

PROCESS MODELLING, PROCESS MANAGEMENT AND COLLABORATION

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EDITORIAL

In the last decade, there have been much research and development efforts in construction IT spent on various collaboration related issues such as product modelling and management, data exchange and sharing, knowledge management, Web-enabled cooperative work. The focus of these developments has been on the efficient use of project information (architectural and engineering solutions, drawings, specifications, reports), created in result of various kinds of project activities. Less attention has been paid to the processes themselves in which this information is being created. However, to add more value to collaboration, decrease the amount of wasted time and increase the quality of the communicated information, it is necessary to consider simultaneously:

- the business process in which work is done on the information,
- the actions that do these work,
- the actors performing these actions,
- the input information that enables the process to happen,
- the actors from whom the input information arrives,
- the resulting output information that enables other processes to happen,
- the business processes enabled,
- the actors receiving the result.

This requires dealing with various process modeling and management issues in tight relationship with collaboration demands.

The nine papers appearing in this Special Issue of the ITcon journal address many important process related topics of collaborative work. Developed on the basis of selected contributions from the CIB-W78 Conference on Construction IT held at Dresden, Germany in July 2005, they cover aspects of collaborative business process networks, agent-enabled process models used in cooperative civil engineering work, prediction/simulation processes for interdisciplinary decision support, formal specification of construction schedules, visualization support to process coordination and, last but not least, a case study examining the usefulness of several coordination support techniques put together. However, this broad range of aspects does have a binding idea that can be tracked throughout all papers – the *process-centric approach to project collaboration*. In one way or another, the work done by all authors contributes to that essential upcoming issue of construction IT.

Whilst selection of invited contributions was done exclusively by quality, I was happily surprised to be able to apply a clear logic when ordering the presentations. Thus, in general, the Special Issues starts with contributions that address high-level business process topics and proceeds down to more specific methods, tools and use cases.

The first paper by *Keller et al.* examines dynamic cross-enterprise process planning, execution and controlling, specifically focusing on the business perspective. The second paper by *Cerovsek & Katranuschkov* narrows somewhat the scope to the study of technical processes. However, on that level it offers a broad high-level framework related to the reuse of process knowledge through conceptualized process patterns and suggests a principal life-cycle for active process modeling.

The next four papers present research work done in the frames of a large priority program funded by the German Research Foundation (DFG), specifically dedicated to the problems of networked cooperation in civil engineering (see <http://www.dfg-spp1103.de>). The first of these papers by *Alda et al.* looks into the systemic aspects of process-centered networked cooperation. The authors suggest a novel integration approach combining a global workflow model with an awareness-based coordination model using peer-to-peer and multi-agent technology.

Rueppel & Lange present an integrative process modeling environment to support cooperation in distributed planning processes in civil engineering applications on the example of fire protection design. The developed approach is based on Petri-Nets (modeling the processes) and agent technology (providing resources and methods to process the technical information within the modeled processes). *Bletzinger & Lühr* propose a design collaboration model exploiting agent technology and workflow management together with predicting simulation methods based on sensitivity analysis to provide for better judgment of design solutions and improved decision making. *Huhnt & Enge* present a novel model for construction scheduling in which technological interdependencies between construction activities are treated as results of algorithms based on relational algebra.

The following two papers shift the focus closer to the end user perspective. *Kubicky et al.* present their on-going work on the development of an innovative assistance tool for design coordination, named 'building construction dashboard', which provides a context-aware view to the coordination process, adaptable to the user's role, skills, specific tasks etc. The envisaged use of the dashboard is within a larger cooperation platform based on the Meta Object Facility model proposed by the OMG. *Otjacques et al.* propose a generalized Interaction Visualization Framework (IVF) classifying interactions along three axes, i.e. (1) which objects are to be visualized, (2) in what context, and (3) how. The paper explains three major applications of IVF and can be seen as a first step towards a structured view of the 'visualization of cooperation' domain.

The Special Issue concludes with the case study by *Haymaker et al.* performed at CIFE, Stanford University which examines three inter-related approaches for managing and communicating project information, design processes and decisions on the example of the Stanford 'Living Laboratory' project.

I hope that the nine papers of the Special Issue will give the reader similar pleasure, insights and new ideas as it was my case when preparing the issue.

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