



## **Digital Twins in Cyber-Physical Industrial Systems**

### **Organisers:**

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### **Short presentation:**

Cyber-Physical Industrial Systems are considered in many ways as a structuring paradigm of future industrial systems. The physical layer generally contains the assets, the operators, the real-time control system and the production managers. The cyber layer is in charge of extracting data and knowledge from the behaviour of the physical layer to analyse it with respect to the current environment and objectives of the system, and potentially trigger a reconfiguration of the physical layer. In this cyber layer, the need for a virtual replica of the actual behaviour of the physical system is crucial to gather the information needed for the analysis. This replica, sort of cyber model of the system, is generally referred as the Digital Twin (DT) of the system.

This DT is meant to be the first element of the loop enabling efficient development of knowledge extraction and analysis, and therefore requires a high effort of modelling and implementation. 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 industrial systems are targeted. Position papers and applications feedback are particularly welcome. Works on the generic architecture of a Twin are of great interest, as well as applications and proofs of concepts in industry or learning factories.

**Keywords:** Digital Twin, Digital Shadow, Digital Model, cyber-physical industrial systems

### **Important dates:**

- Proposals of Special Sessions: 30 April 2021
- Full paper submission: 15 July 2021
- Notification of acceptance: 15 September 2021
- Final, camera-ready paper submission: 15 October 2021
- Early registration and fee payment: 1 November 2021
- Workshop: 18-19 November 2021