Work Force Information Progress Based on Programming Engineering Models and Web Services with Standard Conventions

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ABSTRACT: The essential objective of the Work Force information progress is to give reasonable labor quantitatively and subjectively with specific aptitudes, capacity, fundamental instructive capabilities and information of business area. Customary Enterprise human asset enlistment framework is not sufficiently adaptable and is free of each other and does not take after the measures with the absence of correspondence between each other. The framework cannot share the assets and the operation is awkward and not sufficiently advantageous. This paper exhibits a web benefit based staff enrollment framework to take care of these issues well. Web administration is an appropriated programming engineering model and uses XML, HTTP, WSDL, SOAP standard conventions. It is the product design as a nonexclusive usage display for administration arranged engineering. Web benefit based HR framework has brilliant assets reusability, flexibility and versatility. It can lessen cost cash and enhance extraordinary effectiveness for big business staff enrolling and spare time and vitality for occupation searchers.

KEYWORDS: Web service, XML, XML Schema, PIS, SOAP, and WSDL.

I. INTRODUCTION

Recruitment process involves a systematic procedure from sourcing the candidates to arranging and conducting the interviews and requires many resources and time. It is a function that requires business perspective, expertise, and ability to find and match the best potential candidate for the organization, diplomacy, marketing skills and wisdom to align the recruitment processes for the benefit of the organization. The HR professionals handling the recruitment function of the organization are constantly facing new challenges in Recruitment. The biggest HR challenge in Recruitment for such professionals is to source or recruit the best people or potential candidate for the organization. A company's workforce should be seen as the most important investment and human resources decision-making affects the company's success and competitiveness. The company must have a set of means to explore effective means of human resources in order to remain competitive. Recruitment system can provide more strong support for company in general. It can optimize the recruitment process and reduce the operational workload and reduce recruitment costs and provide supplementary information on the job for the employee.

The traditional recruitment system is not flexible enough and can’t be extended and this paper proposes a system based on Web service which is a type of application system of SOA. SOA (Service Oriented Architecture) [1] is most popular software system architecture and can get more reusability and flexibility of software. There are three types of roles in the SOA structure including service provider, service broker and service requester. The service provider released their own services and response to the request for the use of their services. The service broker registers issued service providers and provides the classification and searches for these services. The service requester finds the services using the service brokers and uses the service. The components in the SOA must have a role in one or more. The roles have three kinds of operations: publish, find and bind.
The publish operation enables the service providers to register the functions and access interface for the service brokers. The find operation enables the service requesters to search service using the service brokers. The bind operation enables the service requesters can use the service which is provided by the service providers. SOA has more components such as services, service description; interact between service provider and service requester designated by the service description and some preconditions, post-conditions and the quality of service level and so on. The service is the basic building block of a business process in the SOA. The service has the independence feature and can be reused and can be shared. The service provides the standard access interface and can be found in the environment system. SOA makes the establishment of consistency between business processes and SOA services. The service operation depends entirely on the business processes including services definition and creation, the coordination of service delivery and the call of corresponding service. The fundamental attributes of SOA service is to implement the reuse and sharing of service and to change the business process more quickly and easily. The ability of adaptation and creating business process quickly not only helps to improve operational flexibility but also enables enterprises to take advantage of features and interface which make a clear definition of the service to implement business. The basic features in SOA [2] lie in the software reusability and each service is independent of the design and it doesn't dependent on the other services. The service in the same system can be called by other service and the service in different system also can be called by other service and it enhances fully the software reusability.

The implement technology and standard of SOAP have many kinds of method and web services is the most commonly used technology which can provide a standard interface based on a number of XML middleware and highlight distribution in the overall structure and has loose coupled for system integration and has open standards and the management of application process. So the Web service can meet well the needs of SOA application mode.

