

# 14th International Workshop on Service -Oriented, Holonic and Multi-Agent Manufacturing Systems for Industry of the Future (SOHOMA 2024)

Augsburg Technical University of Applied Sciences– Augsburg, Germany  
September 26 – 27, 2024



## Call for Spot Light Session Papers:

### CONVERGENCE OF DIGITAL TWINS AND ARTIFICIAL INTELLIGENCE

It is our pleasure to invite you to the **14th International Workshop on Service-Oriented, Holonic and Multi-Agent Manufacturing Systems for Industry of the Future (SOHOMA2024)**, organized by the Augsburg Technical University of Applied Sciences (Germany), in collaboration with University Politehnica of Bucharest (CIMR - Research Centre in Computer Integrated Manufacturing and Robotics), Polytechnic University Hauts-de-France (LAMIH - Laboratory of Industrial and Human Automation Control, Mechanical Engineering and Computer Science) and Polytechnic Institute of Bragança (CeDRI – Research Centre in Digitalization and Intelligent Robotics).

The main objective of SOHOMA workshops is to foster innovation in and developments towards a data-driven Industry of the Future that seamlessly integrates engineering and operations of manufacturing, logistics systems and (dynamic) supply chains. In this context, the workshop focuses on concepts, methods, and solutions for the digital transformation of manufacturing through service orientation in holonic and agent-based control with distributed artificial intelligence.

The theme of the SOHOMA 2024 Workshop is **"Industrial Artificial Intelligence in the data-driven Industry of the Future: Models, Architectures, and Applications"**. In this edition, the workshop focuses on exploring the intricacies of cross-enterprise data sharing and the strategic use of artificial intelligence (AI) within manufacturing systems. Thereby, the workshop focuses on (but is not limited to) methods, tools, and architectures for the value-adding application and integration of AI in industrial production and logistics for the transformation to a data-driven industry of the future.

#### What is a Spot Light Session?

Spot Light Sessions are a novel and optimized form to provide a larger space for discussion and exchange of scientific results and topics. They are a combined form of oral presentation and panel discussion participation. They are a combined form of a traditional oral presentation and joint final panel discussion with all spot light presenters. Accepted Spot Light papers will be part of the workshop proceedings like regular papers.

#### SLS-04 Convergence of Digital Twins and Artificial Intelligence

This session delves into the synergistic relationship between Digital Twins and Artificial Intelligence (AI), focusing on their convergence and exploring its transformative synergy in engineering and operation of complex technical systems. The integration of digital twin standards and technologies with state-of-the-art AI methods includes (among others) multi-agent systems for distributed decision making, generative AI for design optimization, and symbolic AI approaches such as knowledge graphs and logic-based reasoning for improved knowledge representation and reasoning. Moreover, this session would like to provide a platform for discussions and demonstrations how the amalgamation of Digital Twins with AI methods is essential for success, particularly in conjunction with systems engineering as well as domain-specific models. By leveraging the knowledge and information encapsulated within these models, AI-driven approaches enable holistic and intelligent decision-making processes, thereby optimizing the design, operation, and maintenance of complex technical systems. This session aims to:

- Highlight the transformative potential of AI-powered digital twins for intelligent system design, operation, and optimization.
- Explore the application of this synergy across various engineering domains critical to an all-electric society.
- Demonstrate the importance of interoperable digital twin standards and their integration with diverse AI approaches.
- Emphasize the value of domain-specific knowledge and systems engineering models in AI-driven digital twin development.

#### Paper Submission

Papers must be submitted in via the submission menu on the SOHOMA 2024 website. The paper content must be original work not published or being considered elsewhere. The workshop language is English. Papers are limited to 12 pages formatted in the Springer book series "Studies in Computational Intelligence" according to the instructions given on the workshop's website.

All papers accepted and duly presented at the workshop will be included in the SOHOMA 2024 post-conference proceedings volume published in the Springer series "Studies in Computational Intelligence", indexed Web of Science, Scopus, ISI Proceedings and DBLP Computer Science. Selected, extended papers will be proposed for publication in special issues of journals representative for the workshop's domain.

#### Important Dates

Submission of Spot Light Session Papers	June 30, 2024	<b>extended to July 7, 2024</b>
Notification of acceptance	August 1 <sup>st</sup> , 2024	
Early-bird registration until	August 30, 2024	
Final paper submission	September 8, 2024	
SOHOMA 2024 Workshop	September 26 - 27, 2024	

#### SOHOMA Steering committee

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#### Academic Partners



#### Registration Fees

	Before August 30, 2024	After August 31, 2024
Students*	200 €	300 €
Academia	350 €	450 €
Industry	400 €	500 €

\* Students must provide a valid university ID