ISSN 2348-1196 (print)
International Journal of Computer Science and Information Technology Research ISSN 2348-120X (online)
Vol. 3, Issue 1, pp: (399-402), Month: January - March 2015, Available at: www.researchpublish.com

Enterprise Application Integration (Middleware): Integrating Stovepipe Applications Using SOA through TIBCO Technology

[1]Deepak Kumar Mishra, [2]Ambure Yogesh Dattatray , [3]Deshmukh Sarveshwar Rajesh , [4]Devikar Bandu

[1,2,3,4] IT Dept, Sinhgad Institute of Technology, Lonavala, India

***Abstract*: Enterprise Application Integration is a term attributed to the integration of variety of applications including stovepipe applications using a common middleware. This introduces the concept of Enterprise Application Integration architecture and coins how SOA can help achieving the integration within the enterprise and/or among inter enterprises working in heterogeneous middleware environment. Traditionally we used to talk about integration of either IT applications or Business processes but Enterprise Application Integration is an emerging research field that deals with integrating IT applications with Business processes. To help the organizations to achieve this is to find better ways to reconfigure their business processes using a common middleware. The ultimate goal is to prove how EAI allows different enterprises to quickly and easily integrate diverse applications in distributed message oriented middleware**

Keywords: **Distributed Message Oriented Middleware, EAI , Middleware, SOA, Stovepipe applications.**

I. INTRODUCTION

With the explosion in new transactional, communication, social networking & distributed systems, companies began to face challenges in how to connect these new applications to older, legacy systems. The 1980s IT solution was to design your own software to bridge the gaps. The shortcomings of this solution were quickly recognized as organizations attempted to share system services internally & with other organizations. The task of translating & maintain internal & external messages & protocol became unmanageable. With the ongoing integration of new system, the challenge of how to share information increased. Service-Oriented Architecture is an emerging approach that addresses the requirement of loosely coupled, standard-based, & protocol independent distributed computing. In today's IT environment, organizations often have numerous applications communicating with each other chaotically. Middleware streamlines that communication process, providing maximum integration benefits.

Enterprise Application Integration is becoming the most challenging task of the IT Organizations to offer increased functionality and software reuse. Traditionally we used to talk about integration of either IT applications or Business processes but Enterprise Application Integration is an emerging research field that deals with integrating IT applications with Business processes. To help the organizations to achieve this is to find better ways to reconfigure their business processes using a common middleware.

In this paper, we focus on remote data integration, which is the fundamental for inter-organizational integration that helps to exchange data, to unify software components, and to streamline business processes. This paper also includes the research of enterprise integration. The model is proposed where the integration between three different organizations is proposed using TIBCO technology.

ISSN 2348-1196 (print)
International Journal of Computer Science and Information Technology Research ISSN 2348-120X (online)
Vol. 3, Issue 1, pp: (399-402), Month: January - March 2015, Available at: www.researchpublish.com

II. BACKGROUND

With the early evolution of "stovepipe applications" (independent applications within or outside an enterprise for performing certain business functions e.g. HR, accounting, training, education, placement) , need for effective communication between these applications encountered. According to research firm Gartner, application integration accounts for approximately 35 percent of the total cost of application design, development and maintenance in an

enterprise. This paper proposes a layered architecture for different enterprises. The internal integration of applications within the organization is possible at Integration Layer. This is further followed by proposing a complete framework showing communication among these layers. The integration with external enterprises is proposed by exchanging messages over MOM. The sequence of message exchanges is well explained in Sequence diagram. With MOM different enterprises (three organizations discussed in example below) communicate either synchronously or asynchronously. The MOM communication is possible by employing SOA as web services architecture.

