Chapter XLVI
Extending Enterprise Architecture with Mobility

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ABSTRACT

The Enterprise Architecture (EA) brings together various business processes, technologies, standards, systems, and IT infrastructure of the organization. This chapter considers extending the EA with mobility so that it would facilitate easier implementation of applications that overcomes the boundaries of time and location. This extension of EA with mobility will result in a comprehensive Mobility Enterprise Architecture (M-EA) that will provide the business with advantages of real-time business processes, reduced costs, increased client satisfaction, and better control. This chapter outlines the M-EA framework, which is based on the literature review, initial modeling, and a case study carried out by the lead authors. Later, the framework is validated by another case study carried out at international software development organization. Further validation of the model is envisaged through action research in multinational organizations.

INTRODUCTION

A carefully thought out and implemented Enterprise Architecture (EA) provides the business with competitive advantage by opening up opportunities to streamline processes, reduce costs, increase customer satisfaction and enable thorough strategic planning (Lan and Unhelkar, 2005). Businesses can further advance these benefits by extending the EA with strategic incorporation of Mobile Technologies (MT) - including wireless networks and handheld devices – into their business plans. This is so because of the phenomenal impact of the "time and location" independence provided by mobile Technologies (Unhelkar, 2006; Barnes, 2002). Furthermore, mobility extends the ability of the organization to create dynamic interconnections, in real time, between various parts of its information networks. This ability to dynamically interconnect various parts of its data and information through mobility results in "correlations" that provide new insights to the organization's decision makers and enhance their decision making. Thus, a Mobile Enterprise Architecture (M-EA), through location-independence, provides greater opportunities for

business information systems to create these dynamic correlations, resulting in greater business advantage than information exchanges over land-based Internet and other communication mechanisms. Thus, the objective of this chapter is to outline a comprehensive framework for incorporation of mobile technologies in an organization's Enterprise Architecture that would provide it with competitive advantage. This framework is based on the literature review and initial modeling carried out by the lead author at the Mobile Internet Research and Applications Group (MIRAG) at the University of Western Sydney. Later, the framework is validated by case studies and action research in multinational organizations. Initial findings suggests an "all encompassing" approach to MEA in business that considers the business processes as well as the social aspects of mobile technologies, is likely to ensure greater success, as against a pure technical approach.

BACKGROUND TO RESEARCH

Information Technology (IT) growth is substantiated by the large number of infrastructures and products have been showing up in the market with ever-increasing frequency (Ramakrishnan et. al., 2006). However, in order to increase the ability of the enterprise to serve its customers and deal with its business partners in today's dynamic business environment, there is a need to integrate these products and services through a common EA (Linthicum, 2000). While EA has successfully managed to integrate these various technologies used by the enterprises (such as Internet-based application, reusable components, security and database components), enterprises are now seeking to capitalize on the MT. This has resulted in a need to further extend and integrate mobility into the EA. MT is a significant emerging technology that has the potential to influence various organizational applications (Unhelkar, 2005), in additional, impact EA as they are technologies without wires with the ability to communicate through a multiplicity of hand-held devices. The advantage of mobility comes from its ability to overcome "time and location" boundaries that would enable enterprises to operate effectively real-time respond to the ever-increasing changes on this competitive marketplace. The need, therefore, to have a comprehensive EA that would enable delivery of services to the "location independent" market has grown. Along with that need is the need to have a formal process to incorporate and extend the EA with mobility. This chapter outlines the process of enabling such extension and incorporation of mobility in EA.

ENTERPRISE ARCHITECTURE OVERVIEW

Enterprise Architecture Background

In order to increase liveliness in today's dynamic business environment, enterprise needs to integrate their business processes, systems, databases, human resources, infrastructures and technologies together. This integration of various aspects of an enterprise results in what is known as Enterprise Architecture (EA). Kamogawa and Okada (2004) state that EA should integrate these various systems such as Supply Chain Management (SCM) system, Customer Relationship Management (CRM) system, and Enterprise Resource Planning (ERP) system. The overall EA comprises software systems that may have been created using different programming languages, databases, and may be operating on different technology platforms. Ross et. al. (2006) and Cook (1996) all state EA allows integration and coordination across whole enterprise, including internal and external enterprise. So, in Fig. 1 this research extends the original idea to integrate not only IS, but also the people, data, processes, applications, platforms, and middleware all should be integrated into EA. This integration makes EA could provide best solution of internal enterprise. Additionally, applications of other businesses, which are external enterprise users, include the customers, partners, suppliers, or all members in a supply chain should be enabling to see a unified view of the EA as well. This internal and external enterprise architecture integration is the blueprint solution for different generation information systems that already exist and / or future applications coordination.

Enterprise Architecture Definition

Enterprise Architecture represents the enterprise's key business system, information/ data, application, technology strategies and their impact on business processes also the users. META Group Inc. (2006) and VITA (2006) both demonstrate that EA consists of four key components, which are: Enterprise Business Architecture (EBA), Enterprise Information