
Editorial:

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This editorial outlines the scope and contents of the Special Issue, 'Product and process modelling in construction and related industries', of the *International Journal of Internet and Enterprise Management (IJIEM)*.

Building and construction is one of the world's major industries, considering the number of people that it employs, the money that it represents, and its unquestionable basic social relevance. Nevertheless, this industry is not taking advantage of the latest technologies in the advent of the internet and information management.

Its distributed characteristics, with many actors participating in various construction activities, together with the small size of the companies (SMEs) working for this industrial sector, has led to a situation of isolation between these companies; data exchange is very difficult, as is the integration of information which is needed to automate processes and procedures in this huge network of SMEs, which must work in a continuous and cooperative way.

An interoperable environment supported by a global integration of applications, can contribute to reduce this problem. Product and process modelling in this case has a principal role, providing the basis for integration.

This special issue of IJIEM includes six research papers, which present to the scientific and industrial communities many ideas and results that we believe can provide important contributions to reducing of the extent of this problem, facilitating the management of construction companies and the adoption and broad use of emergent technologies such as the internet.

Jirawat Damriant, in his paper, 'COSMOS: A discrete-event methodology for construction processes' introduces an alternative discrete-event modelling methodology called COSMOS (construction oriented simulation modelling system), designed for the modelling of general construction processes, created and extended from the basic formalism of Petri Nets. The paper describes how with COSMOS the models are able to represent more complicated systems, providing a means of reflecting reality and practicality in construction-process modelling.

'Procession: a three-dimensional information visualisation tool for construction project statusing', is presented by Steve North, proposing that a more comprehensive construction project management performance measurement system might represent project progress as a three-dimensional data surface, rather than the traditional use of two dimensional visualisation techniques. A conceptual three-dimensional framework for the representation of non-physical construction industry data is outlined, leading to the

development of a three-dimensional information visualisation software tool that offers the clients significant improvements in the assessment of project status, over their traditional reporting methods.

The lack of interoperability between applications and companies in the construction industry is recognised as a major problem for the modernisation of this industrial sector. A key factor in solving this problem is the adoption and implementation of standard models towards a global integrated environment. The paper 'A meta-model based environment to assist integrating one-off production in B&C' reports on this problem and highlights the fact that the implementation of standards for product and process modelling has been found to be costly and to require a large amount of man-power; it is one of the major obstacles to achieving interoperability. As a result, this paper proposes a framework to stimulate the adoption and implementation of such standards, assisted by specific tools developed to act at a standard meta-model level, and assist in solving the integration problem at a metadata level.

Hung-Ju Chien, in his paper 'The potential for ERP (enterprise resource planning) in integrating the supply chain in the UK construction industry' draws on examples of success stories, which have applied enterprise resource planning (ERP) supply chain management (SCM) solutions, discussing the potential for ERP in integrating the supply chain across customer/supplier interfaces to create a win-win scenario in the UK construction industry. He concludes that today, UK construction businesses are beginning to realise that their success is increasingly dependent upon integrating all supply chain activities from raw materials to hand-over, and that for continued success they need to collaborate across customer/supplier interfaces to create a win-win scenario.

Today many researchers, working in the field of information management, recognise the problem of modelling complex structures, and many are asking themselves whether an all-inclusive product model is a solution for an integrated information environment that should efficiently support the life cycle of a product. The paper 'Towards a virtual product model' realises that rich experiences in product modelling in the last decade led not to better and better models but rather to an awareness that the more complex the product models are, the more rigid and the less usable they become in practice. Andrej Tibaut, in this paper, introduces a new conceptual solution, called 'virtual product model', which is based on the decomposition of a conventional product model.

Bonaventura Hadikusumo, analyses the potential benefits of using virtual reality at the completion of the design stage in his paper 'Visualisation: an aid to safety management'. His proposal intends to overcome the problems related with safety hazard identification in construction projects conducted by site inspections during the construction stage.

Acknowledgement

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The referee board of this special issue comprised: Alain Zarli, Parisa Ghodous, Rajkumar Roy, Matti Hannus, Patricia Ong Soh Khim, Anne-Francoise Cutting-Decelle, Jeffrey Wix, Amy Trappey, David Leonard, Bo-Christer Björk, Ricardo Rabelo, Kees Woestenenk, Wolfgang Haas, Robin Drogemuller, Fritz Tolman, Jeffrey Wix, Thomas Liebich, Peter Katranuschkov, Arto Kiviniemi, Jarmo Laitinen, J. Leeuwen, Yacine Rezgi, Silvia Ansaldi, Uwe Weissflog and Hervé Panneto.