Consolidated Platform for Recruitment Agencies

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Abstract: In the beginning, different companies, agencies and departments of most enterprises went their own way of establishing a Web presence and developed their own content. To some extent, they were able to captivate their targeted audience sooner.

While on the other hand, this strategy increased the number of infrastructure platforms and redundant expenses within the company which eventually ends in trenches with a huge loss of prospective customers. This paper however proposes a way of consolidating certified recruitment agencies' website with the use of ontology on the platform of semantic web technology. This will go a long way to alienate dubious activities of false recruiters, unprecedented level of labour incompetency and at the same enhances specialized employment recruiters' visibility to the required audience, Job employers and applicants.

Keywords: Recruitment Agency, Website consolidation, Semantic Web, Ontology and Web Application

I. INTRODUCTION

A prevalent mantra in the business world this day is consolidation. Take any sector banking, e-commerce, wireless, cable, computers, and auto industry, one will see that companies are being bought and consolidated in the hopes of reducing cost structure, streamlining operations and realizing benefits of economies of scale and scope. Over decades, the webification option for companies and agencies, such as that of the recruitment, came into lime light and is followed by a rush of companies trying to exploit the opportunities it presents.

Sooner or later, most them reach stagnation or lose competitiveness and more competitive and nimble firms buy them or drive them out of the market by consolidating their position. Websites, at least the corporate ones have followed a similar pattern. This vehemently signifies the needs for Web Consolidation of Recruitment sectors. It will involve everyone and meet the objectives of individual recruitment firm, making them to be more efficient, productive and nimble. The underlying technology, Semantic Web, is of a major importance to this work, with the use of ontology as a means of consolidation.

II. RELATED WORK

The recruitment is a process of searching the future candidates and their stimulation in submitting their resumes for the vacancy [4]. The quality of recruitment is the result of the fit between the candidate and the need for recruitment [5]. The key decision is if the organization recruit from the outside or the inside the organization [1]. Recruitment firms are often the first point of meeting with employers wishing to make use of temporary workers of all types. In fact, more employers use these firms as a source of temporary workers than to fill permanent positions [3].

Engaging a recruitment agency can be attractive to managers because it saves valuable time [6]. By and large everyone has come to agree that the Web is a strategic sales and marketing tool.

It is also a communications and productivity improvement tool. So it would not take much to get the support of various constituencies within a company for Web consolidation. In a corporation, there is a closed group of users and the management is able to enforce company guidelines like adoption of specific ontologies and use of semantic annotation. [2] The term *"Ontology"* can be defined as an explicit specification of conceptualization. Explicit specification of conceptualization means that the ontology is a description (like formal specification of a program) of the concept and relationships that can exist for an agent or a community of agents [2]. The *semantic web* is an evolution and extensions of the existing web that allows computers to manipulate data and information [2]. It provides a common framework that allows data to be shared and re-used across application, enterprise and community [7]. The semantic web is therefore regarded as an integrator across different content, information application and systems [7].

