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Special Issue on: Novel Strategies for Global Manufacturing Systems Interoperability

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As manufacturing systems evolve and become more complex, the need for novel strategies for interoperable operations, automated data interchange and coordinated seamless knowledge and behavior of large scale manufacturing systems becomes highly critical. Global manufacturing depends on the interoperability of its systems and applications, and to achieve such holistic, adaptive and seamless intelligent manufacturing environment there is a need to devise strategies that leverage applied research and technological developments on a more solid and rigorous science base[1].

Lack of interoperability disturbs creation of collaborative work and networked systems. Apart from being a technical issue, interoperability challenges also emerge at organizational and semantic levels, underlying the need for solutions that support the seamless cooperation among manufacturing systems, processes and methods, information and knowledge, organizational structures and people. Thus, intelligent methods and tools to support the interoperability and seamless integration of manufacturing systems have been recognized as a high-impact productivity factor, affecting the overall efficacy, efficiency, quality, yield time and cost of manufacturing transactions, design and operations or digital services. However, up to now the principal tools for targeting the above challenges are grounded on the various standards that try to govern methodologies, manufacturing information systems, development and operations. Standards are usually linked with specific sectors, application areas and technology trends, having a limited time span, a static nature and quite have often different interpretations by engineers, technology vendors, the users in general.

[1] http://www.ensemble-csa.eu. The Future Internet Enterprise Systems (FInES) cluster represents the Enterprise Interoperability and Collaboration Research Domain in Europe, and is composed of 32 European Commission funded research projects, as well as experts and stakeholders from all over Europe.

Therefore, Manufacturing Systems Interoperability suggests the seamless interoperation in manufacturing environments, fostering novel collaborative and networked culture, by transferring and applying the research results in industrial sectors, within the scientific domains of systems complexity, network science, artificial intelligence, information theory and web science, distributed systems, shared data and knowledge, evolutive applications, dynamics and adaptation of networked organizations on a global scale. Those are all directly related with rapid evolution of technology and applications, plug and play instruments, self monitoring capabilities, benchmarking and evaluation of degrading processing, automatic or on demand reprocessing, recompiling or fixing of components or processes. Moreover, to achieve a steady stable interoperable environment in a global scale there is the need for intelligent supervising supported by embedded monitoring systems with learning capabilities.

This special issue seeks to bring together novel contributions from researchers and practitioners who are exploring the definition and applicability of Manufacturing Systems Interoperability in a global perspective towards Intelligent Manufacturing Systems, putting focus on novel strategies, methods and tools in a scientific-based standpoint. Conceptual, theoretical, empirical and technological contributions are foreseen, illustrated by manufacturing examples and convincingly demonstrating noteworthy novelty in comparison with previously reported results.

Publication Schedule:

Notification of Intent to Submit: Now (*Note: by email to guest editors*)
Full Papers Due for Review: February, 2013
Notification of Review Decision: May, 2013
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Final Manuscripts: July, 2013
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Note: Submissions reviewed according to the Journal of Intelligent Manufacturing standards.

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