Extending the Enterprise Using Enterprise Application Integration (EAI) Technologies for the Cloud

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ABSTRACT

It is widely understood that Information Technology (IT) and Information Systems (IS) provide great benefits in improving visibility of supply and value chains within and across organizations. One method to achieve this has been to integrate Enterprise Resource Planning (ERP) systems with web-based and other technologies using EAI technologies. This article seeks to study EAI technologies with reference to the SaaS model of cloud computing. It also gives an example of how EAI can be made functional across the enterprise even with applications having different platforms, technologies and programming languages. The advantages, disadvantages and issues of EAI applications are listed.

KEYWORDS

Cloud Computing, Enterprise Architecture Integration, ERP, Information Technology, SaaS Applications

INTRODUCTION

Over the years, Enterprise Resource Planning (ERP) systems have emerged as systems that enable enterprises to handle their core business process data as well as information concerned across the organization (Rao 2000). These systems were originally designed and implemented in order to solve fragmentation of information in large businesses and integrate intra- and inter organizational information flow.

It is widely understood and implied that organizations can no longer compete effectively without suppliers and customers. So, as a consequence, organizations are interacting and supporting their supply chains in order to get competitive edge using such integrations. The feature of extending the importance of supply chain based on ERP and web portals has extended the reach of IT/IS enterprises. B2B platform architectures fulfil this aim through providing communication using messaging, and automation of business processes through information-brokerage techniques.

These days, the traditional management approach has been replaced by modern techniques. Systems approach is used to solve problems of the organization. The short-comings of ERP has made organizations search for different solutions. Enterprise Application Integration (EAI) emerges as a solution here. So, it is imperative that ERP and EAI be analyzed in a comparative manner. The evolution process of ERP is studied structurally and then, given the factors in evolution of ERP and EAI, both of the two systems are analyzed. The systems-thinking and systems approach is also discussed.

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Systems-thinking and systems approach is structured by “evaluating the system as a set of process” as a principle, “study the system behavior while implementing appropriate policies” as a purpose and lastly “conceptualizing the system” as a method (Erkut, 1989). In order that an organization achieves its target, the rational design and management of business processes are required. The most critical part of such a structure is ensuring “integration” of entire organization on basis of processes.

The tools available for integration have become common due to advent of client server technology and improved relational data management tools. The commercial expansion saw emergence of other applications such as Customer Relationship Management (CRM) and Supply Chain Management (SCM) solutions which should be tightly coupled across the organization.

Disadvantages of ERP

The main disadvantage of ERP is that business process re-engineering cost may be extremely high. ERP may have too many features and modules which confuses the user. The user also has to consider middleware “add on” features and extended modules such as SCM and CRM. So, the integration issue is far from being resolved. EAI technology has been devised in order to overcome this current issue.

Introducing EAI

EAI is developed as an advanced type of middleware which allows a high level of integration. EAI generally increases the flexibility of an enterprise’s information system and thus extends the life cycle of many corporate applications. EAI enables exchange of information, which results in more efficiency and flexibility in delivery of services.

EAI involves linking applications whether purchased or in-house. It is the process of integrating various applications with differences in execution environment, programming languages and operation policies. EAI is soluble glue for modular corporations (Gable, 2002). EAI requires smart business design, which may not be able to be envisioned with the help of a consulting firm. So this requires expert knowledge. EAI enables process automation. It can streamline processes that include data/activity from multiple software applications. For example, data from a CRM can be integrated with an email marketing platform to deliver messages to customers based on their behavior or demographics. Effort could then be coupled with an analytics package to measure the success of this email campaign.

Types of EAI

EAI can be performed on the following different levels, that is, Data-Level EAI, Application-Level EAI, Method-Level EAI and User Interface Level EAI:

1. **Data Level EAI**: Data Level EAI is about data integration which is used in a typical EAI-enabled enterprise. This data is moved from one data source to another and processes the information. There is no code change in the process;
2. **Application Level EAI**: The business process and data are retrieved through the interfaces. Application is developed as a bundle. Business logic and data are shared. A compulsory requirement is that application interfaces must have specific features and functions. So, the EAI is mainly used in packaged solutions. Message brokers are preferred as alternative solutions;
3. **Method Level EAI**: This shares business logic. A method can be accessed by various applications and application can even access each other’s method. It can be achieved using distributed objects, application servers, transaction processing monitors, frameworks and existing applications. It is the process which has been used for a long period but has technological and human constraints;
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