

# Chapter 1

## Fundamentals of Business Process Archeology

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### ABSTRACT

*Archeologists investigate some scenarios by trying to understand what they are observing and how it all fits together. Archeologists have to be careful to preserve the artifacts they find and respect and understand the cultural forces that produced them. Similar to traditional archeology, Business Process Archeology is carried out similarly to traditional archeology, but engineers do not have to wait for ages so that they can comprehend unfathomable artifacts. This is due to the fact that code and business process models become legacy just about as soon as they are written or modeled. Thereby, Business Process Archeology attempts to provide answers to the following questions: What are we looking at? How does it fit in with the rest of the world? and What were they thinking? This introductory chapter shows Business Process Archeology as an emerging stage within software modernization processes, focusing on understanding and recovering specific knowledge from existing software assets. Business Process Archeology consists of analyzing different software artifacts by means of reverse engineering techniques and tools in order to obtain very abstract models that depict not only the legacy systems but also the company and/or the company operation supported by this system (e.g., business process models). This chapter introduces fundamentals and the basis of Business Process Archeology with some allusions to the remaining chapters of this book.*

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## WHAT IS BUSINESS PROCESS ARCHEOLOGY?

A business process is a set of coordinated activities and tasks performed in an organization, which aims at a specific business goal (Weske, 2007). Interest inside organizations in knowing their business processes has increased because they consider them to be a key asset

1. For their performance, since business processes depict the organization's operations; and
2. To improve their competitiveness, because business processes can be adapted to increase customer satisfaction, reduce costs, distinguish products or services, and so forth.

In order to achieve optimal business process management, it is necessary to represent business processes by means of a notation easily understood by the different agents involved in their management. The most important notations are UML 2.0 Activity Diagrams and Business Processes Model and Notation (BPMN) (OMG, 2009). The Business Process Diagram (BPD) of BPMN is the notation used in this work since it is a well-known graphical notation and is easily understood by system analysts as well as business analysts.

Legacy information systems can be an obstacle to business process management, since these systems have evolved independently from the organization's business processes (Heuvel, 2006). According to (Paradauskas & Laurikaitis, 2006a), "a legacy information system is any information system that significantly resists modification and evolution to meet new and constantly changing business requirements." (Hunt & Thomas, 2002) go further to state that the "*code becomes legacy code just about as soon as it's written*". The independent evolution from the business processes is due to the uncontrolled maintenance of legacy information systems. Indeed, according to the study provided by Koskinen *et al.* (Koskinen *et al.*, 2005), changes in a business process is the third criterion (among a list of 49 software modernization decision criteria) to modify the information systems. Unfortunately, source code modifications usually do not have any effect on original business processes, which do not have the respective change. This fact means that legacy systems embed a significant amount of business knowledge that is not defined in the original set of business processes. In this scenario, business process archeology is necessary to obtain the current set of business processes.

According to the (Archaeological Institute of America, 2010), *archeology* is "the scientific excavation and study of ancient human material remains". Also, archeology is defined as "the scientific study of material remains (such as fossil relics, artifacts, and monuments) of past human life and activities" (Merriam-Webster, 2010).

Business process archeology is the engineering activity that studies the business processes in an organization by analyzing the existing software artifacts in that organization. The objective is to discover the business forces that motivated the construction of their enterprise information systems. Real archeologists investigate several artifacts and situations, trying to understand what they are looking at, i.e., they must understand the cultural and civilizing forces that produced those artifacts. In the same way, a business process archeologist analyzes different legacy artifacts such as source code, databases and user interfaces and then tries to learn what the organization was thinking to understand why the organization developed the information system. Let us imagine two parallel examples in order to compare traditional archaeology and business process archeology (see Figure 1).

Despite this analogy and all the aspects in common between traditional and business process archeology there is a key difference. In business process archeology, software artifacts could already be in use,

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