

An Approach to Cloud Computing in HR Domain for Small Enterprise Solution

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Abstract

Web Service design and development is a challenging job that involves analytical programming, keen reasoning and sharp intellect. Plus today all departments and systems are bound through IT – branches of management such as human resource management(HRM), Financial Management, Management Information System (MIS). Through this paper we have endeavored to render the web services more simplified and accessible to all. Our aim is to develop user friendly, reliable, affordable, and adoptable web services. A cloudHRManagement web services would generate a technologically viable solution to the IT world and other enterprises of today's ongoing business world relating to Human Resource Management. A cloudHRManagement is an open-source HR Information System that covers Personal Information Management, Employee Self Services, Benefits, Leave and Salary Information Management.

Keywords: *Web Services, cloud HR Management, Web Portal.*

1.Introduction

Internet and web services are the pivotal and domineering forces in today's IT oriented business world. Transactions of business flow of operations have become simpler, smoother, and steadier through the intelligent application of web services. Presently the top ranking and celebrated IT companies and Internet business centers have started providing web services. Everywhere there is the application of net and web and geographical boundaries have shrunk with the click of a mouse. But the web systems are not as simple as it apparently seems. There is some doubt and misgiving but they have shown that they could overcome the same by providing cutting edge technical solution. This keeps many IT companies ahead in the IT business. The IT world would provide ultimate business solutions adding value and impetus to the business. Commerce and cyber world bind together in a stout and everlasting alliance for safer, smoother and thriving business operations. There has been an introduction of design and marvelous innovation – apparatus and techniques that had changed the facet of web services and that elevated it to a unique level. But still there are much difficulty is to overcome while during the development and application of web services for the enterprises. The work concerned in this paper is to ease and simplified the web services rendering it user friendly, cheap, reliable, flexible, and scalable. A cloudHRManagement web services would generate a technologically powerful solution to the enterprises regarding Human Resource Management. In other ways it can be said the main motive is to provide Human Resource Management solutions to the small enterprises around the globe taking the 21st century internet and web service advantages. For small enterprises with minimum number of employee as it is seen sometimes are not economically suited to position a Human Resource Manager for managing those related to Human Resource

Management. Instead it can be guaranteed that by calling the technology of cloudHRManagement web service to work for a particular enterprise for a being, will give a quality, cost effective Human Resource solutions, and can enjoy economic benefit by that enterprise.

2.Web Service

Web service can convert an application into web application. Web Service is a very powerful tool that has greatly enhanced the efficiency and communication among businesses. According to the World Wide Web Consortium, “a Web Service is a software system designed to support interoperable machine-to-machine interaction over a network.” The platform of the web service is XML and http.

Extensible Markup Language (XML) is the universal markup language that all machines are capable of understanding. In the process of inter-machine communication via Web services, XML is used to tag the data involved. Web Services Description Language (WSDL), on the other hand, is being used for describing the services available. Then Universal Description, Discovery and Integration (UDDI) list the services available from that particular machine. Lastly, Simple Object Access Protocol (SOAP) is used to transfer data for each exchange of information between machines and servers, which typically involve “HTTP with an XML serialization in conjunction with other Web-related standards.” [1]

While serving a similar function as the Web, Web Services do have some significant differences. The most prominent difference between Web services and the Web is that instead of a user interface, Web Services functions via application interfaces. In other words, the machines communicate with each other application to application. Such exchanges limit possible user errors and thus increase the efficiency of the exchange.

Web services provide interactive functionality such as report listing, viewing, refresh and drilldowns Web services through a portal interface [2]. Web services can be designed to provide integrated applications that can automatically conduct business without human intervention. Application logic to perform a variety of business processes can be aggregated from servers in various locations. Application code can be reused on disparate platforms. Web services offer many benefits in systems design. Largely due to their many benefits, web services are gaining momentum [3].

Figure 1 shows the basic flow of a web service, from the consumers of web services, applications, web sites, and other devices, all the way to the service code and the database that supports it [4].

