Chapter 7
The IT Architecture Dimension

ABSTRACT
The main purpose of this chapter is to present some important aspects of a complementary domain of the concept of architecture: the Information Technology (IT) dimension of the enterprise, or its “IT architecture.” There are several ways to reveal the elements and importance of information and communication technologies (the application of computers and telecommunications equipment to store, retrieve, transmit, and manipulate data, often in the context of a business or other enterprise). A simple and straight description is offered by Englander (2009). Therefore, a proper understanding of the concept of IT architecture as a complement of the corporate dimension is what this chapter is about.

1. INTRODUCTION
In Section 2 the main concern is related to the first dimension of the AGG model (the architecture realm) proposed by this book. Chapter 5 indicates that although there are at least three lens through which the enterprise can be viewed (the economist lens, the managers lens, and the information systems professionals lens), something seems to be missing, and that this is a concrete tool which could help one to describe what are the main components of the contemporary digital (or digitalized) enterprise, and how do they interact and function.

That chapter argues that the most valuable tool to perform the above task is the concept of enterprise architecture. In giving support to such an argument, Chapter 5 shows the origin of the use of the enterprise architecture concept, describes briefly how we have moved from the use of the concept of information systems architecture towards the use of the concept of enterprise architecture, and that we should consider the concept of market architecture.

Chapter 6 begins with a proposition that in order to be properly designed, to function adequately, and to sustain its activities, an enterprise architecture should be aligned to the market architecture of its main business environment, and also to the market architectures of its subsidiary business environments. In such a way, in Chapter 6 Section 1 it is indicated that the approach of ‘varieties of capitalism’ (from the political economy literature) seems to be a good starting point for representing the ‘varieties of market architectures’ one should face when aligning the design of enterprise architectures. Chapter 6 Section 2 argues that the concept of the enterprise as a ‘modular organization’ is the one to be considered as a means through
which the alignment of the enterprise architecture and its market architecture is to be found.

The main purpose of Chapter 7 is to present some important aspects of a complementary domain of the concept of architecture: the information technology-IT dimension of the enterprise, or its ‘IT architecture’.

2. BACKGROUND

Perhaps the best way to start this chapter is to present a definite and very revealing argument (concerning the digital age) advanced by Prof. Hal Varian, formally from the University of California at Berkeley, USA, and now Chief Economist Officer of Google Inc.: “Nowadays, most economic transactions involve a computer” (Varian, 2010).

In his article published at the American Economic Review, Varian (2010) observes that now that computers are everywhere, they can be used for many purposes. He explores some of the ways that computer mediation can affect economic transactions. He argues that these computer mediated transactions have enabled significant improvements in the way transactions are carried out and will continue to impact the economy for the foreseeable future.

Another recent account which also reveals important characteristics of the current digital age, is that one provided by a persona who is shaping the recent history of the global IT industry. In an article published at The Wall Street Journal in August 20, 2011, Marc Andreessen (an American entrepreneur, investor, software engineer, best known as co-author of Mosaic, the first widely used web browser, co-founder of Netscape Communications Corporation, and co-founder and general partner of Silicon Valley venture capital firm Andreessen Horowitz), wrote:

This week, Hewlett-Packard (where I am on the board) announced that it is exploring jettisoning its struggling PC business in favor of investing more heavily in software, where it sees better potential for growth. Meanwhile, Google plans to buy up the cellphone handset maker Motorola Mobility. Both moves surprised the tech world. But both moves are also in line with a trend I’ve observed, one that makes me optimistic about the future growth of the American and world economies, despite the recent turmoil in the stock market. In short, software is eating the world.

If ‘software is eating the world’ and if ‘nowadays most economic transactions involve a computer’, then it is possible to argue in this chapter that ‘nowadays no enterprise can emerge, operate and be economically sustainable without the help of information and communication technologies’.

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A computer-based information system is made up of a number of different elements:

The “data” element. Data is the fundamental representation of facts and observations. Data is processed by a computer system to provide the information that is the very reason for the computer’s existence. As you will see, data can take a number of different forms.

The “hardware” element. Computer hardware processes the data by executing instructions, storing data, and moving data and information between the various input and output devices that make the system and the information accessible to the users.

The “software” element. Software consists of the system and application programs that define the
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