Chapter 3.4

Mobile Service Oriented Architecture (MSOA) for Businesses in the Web 2.0 Era

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ABSTRACT

This chapter describes an approach to extending service oriented architecture (SOA) with mobile technologies (MT) resulting in what can be called mobile service oriented architecture (MSOA). Web services (WS) is a popular approach to business applications in the second Web generation (Web 2.0). Mobile technologies (MT) help people reach out and interact with each other anytime and anywhere, transcending time and location boundaries. MSOA brings together MT and WS to create opportunities for offering and consuming services over the wireless networks in Web 2.0 era and beyond. Furthermore, the intelligent convergence of mobile connectivity, network computing, open technology, open identity, and several such emerging technologies pave the way for newer and wider range of service-oriented business opportunities. The authors describe this MSOA model and an approach to its validation through an implementation framework in this chapter.

INTRODUCTION

Mobile Service-Oriented Architecture (MSOA) aims to apply the concept of Web Services (WS) to the rapidly emerging Web 2.0, 3.0 and beyond. Information and communication technologies (ICT), especially the Internet, are developing at a breathtaking speed. The Web, as known in the past, was a means of communicating messages. This mechanism of communication has now evolved into a means of business collaboration through software applications (Unhelkar, et.al, 2009), resulting in what can be understood as Web 2.0. Web 3.0, however, takes the ability of the web to execute applications even further; it deals with intelligent convergence of connectivity, network computing, open technology, open identity, and several such key emerging technologies.

We believe that these two key technologies, when converged, create tremendous opportunities for businesses to offer and consume services independent of location and time across a wide range of networks. This is so because:

- Mobile technologies (MT) include wireless networks, handheld devices and mechanisms to store and present contents to the users in a personalized manner, and
- Web Services (WS) enable services to be offered across the web by 'wrapping' them with commonly understood and standardized interfaces. WS focus on using information, processes and resources that result in an organization's ability to provide services across the Internet.

Together, the aforementioned two technologies enable businesses to execute complete business transactions (as against mere exchange of data and information through emails). This ability of remote execution of applications opens up opportunities for businesses to collaborate – resulting in them being a part of Web 2.0 and beyond. The Service Oriented Architecture (SOA), when extended with mobility, is of interest to the enterprise architects as well as the business leaders as there are many opportunities resulting from this combination of technologies that did not exist before.

MSOA provides the ability for convergence of land-based and mobile connectivity that utilizes the web beyond just a mean of communication. Extending SOA with mobility, as is argued in this chapter, should equip the modern business with ability to incorporate location and time independence in its service offerings. This 'mobility' will enable the business to create effective and personalized internal and external mobile business processes.

This chapter starts by outlining the research methodology. This is followed by a discussion on the various generations of the web, web services and the SOA. The research project is then divided into two parts: 1. The model of Mobile Service Oriented Architecture (MSOA) with web service. This initial modeling of MSOA is based on the literature review and research discussions. 2. The implementation framework for enabling such extension and incorporation of mobility in SOA. This

implementation framework is based on the case studies by interviewing experienced enterprise architects from the industries. However, the actual implementation of the framework is out of scope for this chapter. This chapter finally concludes with a summary of the MSOA and points out to the future direction of this research project.

RESEARCH METHODOLOGY

The selected methodology for this research is the qualitative research method. This qualitative approach is used to construct the initial model of MSOA and it is made up of literature review, case studies based on interviews and action research studies. The literature review is used to outline the various generations of the Web, understand the meaning of web services and also understand mobility. After the literature review is completed, the initial MSOA model is constructed primarily out of the ensuing research discussions and the initial experimentation. The case studies resulting from the interviews are able to verify the initial MSOA model and also help in creating a complete MSOA implementation framework. Three action research studies are planned for this research project and they will be conducted at the premises of the participated organization to study their MSOA implementations and thereby validating the results to the initial MSOA. First action research implementation methodology is used as an example of this chapter. Eventually, it is hoped, that the resultant MSOA model will be usable across any organization with reduced risks during its implementation.

WEB GENERATIONS

The Web has been continuously developing and changing. Murugesan (2007a) has discussed the Web's evolution- past, current and anticipated – which also fits in with the common understanding

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