II. WEB SERVICES

Web service is a software system designed to support interoperable machine-to-machine interaction over a network. It has an interface described in a machine process able format. Other systems interact with the Web service in a manner prescribed by its description using SOAP [8] messages, typically conveyed using HTTP with an XML serialization in conjunction with other Web-related standards.” in the W3C. Web service model is based on the interaction between the three roles: service providers, service brokers and service requesters. The interaction includes publishing, discovery and binding operation and the service providers make the software module as an implement of the Web service and publish it to the service brokers for registration. The service requesters search these services from the registration center and bind the service description to the service provider and call these Web services to finish the service. Web service [2] is the kind of self-contained, self-describing and modular applications which can be published and located and be called dynamically through web. Web services can provide a specific functional element programmable entity such as the application logic and it can be called by any number of systems and also can be called by completely different systems using common internet standards such as HTTP and XML. The web service is a concept and has different interpretations from a different point of view. Web service is a software interface which can describe a set of the operations that can be accessed in the network through standardized XML [6] messaging and it is a kind of architecture which is the composition of the various protocols and standards, Web service is a service that can be expressed by the realization of such a system from the service itself. The advantage of Web services is to enable it to meet the request from the simple to the complex process of arbitrary functions. Once a Web services is completed, other applications including other Web services will be able to find and call the service. Therefore, it can achieve a good level of services in the web interoperability by use of Web services technology and it can to provide a good basis for the formation integration of services. Web Services are linked dynamically between programs through a series of standards and protocols which including XML, HTTP, SOAP and WSDL according to the definition in W3C.

XML (Extensible Markup Language) is the core of the whole Web service technology framework and it is the data description and exchange standards on the internet. XML has simplicity, self-describing, scalability, verification and hierarchical structure. XML is the best vector for message transmission and data conversion and description and some other standards are described by XML format. The XML provides a set of cross-platform, cross-network and cross-language data.
description style. The XML and related technologies and standards constitute a complete XML framework and solve the problem of heterogeneous platforms. HTTP (Hypertext Transfer Protocol)[10] is the web transfer standard protocol and all web pages are delivered by HTTP in the internet. In Web service, the data transmission also is implemented by HTTP in order to follow the general agreement and get the open system architecture. The SOAP in the Web service is running on HTTP although it is dependent of specific transfer protocol. SOAP is fundamentally a stateless, one-way message exchange paradigm, but applications can create more complex interaction patterns by combining such one-way exchanges with features provided by an underlying protocol and/or application-specific information. SOAP is silent on the semantics of any application-specific data it conveys, as it is on issues such as the routing of SOAP messages, reliable data transfer, firewall traversal, etc. However, SOAP provides the framework by which application-specific information may be conveyed in an extensible manner. Also, SOAP provides a full description of the required actions taken by a SOAP node on receiving a SOAP message.” The SOAP is one of the cores of Web services technology and it is used for calling the XML message. The SOAP is used firstly by Microsoft for resolving the HTTP message across the firewall to call the remote COM component and it is made as standard by W3C and used in the distribution environment with XML message. The SOAP provides the message transfer format and code standard of data types between Web service entities. The SOAP is based on XML and message and it make communication between service providers and service requesters. It provides the data exchange using the object format in the application layer procedures and it can be running on HTTP, FTP and SMTP. The Web services use the SOAP to carry transmission information with lower protocol such as HTTP and finish the request and response of Web services for data exchange. The SOAP makes the Web services become be independent on the platform and language and have diversity property.

WSDL (Web Services Description Language) [7] is used to describe the Web service interface and is based on XML. It defines how to access the service. Description includes the contents of Web services, calling methods and involved data exchange, the agreements used in Web service and deployment location on the Web. It defines the description of the service and makes what service can do and where services are and how to call these services. UDDI (Universal Discovery Description Integration) [8] make the mechanism of description, discovery and integration of the core services in Web service framework. It uses the XML and HTTP protocols for the achievement foundation and provides the standard and transparent description and calling mechanism for the Web service and provides Web services registry function.

The Web services can be published, queried and called through the UDDI and the specific services description information also can be searched and be bound to the service dynamically. In OASIS, the UDDI [7] is describe as “The focus of Universal Description Discovery & Integration (UDDI) is the definition of a set of services supporting the description and discovery of businesses, organizations, and other Web services[5] providers, the Web services they make available, and the technical interfaces which may be used to access those services. Based on a common set of industry standards, including HTTP, XML, XML Schema, and SOAP, UDDI provides an interoperable, foundational infrastructure for a Web services-based software environment for both publicly available services and services only exposed internally within an organization.”

