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## Digital Twins in Cyber-Physical Production Systems

### Session Chairs:

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### Aim & scope:

Cyber-Physical Production Systems (CPPS) are considered in many ways as a structuring paradigm of future industrial systems. Defined as systems of systems of autonomous and cooperative elements connecting with each other in situation dependent ways, on and across all levels of production, CPPS are meant to enhance decision-making processes in real-time, response to unforeseen conditions and evolution along time. If the physical layer is classically constituted of the assets, the operators and the real-time control system, the cyber layer monitors the behaviour of the physical layer in order to analyse it with respect to the current environment and objectives of the system. The development of a virtual replica of the actual state and behaviour of the physical system is therefore crucial to gather the information needed for the analysis, data and knowledge extraction. This replica, sort of cyber model of the system, is generally referred as the Digital Twin of the system.

The notion of the Digital Twin in itself, as being to reflect not only the data but also the behaviour of the physical layer, is still not clearly defined and very few proofs of concept can be found. However, several projects in different fields of application involve academia and/or industry all around the world. It becomes now crucial to foster the emergence of a global picture of the Digital Twin that could be accepted by the largest community and show the benefits of the application of such a tool in operations.

This session aims at bringing together multiple actors of this concept in order to foster convergence, innovative tools and applications. All the aspects of the implementation of a Digital Twin in cyber-physical production systems are targeted. Works on the generic architecture of a Twin are of great interest, as well as applications and proofs of concepts in industry or smart factories.

**Keywords:** Digital Twin, Digital Shadow, Digital manufacturing, Intelligent manufacturing, cyber-physical production systems

**Submission:** The submission process and the guidelines of paper preparation can be found on the web page of the conference at: <https://hub.imt-atlantique.fr/mim2022/>

Please submit your contribution using the following session identification code: **9r4ed**

### Important dates:

- December 25, 2021      Deadline for the submission
- February 15, 2022      Notification of acceptance/rejection
- March 15, 2022      Deadline for the final submission