GUEST EDITORIAL PREFACE

Special Issue on Drivers of Business Process Development: Business, IT, Compliance

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ABSTRACT

This Special Issue on Drivers of Business Process Development: Business, IT, Compliance follows the 10th Workshop on Business Process Modeling, Development, and Support (BPMDS’09), organized in conjunction with CAISE’09, which was held in Amsterdam, The Netherlands, June 2009. The special issue is targeted at both researchers and practitioners in the information systems (in the broad sense) community with a focus on business process development and business application software development. The papers in this special issue reflect this focus; they include extensively modified and blind reviewed versions of three papers that were initially presented at the workshop and a new contribution from the business application software development community.

INTRODUCTION

New business processes are created and existing ones evolve following different kinds of drivers or motivations. The business process life cycle can be seen as a set of iterative improvement cycles which include the design, deployment and operation-evaluation phases. This special issue is devoted to the drivers of these phases and their transitions, as well as how they can be accommodated into a broader and dynamic view of the business process life cycle. The research question is what “drives” the wheel (the business process life cycle) when it turns to reach a moving business target with regard to market changes and continuous improvement requirements.

Among the drivers of business process development, we distinguish between three groups, which can exist separately or in any combination in real life situations. First, business objectives and goals drive the creation and evolution of business processes. Evolution of business processes can be driven by attempts to improve the achievement of business objectives (based on their measurement),
or by the need to adapt to changes in these objectives. Research issues related to business drivers include their systematic identification, integration into process design and evolution, performance measurement, and others. Second, the availability of new IT systems (any kind of components-off-the-shelf) can drive both the creation and the evolution of business processes. The introduction of new information systems can enforce, enable or require the design of new business process; new possibilities of business process management or assessment can drive the evolution of the processes. Research issues related to IT drivers include business process-IT alignment, process mining and others. Third, the need to comply with external standards and regulations may drive the creation of new business processes and the evolution of existing ones. Research issues related to compliance drivers include constrained process design, compliance assurance and verification, and others.

BUSINESS OBJECTIVES AND GOALS

Five perspectives have been proposed, for representing business processes, in (Van der Aalst et al., 2003), namely functional perspective, process perspective, organization perspective, information perspective, operation perspective and extended in (Daoudi & Nurcan, 2007) with a sixth one: the intentional perspective. The intentional perspective represents goals and strategies that the enterprise implements in its processes.

The most recent type of process modeling formalisms (Dellen et al., 1997; (Faustmann, 1998; Nurcan et al., 2005) is based on the intention/decision-oriented paradigm according to which the successive transformations of the product (the result of the business process) are looked upon as consequences of decisions. The underlying philosophy is that a process model does not only have to specify the temporal links between activities or product states but also the intention behind the execution of those activities and their temporal ordering. Intention-oriented modeling formalisms are semantically more powerful than the activity or even product oriented ones because they explain not only how the process proceeds but also why. Their enactment guide the decision making process that shapes the business, help reasoning about the rationale of decisions (McLean et al., 1989). This seems to be the particularly appropriate for representing ill-structured, knowledge intensive business processes or processes requiring flexibility.

The paper by Cardoso et al. (2009), ‘A Method for Eliciting Goals for Business Process Models with Non-Functional Requirements Catalogues’, addresses the goal orientation and more specifically the goal elicitation for business process models in the context of requirement engineering. While traditional approaches in business process modeling tend to focus on “how” the business processes are performed (adopting a behavioral description in which business processes are described in terms of procedural aspects), in goal-oriented business process modeling, the proposals strive to extend traditional business process methodologies by providing a dimension of intentionality to business processes. This paper reports on a case study conducted in the Rheumatology Department of a Brazilian hospital, in which authors obtained several goal models represented in i*/Tropos, each of which corresponding to a AS-IS business process also modeled in the scope of the study. Authors argue that NFR (non functional requirements) catalogues have shown to be helpful as a complementary tool in goal elicitation, uncovering goals that did not come up during previous interviews prior to these catalogues’ use. A number of non-functional requirements defined in the scope of the NFR framework could be abstracted and extrapolated to identify both hard- and soft-goals, which have strategic relevance for business process models. As a result, goal models were more complete after employing the technique.
AVAILABILITY OF NEW IT SYSTEMS

Business Processes can be roughly divided into two categories (Nurcan, 1998; Nurcan, 2008): prescriptive processes with predictable sequences of simple tasks and well-defined coordination rules; descriptive processes (knowledge intensive processes), strongly based on the actor collaboration and information exchange. They can be also characterized by a weak predictability of task sequences and only partially defined coordination rules (Rychkova & Nurcan, 2011). However, even a simple business process has to be adapted to a new execution context, depending on, among other aspects, cultural and legal considerations (Regev & Wegmann, 2002).

