

Chapter 11

Linking Business and Application Architectures

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ABSTRACT

The development of an IT strategy and ensuring that it is the best possible one for business is a key problem many organizations face. This problem is that of linking business architecture to IT architecture in general and application architecture specifically. Without this linkage it is difficult to manage the changes needed by the business and maximize the benefits from the information technology (IT) investments. Linking the two domains requires defining the two architectures using a “common language.” While the application architecture domain has developed tools and processes to define and represent the architecture, the business architecture domain, however, lacks such processes and tools to be useful for linking of the two. The chapter addresses several questions dealing with the linking of the business and the application architectures. The author proposes to use category theory related constructs and notions to represent the business and information architecture and the linkages.

INTRODUCTION

How do we ensure that an IT strategy developed is the best possible one for business? This is a question that many organizations face and there is no clear cut process or approach defined to address this question. The problem is that of linking business architecture to IT architecture in general and application architecture specifically. This problem is very apparent when organizations go through mergers, acquisitions and reorganization.

Without this linkage it is difficult to manage the changes needed by the business and maximize the benefits from the information technology (IT) investments. Linking the two domains require that we define the two architectures using a “common language.” The application architecture domain has developed tools and processes to define and represent the architecture, and use it to build the related processes and services. For example, IEEE Std. 1471-2000 (Architecture Description), ISO 15704:2000 (Requirements for enterprise-refer-

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ence architectures and methodologies), Zachman Framework (Zachman, 1987), TOGAF (The Open Group Architecture Framework) (OpenGroup, 2007).

However, the representation of the business architecture in a way that can be linked to the corresponding IT architecture has been a challenge for a long time.

We will address a number of questions dealing with the linking of the business and the application architectures. Specifically, how do we define business architecture (useful for linking)? What level of details we need to represent? What view of the information architecture we should use for linking? How do we represent both these architectures and what “language” should we use? We propose to use Category theory related constructs and notions to represent both the business and information architecture. We would, however, point out that this work is a preliminary step towards the formalization and we intend to strengthen the framework in subsequent research.

BACKGROUND

We first review the business architecture arena, followed by the application architecture. Next we look at what has been the progress when we try to link the business and application architectures. Our focus in this review is mainly on the processes and methodology to represent the business or application architecture. We follow the TOGAF definitions (OpenGroup, 2009) to describe what we mean by the terms business and application architecture. Business architecture describes the functional aspects of the business domain. It defines the business strategy, governance, organization, and key business processes. Application architecture represents individual application systems, their interactions and relationships to the core business processes (defined in the Business Architecture) and reflects the business goals of the organization.

While the business architecture has been recognized as a key element in the overall enterprise architecture, there have been no clear cut definitions and how to represent business architecture. Reviewing the literature on business architecture we see that capability is the key word that identifies with a specific element used in defining/specifying the architecture. TOGAF defines business capability as a synonym for a macro-level business function. In deriving the business architecture a business capability assessment is used to define what capabilities an organization will need to fulfill its business goals and business drivers. TOGAF however, does not prescribe any specific set of enterprise architecture deliverables and hence there is no prescription on how to represent the business capability or how to link the business architecture with application architecture, except that the former is an input to the later.

Forrester Research, (Cameron, 2007; Scott, 2010), analyzes capability maps and provides some insights into how these maps help address improving business and IT alignment. The specifics of how this tool can be used for the linkage with IT is further discussed in (Scott, 2010b) and Cullen, 2010). The capability map is defined as a model of the firm associating the business capabilities, processes, and functions required for business success with the IT resource that enables them. Business is characterized by the capabilities required for that business to accomplish its objectives. By identifying the IT resource with the capability in the definition, a path to linking the business architecture with application architecture also gets defined. The development of a capability map and its content varies with the type of industry (e.g. manufacturing, finance) and the maturity of the organization in using business architecture - consulting groups, government agencies, and private corporations.

In the business architecture overview by the Business Architecture Working Group (BAWG, 2011), the business capability is described as the primary business functions of an enterprise and

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