Chapter 17
A Broader View on Context Models towards Supporting Business Process Agility

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ABSTRACT

Today's enterprises need to be agile, to be able to cope with unexpected changes, to increasingly be dynamic, and to continually deal with change. Change affecting business processes may range from ad hoc modification to process evolution. In this chapter we present dimensions of change concentrating on a specific ability of an enterprise to deal with change. To support business in being agile we propose a semantically enriched context model based on well known enterprise architecture. We present a context aware workflow engine basing on the context model and on rules which trigger process adaptations during run time.

INTRODUCTION

Continuously changing challenges, like shorter product cycles, increasing customer expectations, changing regulations, forces today's enterprises to be more agile (Allweyer, 2007; Scheer, 2003). Henbury regards agile enterprises as capable of rapid adaptation in response to unexpected and unpredicted changes and events, market opportunities and customer requirements (Henbury, 2006). So enterprises have to constantly rethink, optimize and modify their business processes and effectively arrange their information flow (Schwarz, 2001). Modification is difficult, complex and risky according to unintended side effect. Every change has an impact on other parts of the enterprise, which leads to the choice, whether to make

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a change or abandon the competitive benefits of innovation because of the risk (Mitra et al. 2006).

To handle the complexity of an enterprise and its objects, e.g. people, ICT infrastructure, organization structure, information resources etc. often Enterprise Architecture Frameworks (EAF) are used. One well-known example is Zachmann's Framework (Zachman, 1987), or the ARIS house (Scheer, 2000), EA are made for use by humans not by machines. Therefore to deal with changes Enterprise Architectures (EA) are consulted by humans, for example to identify dependencies between business processes and ICT resources. In case a process model needs to be modified, e.g. because of organizational restructuring, in best case an EAF is available to support the business engineer's task.

On the other hand side semantic technologies has been researched amongst others by (Hepp et al., 2005) for process implementation and querying by (Jennings et al., 2000) to build their 'agent based business process management system' or already by (Abecker et al., 1998) to model Organizational Memories.

Following (Winograd, 2001), who defines context as an "operational term: something is context because of the way it is used in interpretation, not due to its inherent properties" we regard enterprise objects as context in which change happens. To improve dealing with change, we model Enterprise Architecture as ontology, based on well-known Enterprise Architecture Frameworks. With that machines can be enabled to identify and deal with changes in order to improve 'time to act' and to reduce the risk of missing (unwanted) effects.

Business Process Management is one approach to make business more agile by making business processes more transparent through the use of process models. To increase the control of business processes, the quality, communication and the information flow and to shorten processing time workflow management systems are used (Galler & Scheer, 1995). However, this approach fails when supporting dynamic and variable processes execution (van der Aalst & Jablonski, 2000; Reichert & Dadam, 1998). An alternative approach towards agility takes into account that every business application is based on rules to conduct the business logic. When compliance requirements increased, along with other demands for business flexibility the business rules approach emerged. Combining these approaches allows supporting enterprises in being agile (Faget et al., 2003).

To identify the requirements for supporting agile enterprises we made a literature review. These requirements are taken to draft an ontology for semantically enriched representation of enterprise architecture and to evaluate current existing workflow management systems supporting agility of enterprises. After it, we developed our approach and implemented a prototype.

To better understand agility, the definition of agility is discussed in the next section. After it, the requirements are listed, which are necessary to fulfil if agility should be supported. Existing systems which wants to support parts of agility are evaluated. For the description of our approach, we introduce in section 4 the term context and context-awareness. In section 5 we describe our approach and present our prototype. After all we conclude this chapter and present presents future research directions.

Background

Today enterprises face increasingly dynamic and competitive environment with continuously changing customer interests and markets. The ability to cope rapidly and efficiently with unexpected and sudden change, uncertainty and unpredictability is called "agility" or "agile business" (Henbury, 2006).

Agility as a concept was firstly introduced by a group of scholars at Iacocca Institute of Leigh University in USA in 1991 (Iacocca, 1991). In their report they described practices observed and