Chapter VII

Using Reference Models in Enterprise Architecture: An Example

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Abstract

This chapter presents a way to use reference models in enterprise architecture (EA) by (a) assessing and organising them into a structured repository using a generalised architecture framework (ISO15704:2000 Annex A) and (b) providing guidance for the selection of reference models that are suitable for specific EA tasks. A brief introduction to EA and current issues in using reference models in this domain is followed by sample mappings of several reference models from the company networks and virtual enterprises area onto the chosen framework. This is followed by a brief description of the meta-methodology guiding the selection of the reference models and by an example of reference model selection for a real situation. The chapter closes with reflections on improving reference models’ quality and conclusions on the usefulness of the framework and meta-methodology used to structure and select reference models for EA tasks.

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Introduction

The survival of a business nowadays depends essentially on its agility, that is, its capability to change (Goranson, 1998) in response to environmental factors such as suppliers, clients, prices, new business entrants, laws, and so forth. Thus, business analysis and architectural design, also known as enterprise engineering (EE), is always present, although often only in a tacit form. Note that within this chapter, enterprise architecture (EA) is used as a term synonymous to EE, although EA can also refer to the architecture of an enterprise as an artifact (hence the end result of the architectural design/re-design activities). Such differences will be emphasized in context where relevant.

Currently, EA as a discipline is still in its early phases. Although several EA research directions exist, the ontology of EA is not yet widely agreed upon. For example, current EA publications and advertised EA positions in the industry reflect a variety of perceptions about the meaning of EA and about the role of “enterprise architects” in an organisation. In addition, EA is not yet fully supported by established “school(s) of thought” espousing formal theoretical foundations and associated paradigms; as a result, the EA researcher needs to find “best matches” in paradigms and research methods from related disciplines, notably social sciences and IS.

Typically, the scope of EA cuts across several disciplines and requires significant resources. The success of EA projects typically depends on the maturity of the methods and models used and on the extent of knowledge capture and reuse. Knowledge management (to understand the current state of the business) and change management (to control business transition from current to future states) are presently main drivers of EA.

A comprehensive introduction to the EA discipline and research is beyond the scope of this chapter, whose focus is on illustrating the use of reference models in EA.

Creating and Using Reference Models in Enterprise Architecture

The reuse of EA knowledge can be achieved by identifying commonalities in enterprise models (EMs), grouping them accordingly and abstracting common features into partial enterprise models that act as a reference for all the models they represent. Here, the term “partial” suggests that the model obtained by abstraction is not necessarily a complete model of anything. Thus, a partial model needs to be detailed, specialised, instantiated and/or combined with other models in order to create a complete model. EA standards, such as ISO15704:2000 (ISO/TC184, 2000), use the terms partial enterprise models (PEMs) or reference enterprise models. For simplicity, in this chapter PEMs will be called “reference models” (RMs). RMs in EA can take various forms, such as fill-in templates or patterns (verified solutions to typical EA problems) and can be represented using several languages.

In the context of EA, RMs can perform several functions. Their main purpose is to speed up the modeling process by providing templates and thus avoiding the need to start from scratch every time an EM is needed (provided that a suitable enough RM exists for the EA task in question). An important aspect of using reference models for creating particular models of
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