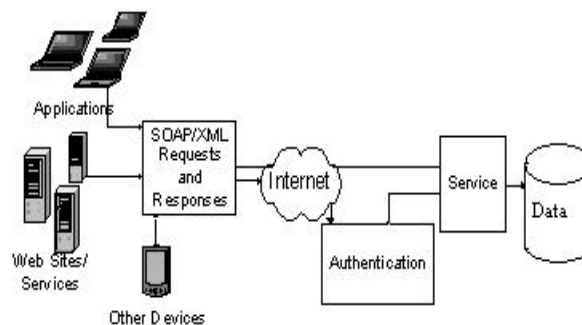


Fig.1 Web Service Processing Model

After becoming familiar with the key elements responsible for making the Web Services work, one needs to see how these elements interact with the whole system, from the client requesting a service to perform a task, the service being executed, and data delivery.[5]

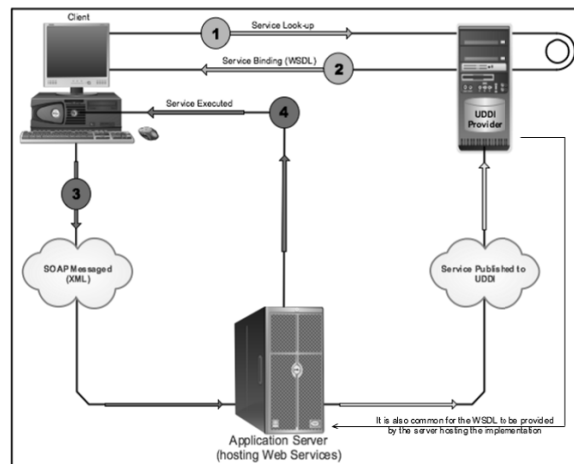


Fig. 2 Web Service in action

A cloudHRManagement web Service the main work concerned is one which allows a client to perform vast range of HR activities, with features that reflect the primary HR management activities. The web application used as the front-end contains simple forms which allow the user to select various operations from EMP Entry to Salary Calculation, Report etc. Now how the cloudHRManagement web service are in action (Figure 2), suppose take the case, during salary calculation the client wants to convert its salary from one currency to another. The application contains a simple form which allows the users to select the starting currency, and the currency to which he wants the conversion to be done. The user submits this data, and the application contacts the UDDI provider to look up the service required to perform this conversion. The UDDI provider then creates the binding, which associates the message to the service requested, and its location. The UDDI provider then returns a WSDL file to the client, which the application completes as a SOAP message. The SOAP message then gets sent to the application server which hosts the Web Service needed to execute the currency conversion. This is done using the binding details in the WSDL file from the UDDI. Using the SOAP instructions, the Web Service can correctly execute the task according to the parameters it was given, and deliver the processed currency conversion back to the requestor.

A cloudHRmanagement is a comprehensive solution for the efficient management and development of our Human Resources functions. A cloudHRManagement assists us in the complex and strategic process of managing this crucial enterprise function. Based on modular architecture, cloudHRManagement enables a vast range of HR Management activities. A cloudHRManagement is a perfect platform for reengineering our HR processes and achieving a new level of HR Management. With cloudHRManagement we can: Manage all aspects of Human Resource management, Define and set pay categories and scales. Organize and keep track of employee personal information, Allow employees to update and view their own personal information, create and distribute reports; Using specific modules: Setting up to manage employee information, Managing and organizing HR information, setting up to manage employee benefits.

3. Working Model

The web service cloudHRManagement developed is the simplest and user-friendly. All the information based on Human Resource Management are kept in a cloud, under the cloud any user from any place can call the services. The basic architectural model of cloudHRManagement created is shown in figure 3. The web portal has three services

- Configuration Management Service for configuration.
- Human Resource Management Service for service agent used
- Human Resource Management Web Service for implementation.
- Validation service for testing.

The agent will call or query for required service i.e. Human Resource Management web service through the Human Resource Management Service web portal and will submit the data. On submission of data the Human Resource Management web service will respond on user's requirement and through web port will go to the database where relevant information are kept. Web portal is not a service, it is an interface through which the users are performing the task and web port can be said as a connectivity system. While pulling the data from database through web port and with the data feed by user, the web service i.e., Human Resource Management

web service, performs the implementation and generate required reports that are fetch by the users. On the other side there is a Configuration Management Service web portal through which the configuration manger will be monitoring the data base that stores the data and information of Human Resource Management. For example if there is a need to change or update the information or data for income tax or provident fund in data base, then it will be the work of configuration manager to do such operation. Service testing manager is required for the validation purposes; verification of data will be performed before the data are fetched or entered to the database completely, so that the probable for occurrences of error will be less.

There are different modules in the cloudHRManagement namely Personal Information Management, Salary Information Management and others. Users can go to cloudHRmanagement web service and can choose different service that they want to take. For example if the user selects the salary Information Management, the whole payroll problem will be solve by using it.

