

Chapter X

Added Value of Ontologies for Modeling an Organizational Memory

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ABSTRACT

With the aim to manage and retrieve the organizational knowledge, in the last years numerous proposals of models and tools for knowledge management and knowledge representation have arisen. However, most of them store knowledge in a non-structured or semi-structured way, hindering the semantic and automatic processing of this knowledge. In this chapter the authors specify a case-based organizational memory ontology, which aims at contributing to the design of an organizational memory based on cases so that it can be used to support better decision-making. One ontology goal is to serve as a base for the organizational knowledge exchange with semantic power, which can facilitate the reuse, interoperability, and automatic processing by agents. In addition, the ontology aims to be at a high level from which other more specific representations can be formulated. In order to illustrate its utility a practical case is shown.

INTRODUCTION

The organizational knowledge management represents a key asset to support decision-making processes by different organizational stakehold-

ers. The main aim of knowledge management systems is to manage, store and retrieve the organizational knowledge, so that it can be used later to learn, share knowledge, solve problems, and ultimately to support better decision-making

processes (Conklin, 1996; Dogson, 1993). Therefore by having a well-developed organizational memory that supports the structuring, reusing and processing of organizational knowledge is a primary decision (and likely a success factor) to achieve such an effective management.

Nonaka and Takeuchi have said that an organization cannot create knowledge itself. Conversely, the knowledge creation basis for an organization is the individual's tacit knowledge; and tacit knowledge is shared through interpersonal interactions (Nonaka & Takeuchi, 1995). In the same direction, Hedberg (1981) has said that an organization does not have brain, but it has cognitive systems and memories. The organizational stakeholders act as the agents of organizational learning, and a link between them and organizational learning systems have to be established.

Therefore, in order to reach and maintain the organizational effectiveness and competitiveness, an organization needs to learn from past and present experiences and lessons learnt and to formalize organizational memories for enabling to make explicit the individual's tacit knowledge -and why not community's tacit knowledge as well.

It is worth mentioning that one of the possible classifications of organizational knowledge can be, namely: public/private, explicit/implicit (or tacit), and formal (syntactically and semantically structured)/informal (unstructured). One of the main goals of an organizational knowledge management strategy is to make explicit the individuals' implicit knowledge, to try to formalize the informal knowledge in order to allow machine-processable semantic inferences, and to make the knowledge public or private depending on the strategic policy at different organization levels.

So far most of the current knowledge management systems capture and store the knowledge in repositories of documents like manuals, memos, and text files systems, and the knowledge transfer is made by means of meetings, courses or by documented manuals and guides. This traditional form of storing and transferring knowledge

causes loss of time and high investment in human resources, since it does not consider powerful mechanisms of semantic and automatic processing of knowledge.

A way of alleviating this problem from the IT-based knowledge representation standpoint is to store the knowledge in a more structured and formal way. We have followed this approach by using the case-based organizational memory strategy. It combines organizational knowledge storage technology with case-based reasoning (CBR) to represent each item of informal knowledge. In general organizational memories are intended to store the partial formal and informal knowledge (Conklin, 1996) present in an organization with automatic processing capabilities. In particular, by structuring an organizational memory in cases can also facilitate the automatic capture, recovery, transfer and reuse of knowledge for problem solving.

Although the benefits of applying the knowledge management systems are well known, and the idea of applying case-based reasoning methods to lessons learned and best practices are not new in the knowledge representation area (Weber et al., 2001; Yang & Chen, 2006), there is almost no consensus yet on many of the concepts and terminology used in both knowledge management and case-based reasoning areas. Despite the efforts made in new research developments and international standardization during the last decade, knowledge management is currently in the stage in which terminology are still being defined, consolidated, and agreed upon. In particular, as we know, there is no full-fledged specified ontology on case-based organizational memory.

In order to reach this aim we have started to construct a common conceptualization for case-based organizational memory where concepts, attributes and their relationships should be explicitly specified; such an explicit specification of a conceptualization is one of the core steps for building an ontology. In this chapter we argue in general about the added value of ontologies for

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