KW Partner: FU Berlin

1 Overview

Challenge
Facilitate efficiently filling open job vacancies with qualified suitable candidates
Solution
Matching between job offers and job seekers
Why a Semantic solution
Semantics support richer matching based on expressed relationships between characteristics of jobs and candidates
Key Business Benefits
Employee recruitment is increasingly being carried out online. In Germany, for example, over 50% of recruitment is expected to result from an online job posting. Finding the best suited candidate in the fastest time leads to cost cutting and resource sparing with regard to recruitment and can potentially bring firm into contact with a higher level of quality of candidates.
Business Partners
Recruitment agencies

Keys components

Existing Software
Web-based User Interface
Database systems
Research and Development
Wrapper
Semantic query
Matchmaker
Metadata crawler
Technology locks
Query engines
Ontology matching
Storage and retrieval systems

The recruitment of employees is an important practice for any business. While other channels remain available and are utilised by businesses, e.g. newspaper advertisements, trade fairs, human resource advisors or internal recommendations, the Internet has evolved into a primary channel for recruitment. In the near future over 50% of recruitments made in Germany are expected to be the result of an online job posting [1].

The use of Information Technology in the recruitment process has been advantageous for businesses, both in terms of cost cutting and the efficiency of finding a suitable candidate for the post. In this use case we uncover open issues in the recruitment process that raise new system requirements and propose the Semantic Web as a technological solution.

This use case has been considered in the framework of the "KnowledgeNets" project[1], funded by the German Ministry of Research BMBF.A ontology for recruitment has been developed within the project and a prototype system using this ontology is being implemented in order to evaluate the use of Semantic Web technologies.

2 Current Practices and Technologies

2.1 Typical business practices

IT systems are now taking on the role of mediating between firms and jobseekers. They provide a repository for the publishing and discovery of job postings and applicants with the advantages of online data stored in a computer system (e.g. access from any Internet-connected device, search functionality, online application procedure).

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[1] http://www.inf.fu-berlin.de/inst/ag-nbi/research/wissensnetze/

Two scenarios can be considered in this use case, one from the point of view of the jobseeker and the other from the point of view of the employer. In both, the goal is to fill a job vacancy with the best qualified candidate as quickly and efficiently as possible.

(1) A jobseeker creates an electronic profile of herself, which gives not only the common contact information but also a record of her qualifications, work experience, skills, interests and other potentially relevant details such as foreign languages and possession of a driving license. She seeks in the database of vacancies for jobs to apply for. This search is guided by the profile she has given so that vacancies for jobs which best match her profile are highlighted. She can manually review the vacancy and if she is interested in the position, request that her application data (drawn from the profile) is automatically forwarded to the firm.

(2) A firm has an open position which it wishes to fill as quickly as possible, and wishes to find the best suited candidate for that position. It creates an electronic description of the position, highlighting the qualifications, work experience, skills, interests and other relevant details wished of an ideal candidate. It publishes this description to a database of vacancies, and requests a list of available candidates (i.e. registered jobseekers in that system) who best suit the position. An e-mail is sent to the selected candidates inviting them to look at the position and apply for it. Applications to the position can be pre-filtered according to applicants' relevance, with only the best candidates being forwarded to a manual (e.g. job interview) phase.

2.2 System requirements Analysis

From the scenarios described in this use case, we can derive the following system requirements:

In the publication of the jobseekers' electronic profile or the firms' job description,
- that published content is unambiguous and able to be understood by a seeker,
- that published content is validated for inconsistencies,
- that published content can be identified as being well suited to an open position or an applicant.

In the searching of the recruitment system for vacancies or applicants,
- that search results are relevant,
- that search results can be filtered,
- that search terminology is consistent,
- that search results can be tailored to the seeker.

Finally, in the case that the job application is carried out online,
- that a job application can be prepared from the published data,
- that a job application can be validated before being sent,
- that job applications can be filtered by matching applicants' data to the vacancy.

Unlike existing systems, we conclude that these requirements can be best met by the use of semantic technologies for the processing, validation and matching of applicant profiles and job descriptions.

