

Chapter I

KIWI:

A Framework for Enabling Semantic Knowledge Management

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ABSTRACT

Research on semantic-aware knowledge management provides new solutions, technologies, and methods to manage organizational knowledge. These solutions open new opportunities to “virtual challenges” as e-collaboration, e-business, e-learning and e-government. The research carried out for the KIWI (Knowledge-based Innovation for the Web Infrastructure) project is focused on the strategies for the current Web evolution in the more powerful Semantic Web, where formal semantic representation of resources enables a more effective knowledge sharing. The first pillar of the KIWI framework concerns development of ontologies as a metadata layer. Resources can be formally and semantically annotated with these metadata, while search engines or software agents can use them for retrieving the right information item or applying their reasoning capabilities. The second pillar of the KIWI framework is

focused on the semantic search engine. Their capabilities and functionalities have to be improved in order to take advantage of the new semantic descriptions. A set of prototypical tools that enable knowledge experts to produce a semantic knowledge management system was delivered by the project. The KIWI framework and tools are applied in some projects for designing and developing knowledge-based platforms with positive results.

INTRODUCTION AND MOTIVATIONS

The widespread diffusion of Internet, broadband availability and accessing devices have changed the way human beings develop their professional lives, the way people work and look for information, the way people book and have entertainment, and the way people live their personal relationships. This new “hardware” context (i.e., cabled and wireless networks) has opened the doors to a new way of content diffusion and to a new generation of applications, called generally Web 2.0, which is enabling Web surfers to be direct protagonists of the content creation (Anderson, 2007).

This powerful technological context and this wider and wider content availability have put a new question: how can we use them? This is the context the project “KIWI” tried to face. The strategy and the solutions provided by the research carried out for this project contribute to the “Semantic Web” research stream (Berners-Lee et al., 2001).

While the new “hardware” conditions enable new software capabilities, society and all its business processes require users to exploit them to obtain new and more powerful results. Technological innovations enable Web surfers to put into practice their creativity and imagination. In the end, all aspects of the everyday life are nicked by this technological trend. “Knowledge workers” (Drucker, 1994) have now an extremely powerful tool for their work. Being information reachable in a few clicks, the knowledge worker can focus on its more valuable activities: extracting knowledge from the information space, creating new knowledge from the assembled information, planning

and carrying out knowledge-based projects, configuring connections among data and information. That is, the knowledge worker can be focused more on reasoning and applying knowledge than looking for data and information.

Another important aspect of the life of organizations which changed with Internet concerns team management and the collaborative behaviour in a team and among teams. Today, people can collaborate on a global scale, expert communities have emerged and are glued together using Internet-based collaboration; networks of practitioners meet on virtual squares (Gloor, 2006). Wider teams and communities mean more (tacit and explicit) knowledge, more perspectives, more expertise, and then more creative capabilities (Nonaka & Takeuchi, 1995). Being so, organizations started to use Web to improve collaboration in their teams, and as a by-product, even free interests-based communities emerged, generally called CoP (Wenger, 1999).

The Web is a platform even for other types of social networks: user and consumer communities that are communities that have as main aim the exchange of knowledge on specific topics, as the performance and the usability of a software or the behaviour of firms. In the end, people are experiencing a new way of collaborating, sharing knowledge, obtaining helps and suggestions, so that today very few questions cannot be answered via Internet.

From an organizational point of view, projects can be carried out without any regional limits in this way organizations are transforming themselves from being “multinational” to being really “global,” from a stage where each factory

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