

# Chapter VI

## Business Process Modeling as a Blueprint for Enterprise Architecture

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### ABSTRACT

*For a successful study, design and development of the enterprise architecture, a thorough insight into the essence of the work and operation of an enterprise, is a crucial factor. As the well-known Zachman and other modern frameworks illustrate, enterprise processes and process modeling are one of the fundamental components of enterprise architecture for providing such an insight. Like building construction in which construction drawings or blueprints play crucial roles, enterprise process models are critical in developing enterprise architecture. Moreover, one may argue that the role of business process modeling in enterprise architecture is similar to the floor plan that defines the boundaries of a building to be constructed. Therefore, a suitable enterprise process modeling approach that could capture the essential operations and reflect the cross-enterprise (cross-departmental) processes is a needed component to complement enterprise architecture. In this chapter, authors study, discuss, and review the practical role of enterprise process modeling in enterprise architecture using a real life organization-based case study. Authors introduce a modeling methodology that captures essential activities not only within a process but also from the enterprise perspective where cross departmental or enterprise processes are represented.*

### INTRODUCTION

For developing business goals-oriented enterprise architecture, system designers need to seriously

focus on enterprise process perspective in such a task. This stand will not only allow organizations to achieve their business goals, but also enable them to better reconcile business and IT that

consumes millions of dollars invested into the enterprise IT infrastructure. In fact, enterprise architecture provides a high-level description and view of the primary resources of any enterprise (Anaya & Ortiz 2005). These primary resources include users (users), processes (business processes), and technology (hardware and software). However, the process or business process component of enterprise architecture represents the most central and fundamental, because it connects the other two resources (users and technology). Poor definition of business processes in an enterprise architecture leads to a number of problems such as “business and IT gap.”

A number of tools, techniques, and methodologies are developed to support enterprise business process modeling that could ensure a well-developed enterprise architecture that guarantees achievement of business goals. According to Dalal, Kamath, Kolarik, and Sivaraman (2004), among multiple tools are data flow diagrams (DFDs), integration definition for function modeling (IDEF0), and activity diagrams in the unified modeling language that all have their roots in process modeling for software development. Similarly, a number of methodologies for enterprise business process modeling were developed, each taking a different philosophical stand such as organizational semiotics by Stamper (1988, 1997) and DEMO (Design & Engineering Methodology for Organizations) methodology by Dietz (2006). In this chapter, we use the language action perspective paradigm supported by a rigorous modeling technique based on Petri nets. The methodology is illustrated on a case study conducted in a small enterprise. Petri nets have been tested and used in enterprise process modeling and workflow management by many authors (van der Aalst & van Hee, 2002; Deiters, 1998; Jensen, 1997a, 1997b); however, in this chapter we discuss application of Petri nets based on the language action perspective. The main motive on using and adopting Petri nets in enterprise business process

modeling is their capability to model and analyze concurrency, choice, asynchronous completion, as well as their ability to visualize and simulate the modeled process. The type of Petri net introduced in this chapter is based on the language action perspective, or more precisely, on the transaction concept introduced in Dietz (1999).

The transaction concept provides a transparent insight into the essence of enterprise processing irrespective of its realization or technical aspects. The concept is based on the notion that an enterprise is a network of business transactions that are exchanged daily while carrying out the mission of the enterprise and interacting with the environment (customers, partners).

The remainder of this chapter provides an introduction to Petri nets, the transaction concept, and its underlying paradigm—language action perspective. The proposed methodology is illustrated on a case study conducted in a small enterprise. For those readers not familiar with the language action perspective, the background section contains a brief overview of this framework.

## **Business Architecture**

The business architecture component (domain, level, or subset) of the enterprise architecture (EA) framework represents an essential component and, therefore, in all different EA Frameworks it is given an important emphasis. In the well-known Zachman framework for enterprise architecture, business architecture is identified as “business model.” In the open group architecture framework (TOGAF), which provides a comprehensive approach to the planning, design, implementation, and governance of enterprise information architecture, business architecture is called “business.” Within the TOGAF, there are four types of architecture that are commonly accepted as subsets of an overall enterprise architecture. These subsets or components are:

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