III. SYSTEM ARCHITECTURE USED

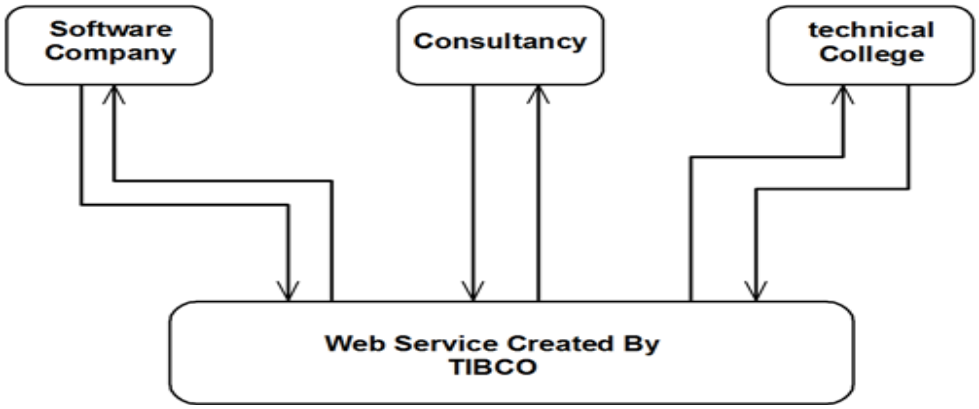

Fig 1 System Architecture

From a software engineering Standpoint, SOA is a IT Architecture based on the delivery of well-defined reusable business services that are implemented by IT Components in such a way that the providers and the consumers are loosely coupled. This greatly minimizes the impact of Change. SOA provides platform independence enabling Components to be implemented in different Platforms technologies & languages.

This provides great flexibility for assembling new solution from exciting one regardless of which platform it is and where it is located. It is important to note that SOA is not a technology it is Architectural approach to software Design

IV. PROPOSED EXAMPLE

We consider three organizations i.e.

1) A consultancy agency,

2) II. Software Company , and

3) III. A Technical University.

Now our motto is to achieve a scenario where these three organizations work as a whole. The various aspects of each of these organizations are as follows:

Organization A. (Software Company) Aspects: Project designing, development and maintenance, payroll, onboard training, administration, HR and Recruitment.

Organization B. (Consultancy Firm) Aspects: outsourcing, consulting, training, education, tech support, interview scheduling and conduct.

Organization C. (A Technical University) Aspects:

ISSN 2348-1196 (print)
International Journal of Computer Science and Information Technology Research ISSN 2348-120X (online)
Vol. 3, Issue 1, pp: (399-402), Month: January - March 2015, Available at: www.researchpublish.com

Student-admission, course conduct, result, mock test and placement.

The inter enterprise integration (interoperability) is possible when these three organizations obtain services of each other in such a way that it perceives as if they are working as a whole. For example, the software company wishes to concentrate more on the design, deploy and maintenance of software products and it obtain the recruitment services provided by the consultancy firm whenever it needs some employees. It does this just by sending its requirement messages to the consultancy firm. Now the consultancy firm communicates with the technical university and collects the information about the students who have completed their courses and seeking for placement.

The consultancy firm schedules interviews, prepares online/screening test and recruit the employees and communicates the same to the software company. The three organizations communicate to each other by passing messages over Message Oriented Middleware using SOA.

This way the three organizations work as a whole but the employee requirement, recruitment and placement are three stovepipe applications that are distributed in a heterogeneous environment.

