Chapter XIV
A Context-Based Approach for Supporting Knowledge Work with Semantic Portals

Thomas Hädrich
Martin-Luther-University Halle-Wittenberg, Germany

Torsten Priebe
University of Regensburg, Germany

ABSTRACT

Knowledge work can be characterized by a high degree of variety and exceptions, strong communication needs, weakly structured processes, networks and communities, and as requiring a high level of skill and expertise as well as a number of specific practices. Process-oriented knowledge management suggests to focus on enhancing efficiency of knowledge work in the context of business processes. Portals are an enabling technology for knowledge management by providing users with a consolidated, personalized interface that allows accessing various types of structured and unstructured information. However, the design of portals still needs concepts and frameworks to guide their alignment with the context of persons consigned with knowledge-intensive tasks. In this context the concept of knowledge stance is a promising starting point. This paper discusses how knowledge stances can be applied and detailed to model knowledge work and support to support it with semantic context-based portals. We present the results from implementing a portal prototype that deploys Semantic Web technologies to integrate various information sources and applications on a semantic level and discuss extensions to this portal for the support of knowledge stances.

INTRODUCTION

Knowledge work can be characterized by a high degree of variety and exceptions, strong communication needs, weakly structured processes, networks and communities, and as requiring a high level of skill and expertise as well as a number of specific practices (Schulze, 2003). Process-oriented knowledge management (KM) suggests to focus on enhancing efficiency of knowledge work in the context of business processes and by this way to link KM efforts the value chains of organizations (Edwards & Kidd, 2003; Maier & Remus, 2003). Various types of information and communication technologies (ICT) are deployed to support knowledge work, ideally forming an enterprise-wide knowledge infrastructure (EKI) (Maier, Hädrich, & Peinl, 2005). Portals are an important part of the EKI since they provide users with a consolidated, personalized interface that allows accessing various types of structured and unstructured information as well as applications simultaneously.

Models are a foundation to design supporting ICT in general and portals in particular. However, process-oriented KM lacks ways to model knowledge work in the context of business processes, especially the knowledge-oriented actions connected to the tasks accomplished in business processes. Here, the concept of knowledge stance can be seen as a promising starting point (Hädrich & Maier, 2004). This paper has the goals to (a) discuss how knowledge stances can be applied and detailed to model knowledge work and to support it with semantic portals, (b) present results from implementing a portal prototype that deploys Semantic Web technologies to integrate various information sources on a semantic level (Priebe, 2004; Priebe & Pernul, 2003), and (c) discuss extensions to this portal to support knowledge stances.

The remainder of this paper is organized as follows: The concept of knowledge stance is outlined in section 2 together with its conceptual foundations. Section 3 provides a framework for context information and relates knowledge stances to it. Section 4 presents the INWISS knowledge portal prototype and how it applies Semantic Web technologies to provide a context-based portlet integration. Section 5 proposes extensions to the portal based on knowledge stances and discusses how these can be implemented. Section 6 concludes the paper and gives an outlook on future research.

MODELING KNOWLEDGE WORK

Modeling approaches applied in KM can be classified according to the concepts that they primarily emphasize into four categories: (1) person (e.g., communication relationships and structural organization), (2) process (e.g., business processes and tasks), (3) topic (e.g., knowledge structure defined by an ontology) and (4) tool (e.g., software architecture and interaction of components) (Maier, 2004). From the view of KM, particularly the interconnections between concepts in these categories are of interest, e.g., "Markus Schmidt" (person) is experienced in "project management" (topic). When choosing a process-oriented KM approach, the relationships between the categories process and topic are of primary interest, i.e. the link between functions and tasks accomplished in business processes and the knowledge applied and created in this context. This section describes two perspectives on knowledge work that correspond to these two categories: a process-oriented and an activity-oriented perspective. The concept of knowledge stance is one possible way to connect these perspectives.

Process Modeling vs. Activity Modeling

Examples for traditional process modeling approaches are ADONIS (Junginger, Kühn, Strobl, & Karagiannis, 2000), ARIS (Scheer, 2001), IEM