III. SYSTEM DESIGN

The recruitment system is divided into two main parts: the common management and system management. The common management includes company information management module, job information management module, personnel information management module and user registration module. The system management includes business management module, personal management module and recruitment information management module and systems data management module.
The human resources department of company releases the post information firstly. The post information includes the type, academic requirements, age requirement, work experience, work address and recruits number and so on. If the post is expired, it must be removed from the post list. The status of post must update timely. The system provides the query interface of the post information. Secondly the job seekers send their resumes for the specific post. The company chooses the resume and discards the unqualified job seekers and save them into the human resources database. If the job seeker pass the first selection, the company make interview with the job seekers. The Recruitment process is as shown in Figure 1.

The core operation function of the whole system is packaged into Web services in order to share and reuse. The core operation objects are company, recruitment information and job seekers in the whole recruitment system. They own appropriate property information and function operations which are packaged into Web services called by other modules. The format of calling these functions is Web service and can be used in different environment. The Web services of company function contains PublishJobs(), ReplyJobApplication(), CreateCompany(), QueryCompany(), UpdateCompany() and DeleteCompany(). The Web services interfaces of recruitment include GetState(), GetCandidates(), CreatePI(), QueryPI(), UpdatePI() and DeletePI(). The Web services of job seekers include GetJob(), ReplyJob(), CreateJS(), QueryJS(), UpdateJS() and DeleteJS(). The relationship between them is as shown in Figure 2.
IV. SYSTEM IMPLEMENTATION

The Web service in the recruitment system can be called in different platform such desktop program, web based program and intelligent mobile platform and other system which can follow Web service standard. Because the Web service is open standard technology, many software systems are compatible with it. The recruitment module based on Web service can be easily and integrated into the other system in the company or the system of other company. The Web service is written once and it can be used for many times and in many places so it can reduce the human resources complexity.

The XML syntax for the process is below.

```
<RecruitmentInformation>
<Company>
```
The XML syntax in this recruitment system is defined by the XSD in order to ensure the XML syntax consistency and
integrity of XML data style. XSD (XML Schema Definition) [9] is a language used for describing the structure of XML documents and it makes the type of XML data in XML documents. The XSD for Post Information in XML document is as shown below.

```xml
<xsd:complexType name="PostInformation">
    <xsd:sequence>
        <xsd:element name="PostName"
            Type="xsd:string"/>
        <xsd:element name="PostType"
            Type="xsd:string"/>
        <xsd:element name="Academic Requirements"
            Type="xsd:string"/>
        <xsd:element name="Work Experiences"
            Type="xsd:string"/>
        <xsd:element name="Work Address"
            Type="xsd:string"/>
        <xsd:element name="RecruitsNumber"
            Type="xsd:integer"/>
    </xsd:sequence>
    <xsd:attribute name="State"
        Type="xsd:string"/>
</xsd:complexType>

<xsd:complexType name="CompanyService">
    <xsd:sequence>
        <xsd:element name="Name"
            Type="xsd:string"/>
        <xsd:element name="Type"
            Type="xsd:string"/>
        <xsd:element name="Information"
            Type="xsd:string"/>
        <xsd:element name="EMail"
            Type="xsd:string"/>
        <xsd:element name="Telephone"
            Type="xsd:integer"/>
        <xsd:element name="address"
            Type="xsd:string"/>
    </xsd:sequence>
    <xsd:attribute name="State"
        Type="xsd:string"/>
</xsd:complexType>

<xsd:complexType name="JobSeekerService">
    <xsd:sequence>
    </xsd:sequence>
</xsd:complexType>
```
V. CONCLUSION

Web service-based human resources system has very good resources reusability, adaptability and scalability and it can save money and improve great efficiency for enterprise recruiting. The recruitment based on Web service can reduce the workload and save the cost for the company. On the other hand, the job seeker can save their time and energy on participating recruitment process. Integration of different Web services can reduce greatly the duplication of development efforts to achieve the sharing and collaboration. The use of Web service technology in system design and integration can improve the system scalability and compatibility, and to enhance the adaptability of the system to improve the quality of service the system.

REFERENCES

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