

# Special issue on Formal Ontologies in Manufacturing

Guest editors

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Manufacturing's ever present drive to be "better, faster and cheaper" is recognising the potential value to be achieved through the better sharing of cross-disciplinary information and the effective exploitation of new advances based on Artificial Intelligence techniques. The ideas, methods and technologies at the grounds of Industrie 4.0, Smart Manufacture and the Internet of Things are revolutionising the manner in which goods are produced, and data are collected, organised, analysed and integrated. For manufacturing drivers to achieve real value they require the underlying technological support; the resolution of a range of ontological issues are critical to manufacturing success.

The purpose of this special issue is to provide a contribution to the application of ontology in manufacturing. The papers accepted for publication will show a trade-off between conceptual analysis, formal representation and application potential to the manufacturing domain. According to the overall philosophy of Applied Ontology, authors will need to explicitly introduce and motivate their modelling choices, present a formal treatment of the knowledge at stake (in the formal language they prefer), and address how the presented work can be used in manufacturing scenarios.

## List of potential topics

(the list is not exhaustive):

- Ontology-based representation of processes, including production processes exploiting emergent technologies like additive and hybrid manufacturing, but also machining processes, logistic processes, among others;
- Integration of ontologies and ontology-based technologies with manufacturing information systems to manage, monitor, optimise or simulate processes;
- Ontology-based representation of manufacturing resources, including agent-based resources and robots;
- Ontology-based representation of manufacturing services, e.g., cloud-based services;
- Ontologies addressing context-driven data management and knowledge representation;
- Ontology-based representation of manufacturing systems as socio-technical systems;
- Ontology-based representation of cyber-physical systems;
- Formal representation of assembly relations based on mereo-topological theories extended with domain knowledge to capture engineering relevant constraints;
- Core ontologies for manufacturing based on foundational ontologies;
- Ontology-based patterns for the representation of manufacturing knowledge;
- Open challenges about the ontological representation of manufacturing knowledge.

## Publication schedule:

Notification of intent to submit: **31 January 2018** (email to Emilio Sanfilippo and Yoshinobu Kitamura);

Full paper due for review: 1 May 2018;

Notification of review decision: 30 June 2018;

Revised manuscript submission: 15 September 2018;

Final decision: 15 October 2018

Expected date of publication: November/December 2018

## Submission instructions

Authors are requested to submit their articles electronically following the instructions published at [www.applied-ontology.org](http://www.applied-ontology.org), clearly specifying in the accompanying letter that their paper is to be considered for the special issue on Formal ontologies in manufacturing.