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A Study on Innovative Approaches of the Use of Technology for Development of E -Commerce

Prof. Apurv Pathak and Shaikh Shaina Ajmat
Jai Bharat College of Commerce (Night), Mumbai, Maharashtra, India

Abstract: *E-commerce has matured and become mainstream after several years of growth. However, in order to meet the new challenges, the e-commerce system of the future needs to move beyond the fundamental functions of a static website with an electronic catalog and/or a shopping cart and toward a commerce system that is intelligent, dynamic, and secure. In order to share information and get the most out of their investments and opportunities, businesses anticipate having an efficient information system and streamlining their business processes. The goal of this research project is to investigate the upcoming technologies that have the potential to address these problems, such as information sharing and system integration. Application services, web services, grid computing, and their combinations are among the introduced new technologies. We talk about the possible factors that encourage businesses to use e-commerce. Businesses will definitely be able to make more strategic decisions with the help of knowledge of these new technology trends, which will help them be more competitive and sustainable.*

Keywords: Application Service, Web Service, Grid Service, and Service-Oriented Architecture: Emerging Technology Trends

I. INTRODUCTION

It is now the age of a toddler (Johnson, 2005). E-commerce generated $6,790 billion in revenue worldwide in 2004, according to Forrester Research's data. According to Jupiter Research, a research and analysis firm (Business Wire, January 17, 2007), online retail sales in the United States will increase by 16% in 2007 to reach $116 billion. US online retail will expand at a CAGR of 11% over the next five years, reaching $171 billion in 2011. These figures certainly suggest that e-commerce has matured and entered mainstream usage. However, researchers and practitioners in the business world discovered that a number of obstacles impede the growth of e-commerce and harm businesses' revenue. First, the low level of customer confidence results in a low conversion rate. The number of visitors who become actual customers is known as the conversion rate. According to Yen 2005, the top 100 retailers' average sales conversion rate is 4.9 percent, according to a recent Neilsen/NetRatings survey. This rate is less than 1% for many new businesses. Second, e-commerce security is a significant issue. According to the Javelin Strategy & Research Survey (2007), the total amount of fraud committed in the United States in 2006 was $55.7 billion, with an average fraud amount of $6,278 per victim. In fact, computer attacks and incidents are growing at an exponential rate. Thirdly, E-commerce has a high operating cost. Information sharing and capturing are becoming the information flow bottleneck in today's e-commerce. According to Marianville and Brown (2006), businesses need to share information with their customers, suppliers, and distributors and automate business processes in stores and across the enterprise.

2. Information technologies and information systems are currently viewed more as services than products. The capability to make a remote call is referred to as a "service," particularly in client/server architecture. Software can be hosted remotely on an application server using web and Internet technology, and clients can use a web browser to call it as a service. The way software applications are designed, architected, delivered, and consumed is changing as a result of this information service concept, business integration requirements, and distributed computing technology. A number of layers make up the hierarchical structure of an information service. It could be individual applications or software components. Application services are one of the newer technologies in service-oriented computing.

While still meeting self-information requirements, the ASP model basically enables businesses to delegate the implementation or deployment of systems to an outside vendor. It effectively manages deployment costs and risks while reducing the complexity of the traditional make-or-buy model. An ASP can, on the one hand, spread out costs

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across its entire clientele, allowing it to increase service quality, security, and risk mitigation measures that individual clients may find prohibitive. Client organizations, on the other hand, do not have to pay for the costs of traditional software implementation, such as licensing fees, hardware investments, staffing, and system administration training. They avoid the need to sign a contract with a technical support group, data backups every night, software updates every month, data loss due to server or local hard drive failure, and more. They can concentrate on their core businesses and free up resources for applications that are absolutely necessary by not having to manage software, hardware, personnel, information, or anything else. Applications can be up and running in a matter of weeks rather than months or even years by eliminating the need to evaluate, purchase, deploy, and test hardware and software. Salesforce.com is a good example of a successful ASP. They offer tools for customer relationship management.