III. ARCHITECURAL DESIGN

The Consolidated platform for Specialized Job recruitment is an ontology based system developed using a combination several semantic driven components. It comprises of the recruitment ontology, which is the consolidation, OWL API/RDF and Web application, which provides a user interface for access. Figure 1 depicts the architectural components of the consolidated Recruitment framework.
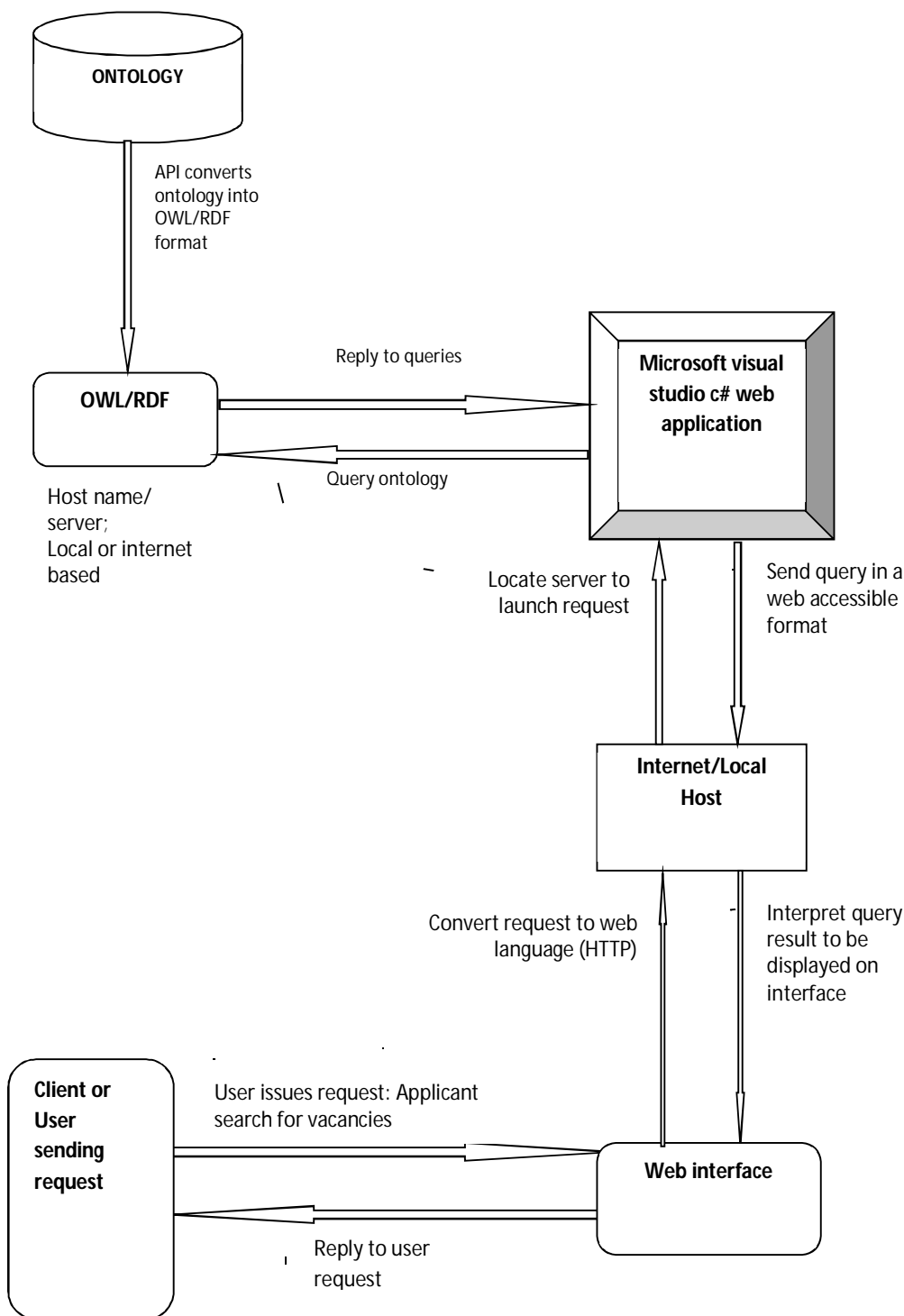

Figure 1: Hierarchy representation of classes

A.   Recruitment Ontology Design

The Consolidated platform for Job recruitment proposed in this paper uses ontology, which provides a means of integrating all Recruitment components including Employer, Recruitment agency, Job and Applicant. These concepts are defined and represented as classes with their related subclasses as shown in Figure 2. Area of Specialization, qualification, personal information and available job are subclasses of the super class "Recruitment firm" and so on. The OWL ontology however serves as the knowledge structure of the web application which contains all the information about Specialized Job Recruitments.
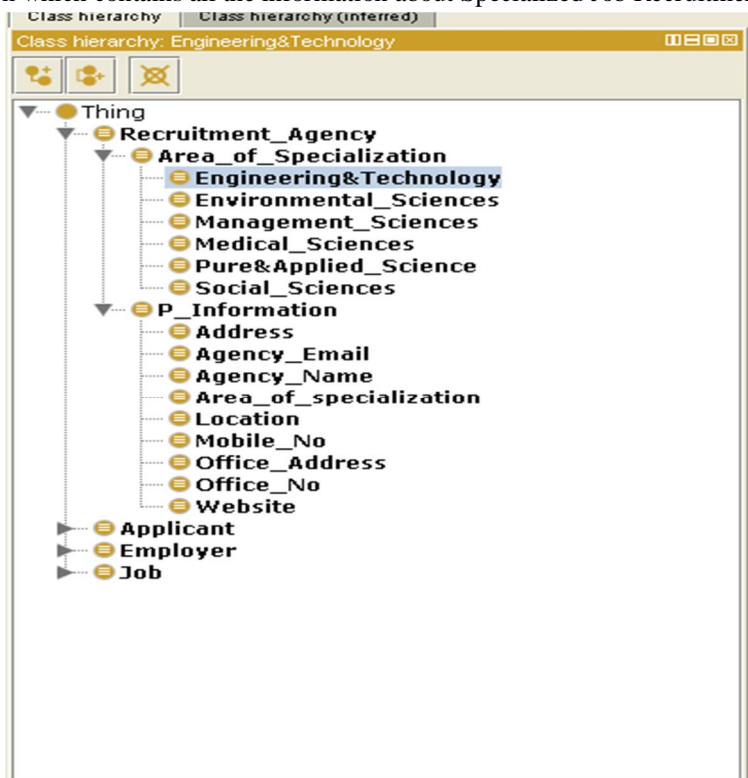

