Guest Editorial

Business Processes and Support Systems: Design for Flexibility

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Business process orientation is considered to be an efficient way for companies and organisations to survive and flourish in the increasingly dynamic world of business. The process-oriented way of working includes automated support from properly designed Business Process Support (BPS) systems. However, change is present in some degree and form in all business domains, often as response to advances in technology, new methods and new practices, to changes in policies, and to mergers. A BPS system that cannot tolerate change in a business process will not benefit the company in the long run. Furthermore, business processes are often confronted by exceptional cases that may or may not have been foreseen; in such situations, processes need to deviate from prescribed procedures.

To support flexibility, BPS systems should be designed with relaxed constraints with respect to behavior, functionality, control management, and all other design aspects. In an intra-organisational environment, this means that a BPS system should be designed to tolerate changes that occur in the business process, as it leads to less frequent adjustments. In an inter-organisational environment, a flexible BPS system is needed to support all variations of the business process with respect to different B2B scenarios and partners.

On the other hand, highly flexible BPS systems may not be suitable for organisations requiring strictly defined and constrained procedures; this is because flexible process models may be harder to follow and to control.

It is thus necessary to find ways to model the desired level of flexibility of a business process in a BPS system and to maintain it. To achieve this, it is necessary to define and categorise the different types of flexibility that are needed in various business processes; to define techniques for modelling required types of flexibility with BPS systems; to have approaches for establishing the fit between requirements for flexibility in business processes and the corresponding support in BPS systems; and to have techniques for maintaining the fit.

The topic of designing BPS systems so that they are flexible enough to support changes in business processes was debated at the 6th Workshop on Business Process Modeling, Design, and Support (BPMDS’05) held in Porto, Portugal, June, 2005, (see http://lamswww.epfl.ch/conference/bpmds05). This Special Issue includes extended versions...
of selected articles that were presented in the workshop. The BPMDS series of workshops was designed as a meeting place for researchers and practitioners in business development and business applications (software) development. Each workshop in the series has its own, relatively narrow focus to facilitate meaningful discussions and brainstorming. The focus of the 6th workshop was on the alignment of the flexibility needed in business processes and the flexibility supported by a BPS system. The articles in this Special Issue reflect this focus and the large variety of issues related to it. This variety ranges from an article whose focus is how to select the best business process modelling method for supporting the flexibility likely to be encountered in a given project, to an article that presents in detail a method for achieving flexibility based upon reuse of process components, and from articles with a theoretical bias to articles with a practical slant.

Schmidt, in his article, observes that the design and support of service processes, which feature increasingly in modern economies, does not currently achieve the flexibility and efficiency associated with ordinary business processes. To address this shortcoming, he proposes a component-oriented method for the design and support of inter-organisation service processes. In this approach, components are taken to be the fundamental building blocks of processes. Process components are designed by using the well-known high cohesion and low coupling software design pattern. Furthermore, each instance of a component belongs to exactly one of a small number of perspectives such as the control perspective and the operational perspective. The author illustrates the method in the article using one case study throughout: an incident management inter-organisation service process.

The article by Snowdon et al. also addresses inter-organisational processes. In this context, the authors note that difficulties in changing underlying software systems frequently hamper the ability of businesses to develop. To overcome this obstacle, they propose the use of Beer’s Viable System Model (Beer 1981) as the basis for process architectures that will enable flexible process support systems to be achieved. Using this idea, each organisation is taken to comprise six interacting sub-processes, each of which plays a distinct role within the organisation: for example, one sub-process represents the operational behavior of the organisation, another the intelligence gathering behaviour, and so on. When organisations interact, their various sub-processes interact in various ways. These ideas and the way in which they promote flexibility are exemplified in the article with a dynamic business supply chain example in which a supplier and a shop make contact with each other through a broker, set up and operate a business arrangement, and finally disestablish the connection.

Cardoso, in his article, points out that the more complex a process definition design is, the more likely it is to be associated with a range of problems, and, in particular, with low flexibility. He continues by developing and presenting two metrics that may be used at design time to analyse the control-flow complexity of processes expressed in the language of the increasingly used Business Process Execution Language for Web Services standard (BPEL4WS). Using these metrics, process definition designers will be able to identify, and thus improve, relatively inflexible process definitions before they become operational.

Nurcan and Daoudi contend that different methods for modelling flexible processes are appropriate in different project circumstances. Accordingly, their article presents a framework that can be used by developers to select the most appropriate process modelling method for a given set of project circumstances. The framework is based upon Seligmann et al.’s framework (Seligmann et al. 1989) for describing information system development methods, which characterises methods according to four perspectives: the way of thinking, the way of working, the way of modelling, and the way of supporting. The article includes a case study in which the framework is applied to three established business process modelling techniques in order to select one that will be used by an e-commerce company undertaking the redesign and support of its business processes.

Regev et al. argue that if enterprises do not maintain their identity then they will not survive. But organisations need to change in order to stay relevant in today’s dynamic business environment. So flexibility becomes the ability of an organisation to change while still maintaining its essential identity. The article relates the identity of an organisation to the norms, and beliefs about norms, held by the organisation’s stakeholders – customers, employees, and suppliers, for example. The norms and beliefs held by different stakeholders may sometimes conflict with one another, but the resulting
accommodations can be expressed as the invariants that are maintained by the business processes and their support systems. The article asserts that a minimum set of processes provides a basis for defining flexible processes and support systems. The authors illustrate their ideas using a real world case study involving a production BPS system.

The current Special Issue is the result of substantial work by many people. We would like to thank the Software Process Improvement and Practice Editor-in-Chief, Darren Dalcher and his team, as well as the reviewers of this Special Issue, who did an excellent job in helping the authors improve the quality of their articles.

REFERENCES