As long as the outsourcing of labor and capital continues, software application outsourcing across the Internet will also become a major trend. The fundamental concepts of virtualization and "on-demand rent" give the ASP model a compelling advantage, despite its difficult start. 6 Web Services Web Services are the most promising technology at the moment and have received a lot of attention since 2003. Enterprise software companies that do not see software as a service (SaaS) may not survive in a market that is becoming increasingly competitive (Miranda, 2005).

3. Web Services, in contrast to ASP, which provides the entire system or application as a service, offer components for use. There is no user interface for these parts. System or application programming interface (API) is what they have instead. There is a network-addressable interface for a service. Web Services emphasize interoperability and can be dynamically discovered and used because they are small, independent components of applications that represent business functions or services and can be accessed remotely by another program.

Typically, a Web Service must complete a transaction in four steps:

1) A proxy class instance is created when the Web page on Web Server A is accessed.

2) The proxy class marshals the list of parameters and sends an HTTP request to the Web Service on Web Server B.

3) The Web Service then runs the method, marshals the output parameters, and unmarshals the incoming parameters. An HTTP response is sent back with these.

4) The proxy class returns the result to the web page after unmarshaling the return parameters.

Web services technology is emerging as a promising infrastructure for supporting distributed, heterogeneous, and dynamic, loosely coupled Internet-based applications. It has been anticipated as a significant development in application integration and development. Web services are ideal for integrating even completely disparate systems because they use the XML-based SOAP protocol and do not require any operating system. As a result, Web services technology offers a process-centric, standards-based framework for sharing distributed, heterogeneous applications. Through standardized interfaces, it enables pre-built applications and application components wrapped as web services to interact with one another and form larger application systems.

While Web Services technology offers a promising foundation for the creation of distributed applications for e-business, many issues must be resolved before Web Services can be fully utilized. For instance, cooperations among business associations need to follow the strategies, guidelines, security and other business rules of the associations: How can rule and business event management be integrated with Web Services? How can the current understanding of the Web Service business context and the Web Service infrastructure be reconciled? How to use the Web Service effectively can also be a problem due to the wide range of business domains it covers and possible complex issues. What additional features must be implemented in order for this paradigm to be truly useful in the real world? Last, a significant disadvantage of existing Web Administration approaches is the missing security shows

4. Grid computing dynamically manages network, computing, and storage resources to automatically support business processes across the IT infrastructure, just like an electric power grid does. According to Carlino, Gore, Venturini, and Warner (2006), despite the fact that it has been a popular tool in academia for a number of years, its popularity in industry has recently increased. An organization can use grid computing to turn its distributed, difficult-to-manage systems into a large virtual computer that can take on tasks and issues that a single computer can't handle effectively.

Grid computing is intended to provide access to the following primary resources: Power for computing and processing Networked file systems and data storage Transmissions and bandwidth Software for applications. The quality of service (QoS) requirements of the user are taken into consideration when allocating these information resources.

Grid computing offers the following advantages:

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1) a lower total ownership cost (TCO);
2) consolidated computing, data, and storage resources and increased their efficiency;
3) the development of virtual organizations for data and application sharing.

The widespread use of grid computing is hampered by a number of technical and non-technical obstacles, despite the significant advantages it offers, such as decreased costs and increased performance. The following are the top non-technical barriers to Grid computing (listed as "high" or "very high"): perceived lack of authority or access to resources (44 percent); 40 percent of the perceived dangers associated with enterprise-wide deployment; perceived reduction or loss of budget funds Businesses will need time to comprehend and adopt Grid computing, just like with any other technology.

5.Service-oriented architecture (SOA) is a new application development and integration methodology that effectively addresses these issues. In order to gain internal support, individuals need to be educated at all levels of an organization, from the IT manager to the CEO, about the business benefits of Grid computing. Business Process Management and Enterprise Application Integration (BPM/EAI) platforms have incorporated SOA, which is technically based on XML and Web Services technologies.

There are a number of notable advantages to SOA. First, organizations can use the same architecture to extend the SOA outside of the enterprise to connect with suppliers and customers and facilitate collaboration with other systems. Instead of creating point-to-point connections, they can use SOA to establish a single connection to each vendor or customer organization. The rest of the system would not be affected if one organization altered the internal processing of a particular function so long as the published programming interface remained unchanged. As a result, entry and exit costs will be significantly reduced. Second, SOA makes maintenance and operation easier. Instead of requiring hundreds of custom bridges for each new application or process change, SOA only requires one integration point for each. A software bus allows new systems and platforms to be connected to all of the other systems on the bus at once. According to Themistocleous & Chen (2004), SOA can also be used to integrate middleware islands and capitalize on existing EAI investments.