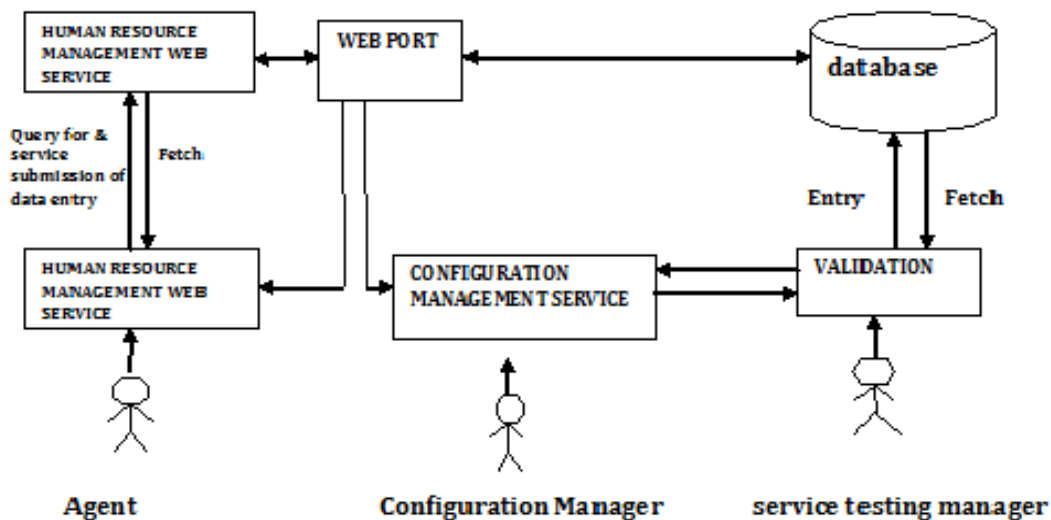


Fig. 3: cloudHRManagement Delegate Model

3.1 Business Model

There are several methods of putting a business model in place for a web service [6]. For our web service model; we recommended the two most popular business models, the subscription model and the transaction model. In the subscription model, a user would pay a set fee per month or per year to use the service. Another model is the transaction model in which, a user may only need the service a few times and could pay a set fee per use. Users can be separated into groups based on the functionality that they need, and the provider can set up pricing models to meet each group's needs [4].

4. Results

When the users take the service of CloudHRManagement web service various modules regarding HR Management will be provided like salary information management module, leave information management module and many others. Given the modules when the user will select the leave information management module, from there the user will choose the types of leave namely regular personal time off (PTO), maternity leave, military leave etc. along with entering the number of days for leave. With the data provided the web service here will search from the database for casual leave or medical leave and the leave will be approved accordingly. If no casual leave or medical leave are left, the salary will be deducted accordingly and report will be formed. Lastly the final report for the leave approved will be generated.

5. Conclusion and Future Work

Employee is one of the most important assets for every enterprise. Effectively HR Management is the guarantee to achieve competitive advantage for the enterprise. This paper provided an open-source HRManagement technology framework that can lead to new era and provides a management technique for efficient and effective

solutions, workings, analysis, associating to Human Resource Management of any enterprise. Lastly it can be said, the idea of the internet as we know it is quickly surpassing the simple need to obtain information with ease through web applications, and is now evolving into a multitude of systems which perform tasks, calculations, accurate searches, and many other complex operations. Web Services are the perfect example of a solution to the need for a simplistic system which allows many different technologies to collaborate and communicate with each other. Being available to the end user over the internet, Web Services will keep increasing in popularity due to their functionality, and this popularity will also expose the threat to the servers hosting them.

As for future work we plan to introduce more modules in this web service. Our agenda is to develop an all-round Human Resource Management service providing web service '*cloudHRManagement*'

6. References

- [1] <http://www.w3.org/TR/2003/WD-ws-arch-20030808/#id2608472>
- [2] Johnston, S.J., State of Web services. InfoWorld, 2002. 24(5): p. 17.
- [3] Dostan, D., Solving the web services puzzle. InfoWorld, 2002. 23(38): p. 44.
- [4] Phill Miller, Sushil K. Sharma, Fred L. Kitchens, A Flexible Services Architecture Based Translation Web Services – ceur-ws/vol-61/paper 6, 2002
- [5] Jacques Guillaumier, Web Services – The Technology and its Security Concern, Acunetix Ltd., White Paper- May 2007
- [6] Schultz, B., Assembling a top of the line Web services model. NetworkWorld, 2002. 19(7): p. 56-58.

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