While traditionally business processes have been mainly depicted by their (more or less structured) sequence of activities, other aspects have been incorporated into models, such as states and goals (Soffer & Wand, 2005; Andresson et al., 2005). Such modelling approaches can better support unstructured and goal seeking processes.

In line with this direction, the paper by Künzle et al., ‘Object-Aware Business Processes: Fundamental Requirements and their Support in Existing Approaches’, draws our attention on the fact that using existing process management systems, a business process is typically defined as set of activities representing business functions and having a specific ordering. Authors highlight that (1) existing process management systems have been primarily designed for highly structured, repetitive processes; (2) and by contrast, do not provide sufficient support for unstructured and semi-structured processes, which are driven by user decisions and which are knowledge-intensive. The thesis is that a common characteristic of unstructured and knowledge-intensive processes is the role of business objects and data as drivers for process modeling and enactment. This paper discusses fundamental requirements in respect to the provision of an integrated view on processes and data arguing that such integration is needed for many applications like enterprise resource planning and customer relationship management. Based on these requirements, authors evaluate imperative, declarative, and data-driven process support approaches and investigate how well they support object-aware processes.

The paper by Belhajjame and Brambilla, ‘Ontological Description and Similarity-Based Discovery of Business Process Models’, addresses the issue of project repositories as a central asset in software development, as they preserve the knowledge gathered in past development activities. As a matter of fact, business processes can be stored in repositories to be shared and used by third parties, e.g., as building blocks for constructing new business processes. The success of such a paradigm depends mainly on the availability of effective search tools to locate business processes that are relevant to the user purposes (goals). The authors indicate that several researchers have investigated the problem of business process discovery using as input syntactical and structural information that describes business processes. The candidate solutions to business process discovery from the literature use as input the workflows that model the business, namely the activities that constitute the business processes and their dependencies in terms of control flow. As previously highlighted, a workflow model (i.e. a specific ordering of activities) is not a complete description of business processes. In this paper, authors argue that a more effective discovery of business processes can be achieved if they are semantically described. They argue exploring an additional source of information encoded in the form of annotations that semantically describe business processes and they show how business processes can be semantically described using the so called abstract business processes. Those processes are designated by concepts from an ontology which additionally captures their relationships. Authors show how this ontology can be built in an automatic fashion from a collection of (concrete) business processes, and illustrate how it can be refined
by domain experts and used in the discovery of business processes, with the purpose of reuse and increase in design productivity.

COMPLIANCE WITH EXTERNAL REGULATIONS

The paper by Mehrfard and Hamou-Lhadj, ‘The Impact of Regulatory Compliance on Agile Software Processes with a Focus on the FDA Guidelines for Medical Device Software’, addresses the difficulty of complying with an ever-increasing set of regulations, and the significant increase in attention to regulatory compliance and its impact on the way organizations are managed and controlled. These regulations often drive significant changes in the way organizations operate to deliver value to their customers. This paper focuses on the impact of the Food and Drug Administration (FDA) regulations on agile software development processes. The new challenges that Information Technology poses on protecting and securing sensitive information, and a higher need for business continuity in an ever-changing business world are also developed.

This paper focuses mainly on the impact of regulatory compliance on the process by which software systems, used by regulated companies, are developed, maintained, and tested. Software processes can be seen as just another type of organizational processes since they are implemented by software companies to carry on the development of software products. This paper targets software systems used to control medical devices and which are subject to heavy regulations from government organizations to ensure that their design is carried out based on sound software engineering practices.

Authors focus in particular on the ability for Extreme Programming (XP) to support FDA requirements. The findings show that XP fails to meet many of the FDA guidelines for medical device software, which increases the risks of non-compliance for organizations that have adopted XP as their main software process.

To address this issue, there is a need to extend XP for projects that requires FDA compliance by explicitly addressing the missing requirements. This extension will require adding new roles, practices and work products.

ACKNOWLEDGMENTS

The BPMDS series has produced 11 workshops from 1998 to 2010. Nine of these workshops were held in conjunction with CAiSE conferences. From 2011 it will become a (two days) working conference attached to CAiSE (Conference on Advanced Information Systems Engineering). The topics addressed by the BPMDS series are focused on IT support for business processes. This is one of the keystones of Information Systems theory. The goals, format, and history of BPMDS can be found on the web site: http://www.ibissoft.se/bpmds.html.

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REFERENCES


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Roland Ukor is an IT consultant with FirstLinq Limited. He holds Bachelor and PhD degrees in Computer Science from the Universities of Benin and Manchester respectively. His research areas include business process modelling and implementation, inter-organisational business process management and service-oriented architectures. Roland has served on the program committee of several conferences and workshops, and has been a member of the BPMDS organizing committee since 2008.