Guest Editors of the Special issue on E-Manufacturing and web-based technology for intelligent manufacturing and networked enterprise interoperability

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Guest Editors'introduction

In today's competitive business environment of the internet society, the agile manufacturing enterprise has to continuously adapt the whole product life cycle so that its internal organisation can respond faster and better to customer's requirements to enable more customer-driven specific products. The so-called e-manufacturing, taking advantage of ICT and web-based technologies is a domain aiming at making interoperable the manufacturing chain, either within the enterprise itself, either through networked enterprises.

The purpose of this issue is to focus about the research and its applications on E-Manufacturing and web-based technology for intelligent manufacturing and networked enterprise interoperability dedicated on increasing the so-called intelligence into smart organizations.

This more and more customized manufacturing needs have been raising many organisational and technical "Business to Manufacturing" (B2M) issues, from the shop-floor manufacturing level up to the enterprise corporate level. The challenge is thus to support close-loop managerial and operational decision making (Banaszak and Zaremba), in order to effectively control the elaboration of products (goods and services) throughout the extended manufacturing chain. Therefore, the manufacturing companies have to perform a better control and management of the ordering of each instance of their products, both at the front and back office levels of their B2M chain, through their Manufacturing to Customer (M2C) and Manufacturing to Supplier (M2S) chains from their Business to Customer (B2C) and Business to Supplier (B2S) chains. In that context, ontology-based semantics is necessary to formalise natural language contents in human-machine interaction (Lepratti). Making products requires that all information needed is available at every step of the process, from the creation of the initial product concept to its manufacturing up to be a delivered product, in the form that directly supports each function, supported by an integrated, information flow seamlessly throughout the development, production, and support life cycle. To achieve that, it implies the existence of consistent interoperability of models, tools and management of information throughout the process, optimized, not only of individual processes, but also of the total product/process/resource environment. To analyse these processes, web-based benchmarking service for manufacturing control systems have been developed (Valckenaers, et al.).

Nowadays, within this Globally Scaled world, the new successfully strategy for the Manufacturing Process deals with interoperability between all enterprise activities performed along the process itself and between the networked enterprises that collaborates (Ray and Jones). For realising such Collaboration Strategy, Manufacturing has to become an "integrated manufacturing process": all methods/tools/environments dispersed along the Manufacturing Process have to be integrated, for constituting such a collaborative arena, physically realising the Collaboration Strategy (Nof) (Molina and Santaella). However, organizing cooperative work processes implies some methodologies to define responsibilities inside the working groups (David and Idelmerfaa). In the most advanced manufacturing enterprises today, many technologies exist to integrate elements of the product realisation and business systems (Florenzano Sousa, et al.)(Chira, et al.). Interoperability of these Enterprise Systems, at the shop-floor level and beyond, should focus on modelling products and their processes together with enterprise models exchange in order to integrate the information through a business to manufacturing framework.

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