Chapter 30
Applicability Assessment of Semantic Web Technologies in Human Resources Domain

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ABSTRACT

To meet the challenges of today's Internet economy and be competitive in a global market, enterprises are constantly adapting their business processes and adjusting their information systems. In this article, the authors analyze the applicability and benefits of using semantic technologies in contemporary information systems. By using an illustrative case study of deployment of Semantic Web technologies in Human Resources sector at the Mihajlo Pupin Institute, this paper shows how the latest semantic technologies could be used with existing Enterprise Information Systems and Enterprise Content Management systems to ensure meaningful search and retrieval of expertise for in-house users as well as for integration in the European research space and beyond.

INTRODUCTION

In order to meet the challenges of today's information economy and be competitive in the global market, enterprises are constantly adapting their business processes and adjusting their information systems. Whereas in the 1990s the

companies concentrated on implementing systems with re-automated functions to provide specific benefits in-house, today's market demands new applications and better integration within and between the organizations. Nowadays, the modern enterprise information systems represent an interconnection of heterogeneous systems like frameworks, knowledge management systems, enterprise resource planning, databases, data ware-

houses, etc. Resources are more often distributed over multiple sites, thus requiring utilization of different technologies and approaches for data/document access and retrieval.

Semantic technologies provide standards and structures that allow information to be described in a way that captures what it is, what it means and what it's related to, all in a machine-readable form. This enables machines as well as people to understand, share and reason with them at the execution time. Semantic Web (SW) technologies are designed to extend the capabilities of the information on the Web and to enable enterprise systems to be networked in meaningful ways. This opens new perspectives that are far beyond the traditional approaches to information management.

In the present article we shall first more closely define the semantic technologies and the Semantic Web, and then, using an illustrative case study of deploying Semantic Web technologies at the Mihajlo Pupin Institute (Belgrade, Serbia), we will discuss the transition from the older models of information management to new ways of data integration and leveraging the diversity of resources using Semantic Web technologies. In order to locate the types of problems semantic technologies can solve, we will analyze the W3C collection of Case Studies and Use Cases and discuss the extent of adoption of Semantic Web technologies in practice.

RESEARCH FRAMEWORK

Semantic Web is one of the fastest developing fields within the ICT sector and, as such, under constant examination by scientists and IT professionals. Most of the academic work, up to now, has focused on the global public gains of adopting SW technologies (Alani et al., 2008), and to a significant degree has neglected the industry development and migration needs to meet the SW challenges.

Having in mind this situation, the present work will focus on:

- Presenting a brief account of the key application areas of Semantic Web technologies and a summary of the achieved benefits from them (based on the analysis of the W3C collection of Case Studies and Use Cases), that will give a picture of the present status of the SW technology implementation and needs thereof in industry development sector, and
- Presenting the results of a case study of the use of semantic technologies for integration and meaningful search and retrieval of expertise data, as an example of the new approaches to data integration and information management.

Semantic Web Background

The Semantic Web was envisioned by Tim Berners-Lee, inventor of the World Wide Web (Web), and is now being further refined by researchers and visionaries within the World Wide Web Consortium (W3C), which Berners-Lee directs. In (Berners-Lee, Hendler, & Lassila, 2001), Semantic Web is defined as '…an extension of the current Web in which information is given the well-defined meaning, better enabling computers and people to work in cooperation'. The main standardization body the W3C was created in October 1994, to "lead the World Wide Web to its full potential by developing common protocols that promote its evolution and ensure its interoperability."

Semantic Web is an extension of the conventional Web based on the HyperText Markup Language (HTML) and the Extensible Markup Language (XML). A markup language is a set of markup tags used to describe the web pages. A HTML Web document contains HTML tags and plain text. XML is a generic markup language for describing the structure of data. Unlike in the HTML, neither the tag set nor the semantics of

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