Chapter V

A Case Study in Building Semantic eRecruitment Applications

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ABSTRACT

Ontology-based technology has achieved a level of maturity which allows it to become a serious candidate for the resolution of several major IT problems in contemporary businesses, be that enterprise application integration, data modeling or enterprise search. As it implies considerable additional efforts, building and deploying ontologies at industrial level has to be supported by elaborated methodologies, methods and tools, which are available to a large extent and at feasible quality to date. However, sophisticated methods alone are not sufficient for the industrial purposes. They have to be accompanied by extended case studies and comprehensive best practices and guidelines, which are of benefit in particular in real-world situations and in the absence of deep knowledge engineering expertise. In this chapter we report our practical experiences in building an ontology-based eRecruitment system. Our case study confirms previous findings in ontology engineering literature: (1) building ontology-based systems is still a tedious process due to the lack of proved and tested methods and tools supporting the entire life cycle of an ontology; and (2) reusing existing ontologies within new application contexts is currently related to efforts potentially comparable to the costs of a new implementation. We take this study a step further and use the findings to further elaborate existing best practices towards a list of recommendations for the eRecruitment domain, which, far from claiming completeness, might speed-up the development of similar systems.
CURRENT SITUATION

Ontology-based technology has achieved a level of maturity which allows it to become a serious candidate for the resolution of several major IT problems in contemporary businesses, be that enterprise application integration, data modeling or enterprise search. This trend is confirmed by the wide range of international projects with major industry involvement exploiting the business potential of ontologies, by the increasing interest of small and medium size enterprises requesting consultancy in this domain or by recent surveys by established ICT advisory companies such as Gartner.¹

Enterprise IT systems nowadays need to handle an explosively growing amount of information and the variety of forms in which this information might be available or might be required to be processed. Ontology-driven technology improves traditional IT systems as those used in the areas mentioned above as it extends the functionality of these systems by replicating to a certain extent the human-specific “understanding” of the business domain being dealt with. Besides acting as a means to formally represent knowledge and to model data, ontologies can be viewed as mediators between applications operating within and among enterprises. In this way they enable application interoperability as applications in heterogeneous environments are provided with an instrument to communicate to each other using a commonly agreed vocabulary with a machine-unambiguous meaning.

Despite the acknowledged potential of this novel technology across businesses its feasibility from an implementability perspective needs to receive equal attention both from the research community and from technology vendors and consultants. As ontology engineering activities usually imply considerable additional efforts in extending conventional systems into semantics, building and deploying ontologies at industrial level has to be supported not only by elaborated methodologies, methods and tools but also by extended case studies and comprehensive best practices and guidelines. Such empirical knowledge is of non-negligible benefit in real-world situations, in the absence of deep ontology engineering expertise and under limited resource and time constraints.

In this chapter we report on our practical experiences in building an ontology-based eRecruitment system, which can be seen as a case study on current ontology reuse technology. In the last years, the Web has advanced into being a fundamental technology for many recruitment applications, be that job portals, personal service agencies or official employment initiatives. While the advantages of using the Web as a dissemination medium are widely recognized by job applicants and employing companies, current job search engines are far from offering job seekers high-quality access to job offer resources. Apart from the fact that a significant number of job offers are still published on proprietary, non-publicly accessible company sites, the quality of the results of a job search - performed by using either general-purpose or specialized search heuristics - depends on a great extent on various characteristics of the job descriptions available on the Web, such as form, language and purpose. Furthermore, the free text representation of these descriptions considerably restricts the precision and recall of the underlying retrieval engines, which, in absence of a machine-understandable representation of the semantics of the content, are restricted to flavors of keyword- and statistics-based techniques.

In this case study we analyzed the possibility of extending existing job search engines into business semantics represented through ontologies. In doing so, domain-relevant ontologies termed as “Human Resources/HR ontologies” are aimed at being used as semantic indices, by which job descriptions and applications in the selected sector are classified and matched, thus enhancing the search engine with semantics-aware retrieval
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