engineering and computer and data science sciences.

Cyber Physical Production Systems (CPPS) are modelled, implemented or even executed remote in the internet. One of the most prominent Industry 4.0 application scenarios is the adaptation of a CPPS to new requirements, as imposed by new products, new machinery components or modifications of the machine's software. Therefore, methods are required to support the evolution of CPPS and the services offered by them. Such methods might support the systematic design and verification of software variants to increase the adaptability of CPPS. Due to the interdisciplinary nature of CPPS, methods stemming from software engineering or from the engineering

of mechatronic systems can be enhanced and combined to fulfil the needs of a systematic design and maintenance of CPPS,

This Special Session on “Evolution of Cyber Physical Production Systems and their Services” is focused on the evolution of mechatronic systems, esp. automated production systems, including their services. Topics include, but are not limited to, the following research topics and technologies:

- Transition process from automated Production Systems to ICPS/CPPS and cloud-based (IoT / IoS) systems
- Design methods for mechatronic systems in relation to ICPS, CPPS, IoT
- Software Evolution (methods, platforms) applicable to ICPS, CPPS
- Requirements Engineering for CPPS
- CPS modeling aspects in terms of model integration, modular modeling, and model interfaces (e.g., Model-based Systems Engineering)
- (Knowledge-based) software, methods and platforms to support the evolution of CPPS and ICPS
- Model coupling and cross-disciplines and inconsistency management
- Tracking and tracing and management of changes and evolution steps
- Tool chains, platforms, and frameworks to support the design and maintenance of CPPS
- Measures to evaluate flexibility, adaptability and software quality of ICPS and CPPS
- Security aspects imposed by the Cyber part of CPPS
- Case studies and successful application reports (academia and industry)

Submissions Procedure: All the instructions for paper submission are included in the conference website <http://www.indin2017.i2ar.de>

Deadlines:

Deadline for special sessions proposals	February 17, 2017
Deadline for submission of papers:	March 28, 2017
Notification of acceptance of papers:	May 05, 2017
Final manuscripts due:	June 02, 2017