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## Modelling methodology for the simulation of the manufacturing systems (Article)

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### Abstract

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Facing an increasingly competitive environment, companies must continually improve the performance of their production systems to respond to consumer demand which is increasingly unpredictable, unstable and with competitive prices. This article is intended as a contribution to finding a solution to an emerging problem in the management of manufacturing flows in recent years where product diversity, shortened lead times and strong competition make the aspect of the 'flow' of goods from supplier to end customer a central one. In this perspective, the aim of this paper is to develop a flexible modelling environment for the simulation and analysis of production systems. This environment enables the decomposition of the production system, by offering generic and modular concepts for modelling the physical processes as well as the control processes to simulate the manufacturing processes as a whole. These concepts are specified and modelled using an object oriented approach such as the unified modelling language (UML).

### Author keywords

Control systems; Decision-making; Industrial case study; Manufacturing modelling; Manufacturing systems; Model replication; Model reusability; Optimisation; Performance evaluation; Simulation; UML

### Indexed keywords

**Engineering controlled terms:** Computer simulation; Control systems; Decision making; Manufacture; Reusability; Unified Modeling Language

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