Editorial

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Biographical notes: Teruaki Ito is an Associate Professor of the Institute of Technology and Science at the University of Tokushima in Japan. He received an MS in Computer Science from the University of Tsukuba (Tsukuba, Japan) and a PhD in Engineering Systems from Tokyo Metropolitan Institute of Technology (Tokyo, Japan). In addition to his activities at the institute, he also served as a Visiting Scholar at Stanford University (Stanford, CA) and as a Visiting Professor at Massachusetts Institute of Technology (Cambridge, MA). His research interests are in the area of collaborative engineering, human interface and medical/rehabilitation engineering. He has published various papers in journals such as the *Journal of Intelligent Manufacturing*, *Journal of Advanced Manufacturing Technology*, *Journal of Computer Integrated Manufacturing*, *Journal of Material Processing Technology*, etc.

The benefits of new and emerging technologies on internet/intranet-based systems or web-based systems have become increasingly recognisable in recent years in many areas, including both industries and academia. These systems deal with internet-based trading, e-business, computer-aided collaborative design, computer-automated manufacturing, telematics, EDI and much more. Collectively, these technologies can significantly improve performance of all aspects of a manufacturers business including purchasing, logistics, inventory management, human resources and production planning/control and make it possible to pursue concurrent engineering in production.

Indeed, all of these aspects are recognised in design and manufacturing, but are also significant in training and education, especially in Project-Based Learning (PBL) programmes, where the goals of projects are achieved by teamwork with various view points in design and manufacturing.

The purpose of this Special Issue *IJIMS* entitled 'Web-based approach to design, manufacturing and life-cycle engineering' is to promote and disseminate research that deals with web-based approaches to internet/intranet design, manufacturing and service problems. It will offer researchers and practitioners the most recent concepts, methodologies and techniques in this important field of enquiry. The subject coverage is as follows:

- internet/web infrastructure, computing models, protocols, middleware, data warehouses, web portals and interfaces

- collaboration on internet/web, including applications in product development, manufacturing, services, management, etc.
- e-commerce/e-business methods and environment related to manufacturing and services
- life cycle engineering applications, tools and case studies
- digital equipment and internet/web applications for manufacturing and services
- wireless manufacturing on internet
- networked virtual reality technology and applications
- digital factory, design, manufacturing, services and recycling
- new principles and new methods for next generation networked CAD/CAPP/CAM/PDM/ERP systems
- service delivery for legacy CAD/CAPP/FEM/CAM/PDM/ERP systems
- remote online production planning, scheduling, monitoring and control
- digital enterprise and real-time extended enterprise technology
- advanced manufacturing modes including agile manufacturing, lean production, mass customisation, e-manufacturing, etc.
- security issues and solutions for internet/intranet-based approaches and
- simulation tools, method, case studies for design and production over the internet.

Aiming at solving the key issues regarding internet manufacturing and services, this Special Issue of *IJIMS* chooses five research papers written by the authors from different countries, including the USA, Italy, Germany, UK, India and Japan.

The first paper entitled 'ECAD functionality suitable for web-based optimised automated product variant generation' proposes a new methodology for this problem. Product variant generation is fundamentally different in Electrical Computer-Aided Design (ECAD) rather than Mechanical Computer-Aided Design (MCAD). The difference lies in the logical relationships between ECAD components. It is not straightforward to select a previous product design to aid product variant generation. Therefore, a new methodology suitable for web-based delivery to support ECAD product variant design is described.

In the second paper entitled 'Remote scheduling of production activities: tools, paradigms and performance', a solution to remote scheduling problem is presented. Remote scheduling is a fast growing area of research in the area of Production Planning and Control (PP&C). Many solutions have been reported in the literature and many scheduling tools are currently available however, the criteria for their evaluation and comparison remain loosely defined. This paper proposes an overview of existing solutions, highlighting their advantages and limitations, to support academics and industrial users in their choices of scheduling techniques and IPC solutions for the remote and online scheduling of production. This paper also proposes design guidelines

and performance measures against which production managers can evaluate and improve their solutions.

In the third paper entitled 'Training and recruitment in logistics node design by using web-based simulation', an innovative approach for using modelling and simulation jointly with web technologies for designing logistics nodes is presented. The proposed model takes into consideration one of the most critical supply chain nodes: a container terminal. The approach proposed by authors, thanks to a web virtual environment (that acts as distribute framework), is devoted to support high education, training and recruitment in life cycle management of container terminal resources (design of logistics nodes). The authors propose an application example on cranes and forklifts life cycle design for showing the potentials of the proposed approach. The aim of the analysis (conducting by using box-Behnken design of experiments and response surface analysis) is the identification of the optimal time for performing the life extension inspection, the optimal cluster for cranes and optimal cluster for forklifts.

In the fourth paper entitled 'Towards achieving agility in web-based virtual enterprises: a decision-centric approach', a strategy to virtual enterprise is presented. Virtual enterprises are groups of loosely connected companies, each providing certain core competencies and working collaboratively towards achieving a common objective. Agility of a web-based virtual enterprise refers to its capability to successfully and rapidly adapt to changes in its operating environment. Although, agility has been addressed in the literature with regard to manufacturing processes and product requirements, design processes have not been leveraged to address agility in web-based virtual enterprises. This paper presents a strategy that involves

1 designing the design processes along with products

2 flexibility in the interfaces between different parts of a virtual enterprise

3 standardisation and

4 integrated modelling of processes associated with all elements of a value chain.

In the final paper entitled 'Teaching collaborative manufacturing: experience and observation', the critical issue of human–human interaction is discussed. Even though web-based meeting technology has been developed and implemented and so much information is available on the web, human–human interaction is still a critical part of design. This paper studies how Web-Based Systems (WBS) can support collaborative activities in design and manufacturing based on a case study project. As one of the example of WBS, a Peer-Review Evaluation Process (PREP) to support the deterministic design is presented. Fundamentals of collaborative manufacturing based on project experiences are also studied.

Finally, the guest editor would like to thank the Editor-in-Chief of *International Journal of Internet Manufacturing and Services*, Prof. Pingyu Jiang, all the authors who submitted their papers to this Special Issue and the reviewers who contributed their very valuable comments to improve the quality of the papers submitted. Without their support, we could not have finished editing this Special Issue.