A STUDY ON SERVICE ORIENTED ARCHITECTURE IN ELECTRONIC PATIENT HEALTH RECORD SYSTEM

B.Sambath Kumar, Research Scholar,
Sathyabama University, Chennai, Tamil Nadu

Dr. S.S. Rau, Registrar, Research Guide,
Sathyabama University, Chennai, Tamil Nadu,
E-Mail: sam_kumar06@yahoo.co.in

ABSTRACT

An SOA environment enables system assets to be accessed across the organization, providing opportunities for sharing system capabilities that are currently isolated. In this paper we discuss about how to develop high-quality Service Oriented Architecture solutions for integrating healthcare processes to achieve the goals of reducing time and cost. It will help healthcare domain and healthcare IT professionals to realize their roles in an integrated and collaborated environment in developing and implementing SOA solutions.

KEYWORDS
SOA, loosely coupled, interoperability, web services

1.0 INTRODUCTION

Service-oriented architecture (SOA) is an evolution of distributed computing based on the request/reply design paradigm for synchronous and asynchronous applications. Web Services currently provide the main enabling technique for Service Oriented Architecture. The Web Service technique can function both as a middleware and a modeling and management tool for composed business processes.

Service-Oriented Architecture is a software architectural style that is employed for realizing and constructing business processes, which are composed of components as services. Service oriented technology could extend Information and Communication Technologies to provide various services require a large amount of data exchange. It also separates services into distinct units such as components or modules, which can be
deployed over the Internet, and can be combined to be re-used for new applications. Through the SOA platform, services could be delivered to end-users. SOA to enforce basics software architecture principles and provide interoperability between different computing platforms and applications that communicate with each other.

Service-Oriented Architecture (SOA) provides interfaces for common activities and interests such as medicine, lifestyle, traffic, education, and entertainment has also become one of the popular methods in different industries. Through the SOA platform, we could integrate individual providers into similar service processes. Modeling distinct business providers could provide services in the specific domain. The SOA is playing a major role to solve the problem of interoperability and specification level interoperability.

1.1 SOA IN HEALTHCARE

A healthcare organization that depends upon a single system across the entire enterprise to support various departmental and care delivery needs often already has a solution that shares and reuses system resources. SOA can help meet unfulfilled processing requirements without purchasing additional systems and can provide opportunities to standardize processing and data management. This means existing system capabilities increase in value as they are packaged and shared as services.

SOA enables standardized communication between healthcare providers, facilities, and insurers. Moreover, SOA facilities improved quality of care. Using the capabilities provided by SOA, the patient information system can automatically convey information to the various hospital systems required to admit and treat the patient. SOA can greatly reduce the complexity of integration between these systems to create a better patient experience. SOA can support to create a better patient experience. SOA can support the complex interactions between the hospital and insurance company’s claims and provide a mechanism to automatically authorize treatment.

**Implementation of SOA in Healthcare**

Data is synchronized between systems and system databases within and outside the organization; this data interface approach falls short of supporting data interoperability. Data processing and communication between processes involves multiple systems and redundant processing. To support the overall workflow, users must switch between several applications to complete a process. Systems must also be cleared of redundant data. With SOA, services are developed using existing system capabilities, as shown in Figure 1.
With SOA, system processing is organized and represented as a set of services. Each service is made available to the entire organization through a standard interface. All departments that maintain or access the same information use the same service, making any data and processing redundancies transparent to users. Applications supporting a specific workflow reference one or more services, and each service communicates with the systems to which it is related. Users no longer need to switch between systems to complete a workflow and data is naturally synchronized across processes and supporting systems. Orchestrated services aligned with user workflows enable true interoperability among the healthcare organization’s processes and people. To support compliance with the Health Insurance Portability and Accountability Act (HIPAA), organizations are increasing standard data communication with prayers. In addition, integration with other healthcare organizations is frequently required to support clinical workflow and healthcare information network HIN (Healthcare Intelligence Network) participation. An organization may integrate external services into its SOA solution to provide complete process interoperability. For example, when a patient for the entire community of care. Not only is the patient’s registration information synchronized, but this external communication is placed into the related workflow with little user impact, creating interoperability outside organization system boundaries.

SOA is the next step of system evolution. It builds upon previous architecture approaches while better addressing agility and effective reuse across and outside the organization. SOA provides true interoperability. Most healthcare organization have a large portfolio of system capabilities to be selected and packaged as services that are better focused and available across the entire organization. Organizations can shift their efforts from maintaining a complex data interface strategy to creating service-oriented applications that support interoperability while more closely aligning with healthcare processes. Throughout the remainder of this chapter we explore these themes of how true healthcare data interoperability through SOA can yield an industry transformation in healthcare.

1.2 TECHNOLOGIES USED IN SOA

WSDL (Web Service Description Language) is an XML language that describes a Web Service. A WSDL document describes the functionality a Web Service, How the web service communicates, Where the web service resides.
SOAP (Simple Object Access Protocol) is an XML protocol. It is used by client applications to communicate with Web services. SOAP is a simple, consistent, and extensible mechanism allowing a client application to send an XML message to any other application.

UDDI (Universal Description, Discovery & Integration) is a registry for web services. UDDI manages information about services and service providers.

1.3 Benefits of SOA in healthcare
Healthcare organizations can expect a host of benefits from adopting SOA for healthcare informatics, including:

- Achieve interoperability through standards and standard governance,
- An enterprise view that supports individual, implement new processes and initiatives faster,
- Lower total cost of ownership,
- Simplify the necessary complexity,
- A single view of operations

1.4 CONCLUSION
SOA architecture allows for entire functions of an Electronic Medical Record system or hospital’s processes to be outsourced and hosted in a shared data center and consumed as a utility. Using SOA techniques and technology, a healthcare IT organization can readily integrate internally hosted systems and technology directly alongside outsourced ones. The greatest opportunities for applying SOA to increase reuse and standardization are provided by those functions that are used across systems and organizations.

1.5 REFERENCES
2. Research on Distributed Architecture Based on SOA Hongqi Li, xiong-yi, 2009.
3. Research and Applications of SOA in b2b electronic commerce Li, xiong-yi 2009.
6. Design and implementation of Interoperable Medical Information System based on SOA Zhang Xiao-guang; Li Jing-song; Zhou Tian-shu; Yi-bing; Chen Yun-qi; Xue Wan-guo;Zhao Jun-ping, 2009.