IBM specialists summarize the advantages of implementing a SOA (Channabasavaiah et al.). 2003) in these ways:

• Utilize existing assets: Using a suitable SOA framework, a business service can be constructed as an amalgamation of existing components and made available to the company. Knowing the name and interface of this new service is all that is needed to use it. The complexity of the data flow through the service's components and the service's internals are hidden from the outside world. This part secrecy allows associations to use current ventures, building administrations from a mixture of parts based on various machines, running different working frameworks, and created in various programming dialects.

• Infrastructure, a commodity – Infrastructure development and deployment will become more consistent across all enterprise applications. Legacy systems can be encapsulated and accessed through Web Service interfaces. Within a clearly defined SOA framework, existing components, newly developed components, and components purchased from vendors can be consolidated.

• The underlying infrastructure will begin to be considered more of a commodity element as a result of this aggregation of components being deployed as services on the existing infrastructure. Organizational Web Services libraries will become the most important asset for businesses implementing the SOA framework. This will result in a shorter time to market. As new initiatives reuse existing services and components, reducing the amount of time required for design, development, testing, and deployment, using these Web Services libraries to build and deploy services will significantly shorten the time to market.

. Cost reduction: By adapting the SOA framework and the services library for both existing and new applications, the cost of enhancing and creating new services is greatly reduced as business demands change and new requirements are introduced. The development team's learning curve is also reduced.

. Risk mitigation: The risk of introducing new failures into the process of enhancing or creating new business services is decreased when existing components are reused.

. Continuous improvement of business processes is made possible by an SOA, which makes it possible to clearly represent process flows that are identified by the order in which particular business services' components are used. An

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ideal setting for monitoring business operations is provided by this. The business service reflects process modeling. The process is manipulated by rearranging the components in a pattern (components of a business service).

• Process-centric architecture: The models and procedures for architecture that are currently in use typically focus on the program. Programmers create applications for their own convenience. Process knowledge is frequently dispersed among components. The application lacks any granularity outside of it, much like a black box. Copying code, incorporating shared libraries, or inheriting objects are all necessary for reuse. The application is made for the process in an architecture that is focused on the process. Each step in the process is a business service, and the process is broken down into steps. Each service or component actually serves as a sub-application. In order to create a process flow that can meet the needs of the business, these sub-applications are linked together. Processes can make use of and reuse each sub-application across the organization thanks to this granularity.

6. Grid service -The primary objective of the OGSA is to provide a well-defined set of fundamental interfaces for the creation of Grid systems and applications that are interoperable. A service is a network-enabled entity that provides some capability through the exchange of messages. In OGSA, every resource, such as a computer, storage, and program, is represented by a service. While OGSA supports dynamically created and destroyed transient service instances, Web Services only support persistent service discovery and invocation. As a result, a Grid service is a WSDL-expressed Web service that may be temporary and is based on Grid protocols. In order to distinguish one instance of a service from another that provides the same interface, grid services maintain internal state.

II. CONCLUSION

In conclusion, we talked about ASP, Web Services, grid computing, OSA, and grid service in this paper. The goal of all of these new technologies is the same: managing complexity, making common languages possible through open industry standards, and growing your business by automating and virtualizing IT-based services are all possible. They are not restricted to one another. Instead, they work well together. First, most of the time, ASP offers big, complete applications that don't require much customization. The general public uses them. Web Administrations are little parts intended to take care of exceptional business issues. Although they have published programming interfaces with improved interoperability, advanced programming skills are required to integrate the service into applications.

Numerous factors influence which technology the company should adopt or purchase. There are numerous non-technical factors in addition to the technical ones discussed in the paper. In general, these factors are the most significant: support, budget, privacy, and safety of business leaders. Security is crucial in e-commerce for establishing trust and legal compliance. However, the credit card companies have not agreed on a common security strategy, which could delay the use of anti-fraud tools.

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