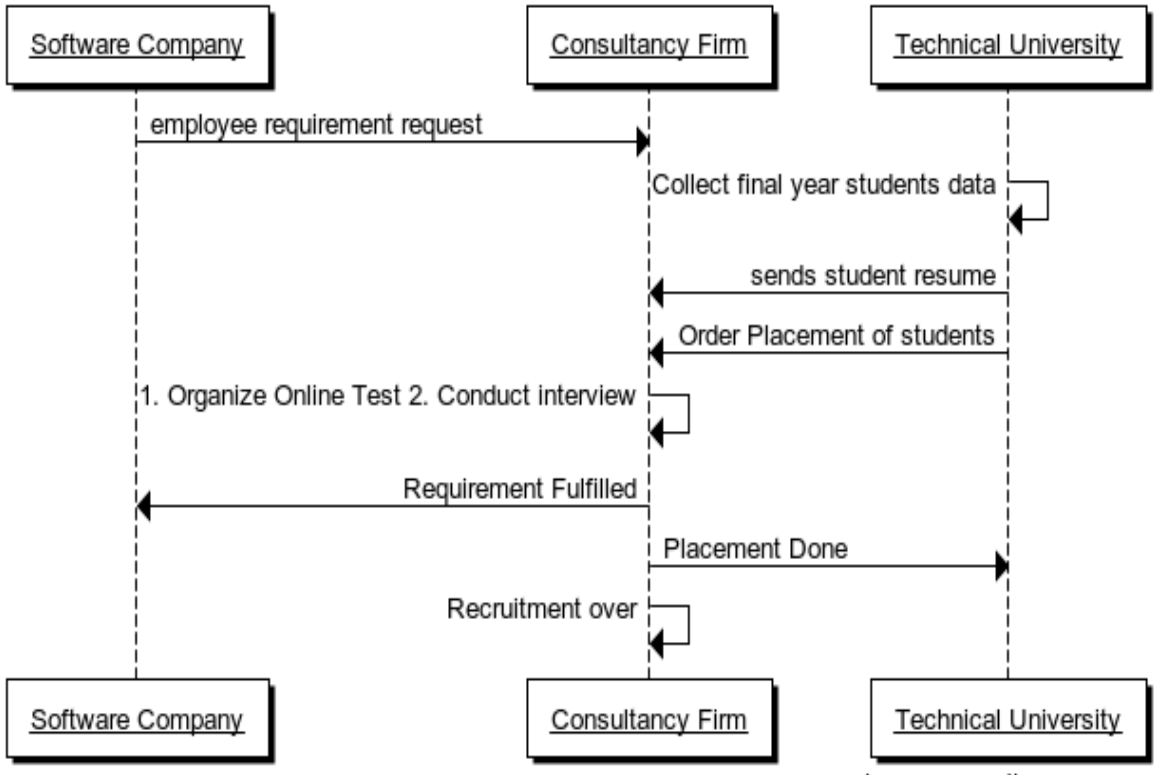

Fig 1 Sequence Diagram

V. FUTURE SCOPE

This is the initial phase of Enterprise Application Integration with Service Oriented Architecture. As a future work we have to continue designing EAI architecture with Aspect Oriented Software Development. Further we wish to compare the EAI (SOA) based Architecture with EAI (AOP) architecture

VI. CONCLUSION

Enterprise Application integration among systems available in heterogeneous distributed environment poses a great challenge. Middleware provides a critical link between diverse resources and applications that follow standard protocols. The call for IT and business systems to communicate within an organization resulted in evolution of EAI.

EAI can be of many types depending on the size of organization. The proposed application architecture describes layered representation for internal integration and uses MOM for integration of applications within the enterprise and with other enterprises.

REFERENCES

[1] William A. Ruh. Enterprise Application Integration. A. Wiley Tech Brief. 2001.

[2] Liu Jing Yong, Zhang LiChen, Zhong Yong and Chen Yong. Middleware-based Distributed System Software Process. International Journal of Advanced Science and Technology, Volume 13, 2009.

[3] Philip A. Bernstein. Middleware: a model for Distributed System Services. Communications of the ACM. pages 86-98, 1996.

[4] Alessio Gugliotta and John Domingue, Liliana Cabral and Vito Roberto, Mary Rowlatt and Rob Davies. A Semantic Web Service-based Architecture for the Interoperability of E-government Services. Proceeding of the International Workshop on Web Information Systems Modeling. 2005.

[5] David E. Bakken, Richard E. Scantz, Richard D.Tucker. Smart Grid Communications: Qos Stovepipes or Qos Interoperability? http://www.gridwiseac.org/pdfs/forum_papers09/bakken.pdf

[6] Krakowiak, Sacha. "What's middleware?". ObjectWeb.org. http://middleware.objectweb.org/.

[7] David Linthicum.What are EAI tools? How are they used to build a middleware? (part1) http://searchsoa.techtarget.com.