Chapter 18
Collaborative Enterprise Architecture Design and Development with a Semantic Collaboration Tool

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ABSTRACT

The design and evolution of an enterprise architecture (EA) is a challenging and complex task. A participative approach to collaborative EA management is needed to support the collaboration of all individuals involved in the process of EA design and evolution. This article presents our concept of a semantic collaboration tool for collaborative EA management. This includes the concept of a semantic, Wiki-like collaboration tool for collaborative EA management and an EA ontology as a formal representation of the EA. Additionally, the prototypical implementation of the semantic collaboration environment and its architecture are described and the benefits of the approach discussed.

INTRODUCTION

Enterprise architecture (EA) management is widely accepted as an essential instrument for ensuring an enterprise's agility, consistency, compliance, and efficiency, and is especially used as a basis for a continually aligned steering of IT and business (IT business alignment) (Bucher, Fischer, Kurpjuweit, & Winter, 2006; Ross, Weill, & Robertson, 2006; Wagter, van den Berg, & Luijpers, 2005). EA management is the field of managing whole EAs as well as the artifacts that constitute EAs.

While an EA model represents an enterprise's as-is or to-be architecture (Rood, 1994; Lankhorst, 2005), an EA framework provides meta-model(s) for EA description and method(s) for EA design, development, use, and evolution (Open Group, 2003; Schekkerman, 2004).

Nevertheless, the design and evolution of an EA is still a challenging and complex task (CIO Council, 2001; Lankhorst, 2005). It is a cost-intensive and time-consuming process, especially in large-scale enterprises with numerous, spatially distributed locations. It consists of many participants responsible for different kinds of information for different parts of the EA using different methods and tools for information gathering. Different business functions (data owners) provide information required for the divergent needs of various stakeholders with different interests. Structuring such a process is difficult due to the involvement of many stakeholders from different business functions and cultures, thus resulting in increased communication and coordination efforts for all involved.

Our goal is the design of a collaboration environment to support the collaboration of all individuals involved in the process of EA design and evolution. In particular, it must be possible for a large and spatially located group of individuals to gather information about EA collaboratively and with minimal effort. Furthermore, information gathering for EA management must be possible without having to plan and structure this process in advance. Our approach to achieve this goal of a participative EA management is a semantic, Wiki-like collaboration environment. This is a solution based on the concept of the Semantic Web and the paradigm of Web-2.0 (e.g., user-generated content, participation, collective intelligence). This semantic collaboration tool allows the combination of formal, semantic structuring of EA information (in an EA ontology) with informal, participative processes of gathering this EA information (supported by a Wiki-like collaboration environment).

This article presents the concept of a semantic collaboration tool for collaborative EA management. An EA management application scenario is presented to further characterize the problem and to derive requirements on a collaboration environment supporting collaborative gathering and maintenance of EA information. Based on this scenario, the approach is presented to include the concept of a semantic, Wiki-like collaboration tool for collaborative EA management and an EA ontology as a formal representation of EA. Additionally, the prototypical implementation of the semantic collaboration environment is described and the benefits of the approach are discussed.

EA APPLICATION SCENARIO

A large number of methods for EA management has been developed by academia and practitioners (e.g., Aziz, Obitz, Modi, & Sarkar, 2005, 2006; Bittler & Kreizmann, 2005; CIO Council, 2001; DoDAF, 2007; IFIP-IFAC, 1999; Open Group, 2003). These methods usually distinguish between the following EA management processes as a life-cycle model of the EA: (a) strategic architecture visioning and definition, (b) EA development, (c) EA use, and (d) EA maintenance (see Figure 1). Almost all of these methods pay little attention to specifying information-gathering procedures for EA model data in detail—especially during EA development and use (Jonkers et al., 2006).

Figure 1. EA management processes (EA lifecycle)
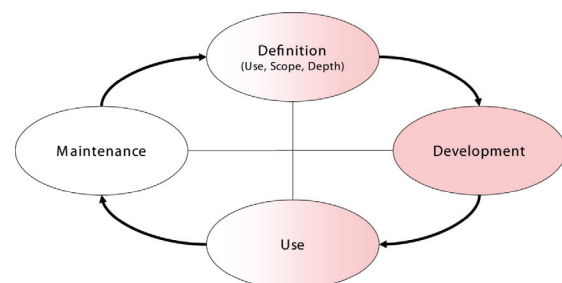
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