Chapter 5.11
K–link+:
A P2P Semantic Virtual Office for Organizational Knowledge Management

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ABSTRACT

This chapter introduces a distributed framework for OKM (Organizational Knowledge Management) which allows IKWs (Individual Knowledge Workers) to build virtual communities that manage and share knowledge within workspaces. The proposed framework, called K-link+, supports the emergent way of doing business of IKWs, which allows users to work at any time from everywhere, by exploiting the VO (Virtual Office) model. Moreover, since semantic aspects represent a key point in dealing with organizational knowledge, K-link+ is supported by an ontological frame-work composed of: (i) an UO (Upper Ontology), which defines a shared common background on organizational knowledge domains; (ii) a set of UO specializations, namely Workspace Ontologies or Personal Ontologies, that can be used to manage and search content; (iii) a set of COKE (Core Organizational Knowledge Entities) which provides a shared definition of human resources, technological resources, knowledge objects, services; and (iv) an annotation mechanism that allows users to create associations between ontology concepts and knowledge objects. K-link+ features a hybrid (partly centralized and partly distributed) protocol to guarantee the consistency

of shared knowledge and a distributed voting mechanism to foster the evolution of ontologies on the basis of user needs.

INTRODUCTION

In the 1990s, Nonaka and Takeuchi proposed a new organizational paradigm (Nonaka et al., 1995). This paradigm identifies knowledge as a key resource for organizations and aims at establishing paths to be followed for better exploiting organizational knowledge. While earlier organizational models (Taylor, 1911) saw the organization as a box with the aim to maximize the output or as something that can be scientifically and rigorously managed, more recently the theme of managing knowledge has become more important (Simon, 1972) and the role of the organization in KM (Knowledge Management) processes has changed notably. The organization becomes a way to connect the knowledge of many subjects into a more complete understanding of the reality. Also the role of technologies has changed; they have become a way to increase people's rationality by enabling both knowledge management and exchange. Throughout the years, several other theories about knowledge have been proposed. A generally accepted classification proposed by Polanyi (Polanyi 1966; Polanyi 1997) and extended by Nonaka (1994) identifies on the one side "tacit knowledge" as the knowledge resulting from personal learning within an organization. On the other side, "explicit knowledge" is a generally shared and publicly accessible form of knowledge. Explicit knowledge can also be classified on the basis of the following forms: "structured" (available in databases); "semi-structured;" (generally available in Web sites: HTML pages, XML documents, etc.) and "unstructured" (available as textual documents: project documents, procedures, white papers, etc.). More recently, new importance has been given to social processes and to the CoP (Communities of Practice) as sources of knowledge. A CoP can

be viewed as a group of people with shared goals and interests that employ common practices, work with the same tools, and express themselves in a common language (Lave & Wenger, 1991). In a CoP, individuals can produce and learn new concepts and processes from the community, allowing the same community to innovate and create new knowledge. This way, an organization can become a community of communities, offering space for creating autonomous sub-communities. The different types of technological solutions for managing knowledge should correspond to actual social interactions in KM processes. According to this consideration, technological systems for KM can be classified and inserted in a scheme reflecting the adopted social model. Therefore, on the one hand we have centralized systems that are practically identified with the EKP (Enterprise Knowledge Portal) and, on the other hand, we have DKM (Distributed Knowledge Management) systems. In this chapter, we will focus on the DKM approach since it naturally fits the process of creating knowledge. Following this approach, the individual is allowed to manage his/her knowledge without any superimposed schema. Therefore, he/she can share the individual knowledge by spreading it over the organization and making it an asset of the whole organization.

In particular, distributed applications for KM are based on the principle that different perspectives within complex organizations should not be viewed as an obstacle to knowledge exploitation, but rather as an opportunity to foster innovation and creativity. They are increasingly becoming popular since they permit an easy and quick creation of dynamic and collaborative groups (e.g., CoP) composed of people from a single or different organizations.

Moreover, in today's ubiquitous information society an increasing number of people work outside of the traditional office for many hours of the day. Current technologies do not properly support this new style of working and every day it is becoming harder and harder to exchange information

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