Open Invited Track on
"Simulation, optimization, sensor-based state analyses and predictions to support operational decisions in manufacturing and logistics"
for IFAC MIM 2019

Invited track identification code h6wx8
IFAC MIM 2019, August 28-30, 2019, Berlin, Germany

https://ifac.papercept.net/

Track Chairs:
- Dr. Tobias Reggelin, Otto von Guericke University Magdeburg, GERMANY
- Hagen Borstell, Otto von Guericke University Magdeburg, GERMANY
- Prof. Sebastian Zug, TU Bergakademie Freiberg, GERMANY
- Prof. Stefan Galka, OTH Regensburg, GERMANY
- Jun.-Prof. Stephan Schmidt, Otto von Guericke University Magdeburg, GERMANY
- Prof. Juri Tolujew, Transport and Telecommunication Institute Riga, LATVIA

Production and Logistics planners have been using simulation and optimization for many years to support their planning processes. However, simulation and optimization models are not that widely used to support real-time operational decisions in production and logistics. One reason is that models for decision support in production and logistics are commonly developed on two levels. Complex representations provide an overall perspective on the system for off-line and long-term planning decisions. On an operational level, limited models cover only specific aspects in order to ensure a fast response. Related to the concepts of Industry 4.0 and Logistics 4.0 this strict division is not suitable to cover the challenges of these approaches. To reach the intended flexibility and adaptivity, complex world models have to work at the operational level too.

For this reason, this track focusses on all kind of models and their applications to support real time operational decisions in production and logistics systems.

To represent the current state of the production or logistics processes in real-time, these models require direct access to related sensing devices in the field. Consequently, an optimal adjustment of a cyber-physical sensor system with model requirements is necessary. This is an error-prone process due to the degrees of freedom in this process (sensor capabilities and assembling, communication infrastructure, environmental conditions, etc.). Therefore, the workshop addresses all aspects of the design and adjustment process suitable to support an automatic planning process for implementing complex real-time world models.

Furthermore, classical discrete-event simulation models are too complex and slow for many real-time decisions. For this reason, the track addresses aggregated, hybrid and adaptive simulation models and models from the field of artificial intelligence that can better cope with real-time decisions.

Track topics:
The track chairs invite researchers and decision makers from academia and industry to contribute theoretical and applied research papers in areas including but not limited to the following topics:

- *Abstract descriptions of sensors and their capabilities related to logistics and production process parameters*
- *Strategies for (automated) optimization of sensor configurations*
- *Virtual simulation environments to plan and test sensor-based logistics systems*
- *Approaches for planning of an efficient information gathering in distributed sensing scenarios*
- *Concepts for representing fault-tolerant behavior, Sensor-based state detection for logistics processes*
- *Process-integrated state detection for logistics processes*
- *Tracking of logistics objects*

- *Enlargement of production and logistics equipment and resources with assistance systems to increases the process and operational safety*
- *Analysis of processes in production and logistics based on sensor data, Image processing to support the analysis of logistics process*
- *Aggregated, hybrid and adaptive simulation models and models from the field of artificial intelligence to support real-time decisions in production and logistics*
- *Virtual commissioning, Learning Factories for Industry 4.0 and Logistics 4.0*
- *(Mesoscopic) simulation models for digital twins in logistics*
- *Operational scheduling and (real-time) decision-making*
- *Automated and autonomous solutions for decisions making in production and logistics based on sensor data.*

Submission:

For author guidelines, please refer to **www.ifac-control.org**. All papers must be submitted electronically using Symposium Manuscript Management System (CMMS). All papers must be prepared in a two-column format in accordance with the IFAC manuscript style. Please use the official IFAC instructions and template to prepare your contribution as full-length draft paper and submit it online by January 25, 2018. Submission details are available on the symposium website. All submissions must be written in English. All papers that conform to submission guidelines will be peer-reviewed by IPC members. The corresponding author submits the paper online (pdf format) as **an open invited track paper**. Submission as an invited paper requires the **open invited track code *h6wx8***. Several international journals are associated with the MIM 2019 for publication of special issues. For questions related to this track, please write an email to tobias.reggelin@ovgu.de.

Important dates:

December 15, 2018	Deadline for the submission
February 20, 2019	Notification of acceptance/rejection
March 15, 2019	Deadline for the final submission