# SORS: Industry 4.0: a new challenge and opportunity for HPC and data-intensive applications

## Objectives

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**Abstract**:

Nowadays, thanks to the spectacular progress of Artificial Intelligence, High Performance Computing, the Cloud and the Internet of Things (IoT), the Computer Aided Design and Engineering is undergoing a fundamental and deep transformation. Innovation is indeed moving more from product life cycle management to in-service performance. This new requirement has led to a fundamental and disruptive transformation of the manufacturing industry towards a high level integrated digital industry, which must now provide an enhanced numerical description of the Product. This fundamental evolution of the Product's life cycle with its in-service performance monitoring is at the heart of the expectations of industry 4.0. This seminar gives an overview of the research carried out at Mines ParisTech to meet these new challenges.

**Short bio**:



Youssef Mesri, Associate Professor at Mines ParisTech, joined CEMEF -Center of Material Forming- in January 2015 to develop research and teaching activities in computational high performance mechanics. He is director of the Master program in High Performance Computing and Data Science and deputy head of Computing and Fluids research group. Ex-engineer of IFP Energies Nouvelles, specializing in high-performance numerical methods, Youssef Mesri is one of the designers of the ARCANE computing platform to model and analyze fluid mechanics phenomena. Initially developed for nuclear applications (CEA), ARCANE is now enriched with new applications, such as multi-phased multi-species flows in geosciences, enabling it to widen the scope of its potential use. He is reviewer of several international journals, including the Computer Methods in Applied Mechanics and Engineering, the Journal of Computational Physics, and Computers and Fluids. His research is about efficient algorithms for the simulation of incompressible/compressible materials using high performance computing methods designed for unstructured meshes.

# Speakers

**Youssef Mesri,** Mines ParisTech, France

Barcelona Supercomputing Center - Centro Nacional de Supercomputación

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