2.3 Review of the current systems

Existing IT systems for recruitment tend to be in the form of either job portals set up by state job centres (e.g. the German Federal Employment Office or the Swedish National Labour Market Administration) or those which are privately run and are financed by publication fees (e.g. Monster or Jobpilot). Additionally job postings are often made public on organisations' own Web sites and in other, relevant, locations (e.g. mailing lists and other community portals in the domain of the job). The different organisations (as "suppliers") and jobseekers (as "consumers") are fragmented in the online recruitment market (Figure 1). This means both firms and jobseekers must duplicate efforts across the recruitment market if they are to maximize their visibility to relevant applicants and vacancies.
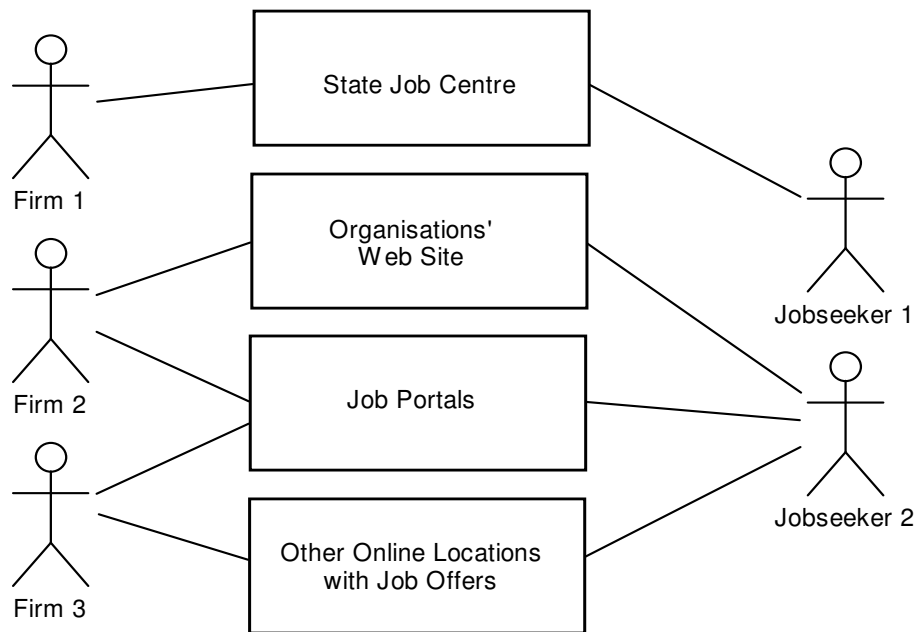

Figure 1 – Fragmentation of online job market

Current recruitment systems such as Jobpilot (http://www.jobpilot.de, see Figure 2) provide facilities to publish and search vacancies, as well as post applicant CVs which can be searched by employers. Their navigational structure is based on occupational domains and search on specifiable conditions (e.g. job location, domain, …)

Figure 2 – Job Pilot website

The German Federal Employment Office (http://www.arbeitsagentur.de, see Figure 3) aims to promote greater visibility in the German job market by integrating data from multiple sources into a central recruitment platform. To support data uniformity and integration, all data in the system is represented using the HR-BA-XML standard, which is a XML-based vocabulary for the human resources domain.
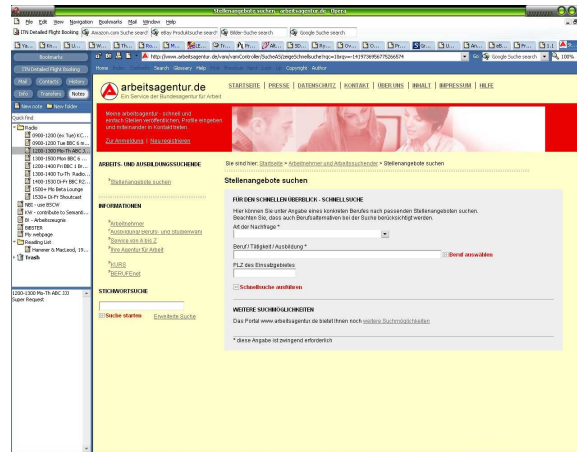

Figure 3 – German Federal Employment Office website

References

[1] Institut für Wirtschaftsinformatik der Johann Wolfgang Goethe-Universität Frankfurt am Main, Monster Deutschland & TMP Worldwide: „Recruiting Trends 2004" (2003), 2. Fachsymposiums für Personalverantwortliche.