



16th IFAC Symposium on Information Control  
Problems in Manufacturing  
11-13 June 2018, Bergamo, Italy

**Open Track Session on: Design, management and control of modular and reconfigurable assembly systems**

**Session Invitation Code: 7xuu1**

**Co-Chairs:**

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**Abstract:** Manufacturers are continuously challenged by the need of producing high quality parts in a large number of variants, small lots, and with shorter technological cycles. To maintain competitiveness in this context, a new generation of highly reconfigurable and modular assembly systems, exploiting the capabilities of industry 4.0 technologies, needs to be properly conceived and implemented. This open track session collects contributions proposing new methods and approaches supporting the design, management and control of modular, plug-and-produce and reconfigurable assembly systems. Particular emphasis will be given to the applicability of these approaches in fast evolving manufacturing sectors, with the objective to decrease production ramp-up times, thus reducing production costs.

**Keywords:** Evolvable Assembly Systems; Reconfigurable Manufacturing Systems (RMS); Machining and Assembly Systems.

**Detailed Description of the Topic:**

Due to current trends towards large number of product variants, small production lots and fast evolution of product models, compounded by an ever increasing pressure on product quality and costs, manufacturers are moving the attention towards the adoption of new assembly system architectures based on high modularity, plug-and-produce capabilities and fast reconfigurability. At the same time, the technological revolution brought by the Industry 4.0 paradigm makes it possible to embed new functionalities in assembly systems, in terms of distributed control, self-configuration and self-programming of modules, product traceability and adaptation of workplaces

to specific operators' requirements. However, in order to be properly exploited, these technological innovations need to be profitably integrated in modular and reconfigurable assembly systems through the adoption of proper system design, management and control approaches.

The session aims at collecting new results in modeling, planning, controlling and monitoring, and the supporting ICT solutions, for modular plug-and-produce and reconfigurable assembly systems. In this session, we welcome papers addressing the problem of designing, managing and controlling assembly systems to adapt their functionalities with short ramp-up time to cope with evolving product requirements and variable production mixes. The solution approaches can be addressed at multiple levels including the single assembly cell level and the overall multi-cell assembly system level. Specific topics of interest include but are not limited to:

- Stochastic models for the design of modular and reconfigurable assembly systems.
- Integrated production and reconfiguration planning approaches.
- Monitoring and control of modular assembly systems.
- Formal models for resource capability description and skill-based programming of production resources.
- Ramp-up time reduction in reconfigurable assembly systems.
- Inspection planning and quality control in modular assembly systems.
- Resource re-use strategies among different assembly cells.

## IMPORTANT DATES

Draft papers submission deadline:	<b>31st October 2017</b>
Notification of acceptance:	<b>12th January 2018</b>
Full papers submission deadline:	<b>16th February 2018</b>
Early registration deadline:	<b>2nd March 2018</b>
Late registration deadline:	<b>1st April 2018</b>
Conference date:	<b>11th -13th June 2018</b>