Figure 2: Hierarchy representation of classes

Using protégé 4.3 tools, properties are meant to establish relationship between classes and every component of the ontology. In this work, the two types of properties used include object properties and data properties, which are value based. Also Classes and object properties are arranged into subsumptious relationships, which encode essential background knowledge into the ontology that is necessary for consistent and correct inferences to be made. For the case of this project the reasoner used is FaCT++, all classes of the immediate asserted fields are automatically inferred as additional information when the reasoner classifies the ontology. Figure 3 shows classes and the relationship mapping.
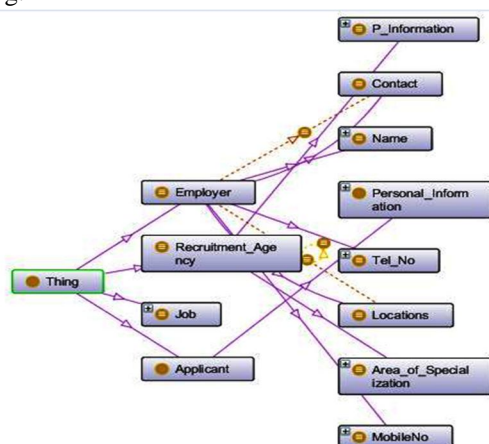

Figure 3: Ontology graph showing classes and the relationship mapping.

In addition, the actual instances of classes are created are referred to as "individuals" in protégé 4.3. This individual are both represented in the class to which they both belong, therefore inheriting the properties of the class both object properties and data properties. Figure 4 shows the radial representation classes of recruitment agencies, the subclasses and individual instances.

Figure 4: Ontology in radial representation classes of recruitment agencies, the subclasses and individuals.

B. OWL API/RDF

The developed ontology is .owl extension as default, whereas the extension needed for the web interface is RDF file. Therefore OWL API/RDF is external integrator element which has to stand in between the ontology created and the web interface, this is responsible for converting the created OWL ontology to a web accessible .rdf format. Figure 5 demonstrates the components interaction.

Figure 5: A high level diagram demonstrating the level of interaction among the software components.
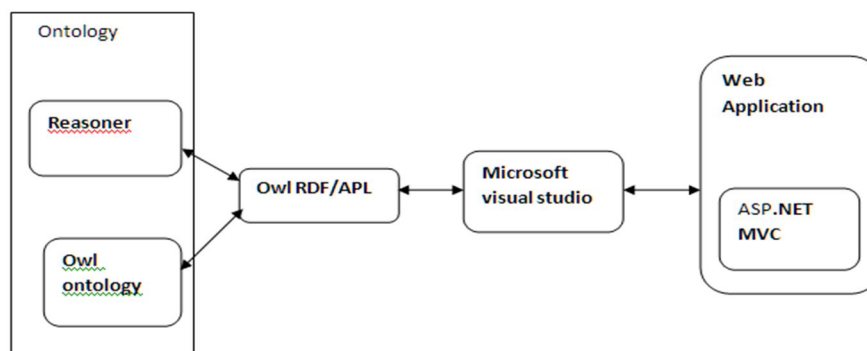
C. The Web Interface Design

