

# Chapter 1

## Introduction

### 1.1 Background

This book has been created in an effort to develop a textbook for one of the key courses of a *Master of Enterprise Architecture* program. It is a first in a series of books needed to further underpin this Master's program with textbooks combining a sound theoretical base with practical insights, and has been authored in a close collaboration between industry and academia. In authoring this book, we have been driven primarily by the need for textbooks for the further professionalisation of enterprise architects as well as education of students aspiring to become enterprise architects. As such, the books needed for the *Master of Enterprise Architecture* program, will be targeted both at university students, as well as practitioners with a keen interest in gaining a thorough understanding of these fields.

In this book, we explore the concept of enterprise architecture. An enterprise is understood as comprising of at least business, human and technological aspects. To be more precise, we define enterprise as *a goal oriented cooperative to be implemented by people and means*. In creating, evolving and/or transforming enterprises, several challenges come to the fore on how to govern such changes. Enterprise architecture is an emerging means of governing these changes. The key drivers for this means therefore are the enabling of informed decision making on these changes, as well as ensuring compliance to these decisions.

This book aims to provide an overview of enterprise architecture including the process of creating, applying and maintaining it, while taking a fundamental view on the field of enterprise architecture. In doing this, we aspire to create an understanding of the mechanisms underlying enterprise architecture, as well of its role as a governance and decision making instrument bridging the gap between an enterprise's vision, strategy and change projects. This role is also taken as a starting point to explore the results that may be produced as part of an enterprise architecture, the process in which these are to be produced, and the role the architect will play in this process. As such, this book does not describe a specific method to develop an enterprise (IT) architecture [21, 35, 148], nor does it define a specific modelling language

for enterprise architecture [20, 78] or does it subscribe to a specific enterprise architecture framework [30, 45, 139, 154, 155]. As mentioned above, it rather aspires to offer the reader a fundamental way of thinking on enterprise architecture. The field of enterprise architecture still seems rather immature. While this book aspires to take a more fundamental view, we will quite regularly run into situations where insight from practitioners seems to make certain indications about, for example, the potential role/value of enterprise architecture, while scientific evidence is lacking. In this book we also not provide this much needed underpinning. This remains left as challenges to the scientific community. Such challenges will also be summarised in the final Chapter, where we list a range of research challenges that need to be addressed when maturing the field.

## 1.2 Outline of the book

In [Chapter 2](#) we start with an overall exploration of the motivations why enterprises turn to *enterprise architecture* to aid them in meeting modern day challenges. Developments such as globalisation, the fusion of business and IT, new technologies, the introduction of new business models and new regulations, occur at a higher pace than ever. This requires modern day enterprises to be able to adapt themselves swiftly to these changes. This puts a challenge on managers to make the right decisions at the right time for both short and longer term needs. The increasing complexity of the issues involved, as well as the growing diversity and heterogeneity of the concerns and stakes of the stakeholders involved, render pre-existing approaches less adequate. This calls for a new governance instrument, a call that is to be answered by the instrument of enterprise architecture. [Chapter 3](#) therefore continues by discussing enterprise architecture as a means to meet the needs discussed in [Chapter 2](#). It provides a historical perspective on enterprise architecture, followed by a discussion on the governance paradigm which will be used to underpin our definition of enterprise architecture. In addition to providing the definition of architecture as it will be used in this book, the core concepts of enterprise architecture will be discussed.

Equipped with this understanding, [Chapter 4](#) continues with a discussion of the results that can be produced when architecting an enterprise. In discussing these results we will distinguish several dimensions along which to classify and position them. Among these dimensions, we will distinguish between:

**Subject dimensions** – Dealing with the classification of the subject, relative to the enterprise being architected, with which the result is concerned (e.g. business, application, enterprise-wide, system specific, contextual, conceptual, logical, etc).

**Purpose dimensions** – Expressing the purposes for which the result is intended (e.g. analytical, collaborative, informative, decisive, etc).

**Form dimensions** – Concerned with the forms in which the result may occur (e.g. principles, patterns, graphical models, formal models, textual descriptions, informal sketches, implicit knowledge, attitudes, etc).

These dimensions will give rise to the so-called architecture frameworks, such as Zachman [155], TOGAF [139], RM-ODP [64], DYA [147] and IAF [30, 45]. The purpose dimension is elaborated in views and viewpoints for specific stakeholders [60].

In Chapter 5, we zoom in on the processes involved in creating, applying and maintaining enterprise architecture, covering such activities as:

- joint conceptualisation of problems, strategies or solutions,
- risk assessment and mitigation,
- decision making,
- assessing alternatives,
- transformation planning,
- offering guidance to development projects and
- ensuring compliance of development projects.

In addition to activities, as exemplified above, in which the process of architecting is *acted* out, we also discern *planning*, *learning* and *organising* activities. The planning activities involve the deliberate planning of which activities to undertake in the architecting process. Enterprise architecting is a continuous process involving the creation, modification, enforcement, application and dissemination of different results. This continuous process should be in sync with developments in the environment of the enterprise as well as developments internal to the enterprise, including both its strategy and its operational processes. We also stress the fact that there is no one-size-fits-all approach to architecting, and that a situational approach is needed. We will identify different approaches to architecting [119, 139, 148], but refrain from casting judgment on the relative quality of these approaches. Especially since enterprise architecting as a professional field is still rather in its infancy, there is a need for continuous *learning*. In other words, the activities involved in enterprise architecting should be scrutinized on their efficiency and effectiveness, and where possible, lessons learned should be recorded and taken into account in future situations. Combining the *acting*, *planning*, and *learning* activities leads to a *plan-act-learn* cycle. In order to get this *plan-act-learn* cycle operational, and keep it operational, an explicit architecture function must be implemented in the enterprise (*organise*).

As a next step, we turn our attention to the professionals who are responsible for the execution of the activities involved in enterprise architecting: *the architects*. Chapter 6 therefore focuses on the responsibilities of architects and the desired competencies. Based on some studies into the skills of architects [26, 90, 139], the *Architecture Skills Framework* from TOGAF [139], a survey conducted among Capgemini enterprise architects, as well as our experiences in teaching future enterprise architects, we will discuss the essential competencies that should ideally be exhibited by an architect and the responsibilities they should be willing to accept in doing their work.

Given the demanding needs on enterprise architecture, the discussions provided in this book, as well as day-to-day practices of enterprise architecting, one can only conclude that the field of enterprise architecting is far from mature. As a profession we are not yet able to aid organisations in solving their transformation problems in a repeatable and predictable fashion. To remedy this, several aspects of our field need further elaboration and even fundamental research. Before concluding this book, [Chapter 7](#) therefore discusses several research challenges that remain.

At the end of the ensuing Chapters we will include some *discussion statements*. These statements are by no means intended to be true or false, but rather aim to spark discussion. With these statements, we invite the readers of this book to reflect on these statements, in order to sharpen their opinion of, and understanding about, enterprise architecture.