



# 18th IFAC Symposium on Information Control Problems in Manufacturing (INCOM 2024) 28-30 August 2024, Vienna, Austria

Open invited track

AI in the Cognitive Cyber-Physical Enterprise

Session code: **2165j**

Sponsored by:

IFAC Technical Committee for evaluation: TC 5.3 "Integration and Interoperability of Enterprise Systems"

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**Abstract:** The cyber-physical enterprise is a digital business innovation concept making Internet of Things, Service Oriented Architectures and Advanced Human Computer Interactions converge for more agile, flexible and proactive management of unexpected events in the global value networks of today. In essence, it concerns the adoption of Future Internet technologies in the frame of the Factory of the Future paradigm, for the virtual enterprise and its value network. Translating the same concept to **cyber-production systems** in manufacturing enterprises, and moreover to **Smart Systems in general** (smart manufacturing, smart cities, smart logistics ...), the capability by next generation systems sensing, modelling and interpreting the signals from the real world is a pre-requisite for a more flexible and agile reconfiguration of those smart systems. **Twinning** the systems is now a prerequisite to better monitor and predict the systems behaviours.

With advent of the new paradigms of Industrial Internet-of-Things and Cyber-Physical Systems, the number and the diversity of systems that need to work together in the future enterprises have significantly increased. This trend highlights the need to shift the interoperability paradigm from the classic consideration of interoperating pair of systems, towards the interoperability as a capability to sense and perceive the information exchanged, as well as to act upon their perceptions purposefully and **socially**. Such a shift could have important consequences on the future architecture of Human-centric systems. The emergence

of cloud based technologies will have a significant impact on the design and implementation of cyber physical systems; using such novel technologies, collaborative engineering practises will increase globally which will enable a new generation of small scale industrial organizations to function in an information centric manner.

The topics of interest include, but are not limited to:

- Smart Systems Interoperability
- Cyber Physical Systems modelling and applications
- Industrial Internet-of-Thing (IIOT)
- Industrial information in Cyber-Physical Systems
- Cyber Enterprise Systems
- Cognitive Systems in Industry 4.0
- Human-Centric Systems/ Human Systems Integration
- Industry 4.0 technologies and concepts for CPS
- AI in Digital Twin/Shadow/X
- Neuro-symbolic AI for CPS/IIOT
- Cloud-based Digital Twins

Submission shall respect the normal procedure on papercept: <https://ifac.papercept.net/>

The authors must select « **open invited track paper** » as submission type and use the track code (**2165j**) at the second step of submission.

If the theme of the paper is not suited to the track scope, the paper will be evaluated and considered for a regular session.

Please send an email with your intention to submit a paper to: [herve.panetto@univ-lorraine.fr](mailto:herve.panetto@univ-lorraine.fr) and [liqing@tsinghua.edu.cn](mailto:liqing@tsinghua.edu.cn)

A Special Issue of the **Journal of Industrial Information Integration** (Elsevier) (I.F.15.7) (<https://www.journals.elsevier.com/journal-of-industrial-information-integration>) is planned with an extended version of the accepted papers.

### **Key dates**

31 January 2024 - Draft manuscript submission

15 March 2024 - Notification to authors

Mai 2024 - Final paper submission deadline