

## Special Session Proposal – MIM 2022 Nantes

### **TITLE: Operators 4.0 and human-technology integration in smart manufacturing and logistics environment**

**KEYWORDS: Human-Automation Integration; Decision-support for human operators; Smart manufacturing systems.**

#### **ABSTRACT:**

Automation, digitalisation, and robotics have ushered a new industrial age in which machines and computers can substitute, complement, and augment human workers in a wider range of activities, physical and cognitive, paving the way to the concepts of the Operator 4.0 and the Logistics Operator 4.0. Operators of the Future will be immersed in intelligent environments with the possibility to share and receive real-time information from smart objects and will be involved in new collaboration mechanisms and social interactions with robots and AI systems. Re-thinking manufacturing and logistics from a human-centred perspective allow to use and adapt smart technologies to enhance the unique capabilities of humans, who will continue to play a main role in the shopfloor. In Smart Manufacturing and Logistics, the available amount of information will not be manageable for a normal operator, just because of the variety, quantity, and intensity. New methods and tools will be required to help Operators 4.0 in managing increasing cognitive workloads. Moreover, the COVID-19 pandemic called for urgent investigation about new practices of industrial smart working, allowing social distancing and space/time flexibility. Alongside the development of new technologies, studies in the human-related aspects must be carried out, both at theoretical level, highlighting the interdependences between technologies and human capabilities, and at practical level, providing industrial companies with effective tools to drive their workforce towards human-centred smart manufacturing environments.

This special session calls for high-quality contributions investigating the main research challenges, reviews, case studies and applications related to the following topics (but not limited to):

- Multidisciplinary Approaches in Human-centred Smart Technologies Development
- Human-centred Development of Assisting/Augmenting Technologies
- Human performance modelling in Smart Manufacturing Environments
- New Skills/Competencies for the Operator 4.0/Workforce 4.0
- Industrial Smart/Agile Working Theory and Practice
- Human-AI Interactions/Collaboration in Cognitive Tasks
- Human-Machine/Robot Interactions/Collaboration in Physical Tasks

#### **Organizers:**

- Chiara Cimini, University of Bergamo, Italy, [chiara.cimini@unibg.it](mailto:chiara.cimini@unibg.it)
- Alexandra Lagorio, University of Bergamo, Italy, [alexandra.lagorio@unibg.it](mailto:alexandra.lagorio@unibg.it)
- Valentina Di Pasquale, University of Salerno, Italy, [vdipasquale@unisa.it](mailto:vdipasquale@unisa.it)
- David Romero, Tecnológico de Monterrey, Mexico, [david.romero.diaz@gmail.com](mailto:david.romero.diaz@gmail.com)
- Johan Stahre, Chalmers University of Technology, Sweden, [johan.stahre@chalmers.se](mailto:johan.stahre@chalmers.se)
- Mirco Moencks, Cambridge University, UK, [mm2393@cam.ac.uk](mailto:mm2393@cam.ac.uk)