The interface generated by the ontology is of no use except for medium through which the public can make and access it (front-end). The ontology requires a web interface which can utilize it, this requirement leads to a web design interface which was designed using ASP.NET MVC C# because of its easy integration JENA.NET was used to integrate the ontology owl into ASP.NET MVC language rdf. The integrator communicates with the web service created to perform the operation. Figure 6 shows the Job Applicant registration Page. It accepts the necessary details such as username, email address and password for registration. This enables applicant's proper access to the consolidated website.
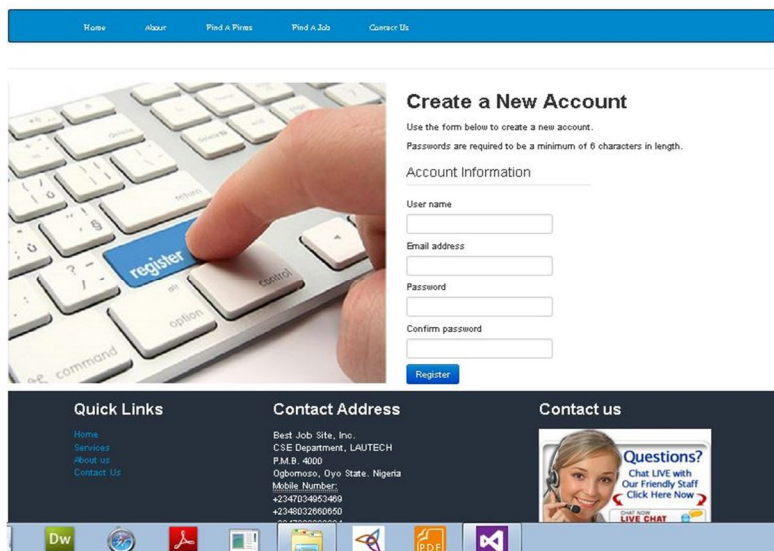

Figure 6: Registration page

The consolidated platform also enables both manual and semantic search. Figure 7 shows the
Recruitment Agencies view page, where user can search individual recruitment firm websites offering employment available in his/her area of specialization, field, location, and qualification.

Figure 8 shows Applicants data entry Page, which allows applicants to supply their details for processing. This provides the employer the applicant details needed to be considered for employment.
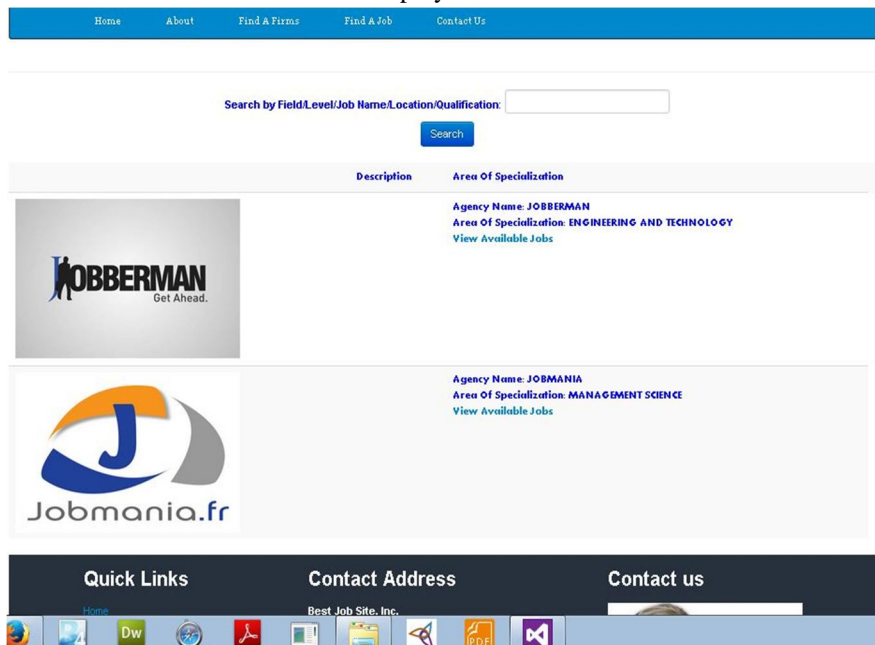

Figure 7: Agencies view page

Figure 8: Applicants data entry page

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