

Chapter XIV

Semantic Web Technologies in the Recruitment Domain

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Abstract

Due to the large number of job offers published online, it is almost impossible for job seekers and job portals to gain an overview of the entire employment market. Since job offers lack semantically meaningful annotations, their location and integration into databases is extremely difficult. In this chapter, we demonstrate how the application of Semantic Web technologies can enable unambiguous identification of concepts and relationships between concepts and how the e-recruitment process provides advantages for all participants in the market. When comparing job and applicant profiles, this above mentioned identification through the use of a dedicated matching function is a key element for increasing the precision of search results provided by search engines. Furthermore, it allows for automating and supporting recruitment processes. In this chapter, we present an application scenario and our prototypical implementation discussing the construction of a human resource ontology for annotating job offers and job applications and our matching function.

Introduction

The cornerstone of an organization's success is the alignment of all corporate resources with business objectives and strategies (Wright & McMahan, 1992). The key asset of every organization is its employees. The crucial factor for businesses to compete effectively is finding the best person for a given task and developing and leveraging their skills and capabilities. Furthermore, the employer has to maximize the impact of training and educational efforts and to align the activities of the employees with corporate objectives as well as to retain top performers by an effective incentive management (Ferris, Hochwarter, Buckley, Harrell-Cook & Frink, 1999).

Whereas most of the chapters in this book deal with employee development through organizational e-learning, this chapter focuses on human resource recruitment, in particular Web-based recruitment. We present an application scenario in which online recruitment processes are streamlined using Semantic Web technologies. Additionally, we describe our prototypical implementation of the technological infrastructure.

Semantic Web technologies can support the unambiguous identification of concepts and formally describe relationships between concepts thereby allowing representation of data in a more machine-understandable way. In our scenario, job position postings and job applicant profiles are annotated using controlled vocabularies combined with domain ontologies. This opens up new possibilities for better job posting discovery by search engines as well as more intelligent matching of open positions with candidate profiles, which no longer relies on the containment of keywords but exploits domain-specific knowledge, leading to increased automation of the recruitment process.

This chapter is structured as follows: In the second section we provide some background information concerning the current situation on the electronic job market and point to the shortcomings of today's online recruitment process. The third section contains a brief introduction into the fundamentals of the Semantic Web. Subsequently, in the fourth section, we describe a typical recruitment process seen from the perspective of a company as well as an applicant. We outline what impact the application of the Semantic Web technologies would have on each phase of the process. The fifth section deals with practical aspects of ontology engineering. It begins with a comparison of two ways of building ontologies: from scratch and through ontology reuse. Next, we give some insight into the structure of the human resources (HR) ontology we have developed as the building block for annotating job postings and applicant profiles. The sixth section is devoted to the prototypical realization of the scenario. Here, we describe the general scenario architecture as well as illustrate how the implemented semantic matching functionality enables search and ranking possibilities far beyond simple keyword-based algorithms. Finally, the seventh section summarizes the impact of the application of Semantic Web technologies in the electronic recruitment domain.

E-Recruitment

Over the last few years, the Internet has evolved into the primary recruitment medium. As reported in Keim et al. (2005), 90% of human resource managers in Germany rated the In-

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