Chapter 9
Mobile Enterprise Architecture Framework

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ABSTRACT

The Mobile Enterprise is a new form of enterprise in the contemporary mobile era. Although several well-known enterprise architecture frameworks are used by enterprises, it is apparent that there is no industry standard available to enable an enterprise to transform its business processes to incorporate mobile technologies to advantage. This paper presents a conceptual Mobile Enterprise Architecture Framework and supporting methodology and process model which can aid enterprise decision makers to evaluate the business values, and analyze the risks and other critical business and technical factors for enterprise mobile initiatives and mobile transitions. The framework covers both the enterprise and mobile enterprise architecture domains that represent the Enterprise, Business, and Mobile Adoption levels. The goal at the Enterprise Level is to obtain a mobile enterprise and the technologies adopted at the Mobile Adoption Level are the different mobile technologies to be incorporated. Each level contains some important components impacting the mobile enterprise transformation. The methodology and process model cover the Strategy, Analysis, Design, Implementation, and Maintenance stages for each mobile initiative, and were validated in a research project against some Ontario Government mobile initiatives.

INTRODUCTION

With a myriad of mobile technologies emerging in what is called the mobile era enterprises have interesting opportunities for innovation, but at the same time are facing huge challenges similar to those experienced at the beginning of the Internet era. The Mobile Enterprise (ME), a new form of enterprise, is any enterprise whose employees are integrated with business processes on a continuous basis from any location inside or outside the enterprise facilities (Dulaney, 2003). The adoption and implementation of emerging mobile technologies is a more recent enterprise trend (Fenn and Linden, 2004; Kalakota and Robinson, 2002). There is limited research on the
impacts, values, and best practices of MEs. Most research has focused on the enablers and drivers of mobile technologies in enterprises (Dulaney 2003; Ferguson and Pike 2001; Steenkamp and Li, 2006). Others have examined potential mobile application areas (Varshney and Vetter, 2001; Chen and Skelton, 2005). Mobile Enterprise Architecture (MEA) research is limited to separate aspects, such as the mobile application architecture (Lee et al., 2004; Wireless Center, 2008), the mobile data architecture, the mobile infrastructure, and the mobile security architecture (Chen et al., 2006).

The use of a conceptual Enterprise Architecture (EA) and EA framework at the Enterprise Level is a recent trend. The EA is a comprehensive framework used to manage and align an enterprise’s business and management processes, information technology (IT) software and hardware, local and wide area networks, people, operations and projects with the enterprise’s overall strategy. Based on a survey from the Institute for Enterprise Architecture Developments (Schekkerman, 2005), the responsibility of the EA is shifting from that of IT management to business management. Current enterprises use different architecture(s) within enterprise architecture practices revealed by the survey results:

- Enterprise Architecture (15%);
- Business Architecture (10%);
- Information Architecture (13%);
- Information-Systems Architecture (14%);
- Technology Infrastructure Architecture (15%);
- Security Architecture (15%);
- Governance Architecture (7%);
- Software Architecture (11%);

The complexity inherent in the functioning of the contemporary enterprise has impacted the way the enterprise system and its architectures are conceptualized (Feurer et al., 2001). The findings above indicate that enterprises are using different architectures for their specific business needs. The different types of architectures used in the enterprises represent different points in the continuum of architectures (The Open Group, 2009) and are not fixed stages in a process. The continuum of architectures illustrates how architectures are developed across a continuum ranging from foundational architectures, through common systems architectures, and industry-specific architectures, to an enterprise’s own individual architectures, and represents a progression, which occurs at several levels:

- Logical to physical;
- Horizontal (IT technology focused) to vertical (business focused);
- Generalization to specialization;
- Taxonomy to complete and specific architecture specification;

An EA is very relevant to the IT customer community, since it describes and guides the final deployment of user-written or third-party components. Such systems constitute effective solutions for a particular enterprise, or enterprises that have a need to share information. The EA guides the final customization of the solution, and has the following characteristics:

- Provides a means to communicate and manage the IT environment;
- Reflects requirements specific to a particular enterprise;
- Defines building blocks specific to a particular enterprise;
- Contains organization-specific physical data, applications, and process models, as well as business rules;
- Provides a means to encourage implementation of appropriate IT systems to meet business needs;
- Provides the criteria to measure and select appropriate products, solutions, and services;