Chapter 4
On Selection, Implementation, and Operations of ERP Systems

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ABSTRACT
This chapter gives recommendations for selecting, implementing, and operating ERP systems. It is not intended to be a complete guideline for introducing ERP. Instead, the authors indicate special aspects that are important from their point of view. The chapter addresses practitioners who are responsible for selection, implementation, and operations of ERP systems, especially IT and project managers. General process models are given for the two main IT projects of this domain, ERP system selection and ERP system implementation. The main structure of the chapter matches the phases of these projects. The authors’ suggestions stretch from project management, business process reengineering, application development, reporting, and customizing to choosing hardware and key users, data migration, and user training. While other publications give rather general advice, recommendations in this chapter are selected to be use-oriented and easy to apply. The recommendations do not depend on any particular ERP system.

INTRODUCTION
Enterprise Resource Planning (ERP) comprises management, planning, documentation, and control of all business processes and resources of an enterprise (Wagner & Monk, 2008). Though ERP is based on an integrated information system, it is much more than just information technology since it affects all parts of an enterprise and is usually subject of Business Process Reengineering (Garg & Venkitakrishnan, 2006; Sarkis & Sundarraj, 2008). Today, most European companies of a certain size use ERP systems. However, they may wish to update their ERP system or migrate to another system in order to take advantage of new software functionality (e.g. Business Intelligence or Customer Relationship Management) or simply because their old ERP system runs out of maintenance.

Despite decades of experience in ERP implementation, a considerable percentage of implementation projects fails or exceeds time and budget
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(Balyeat, 2011). This holds true not only for large enterprises but also for mid-size companies with fewer users and a less complex IT infrastructure.

Several lists of “Dos and Don’ts” and useful hints regarding ERP implementation have been published, mainly on the internet and—in some cases—in scientific papers (e.g. Gupta, 2010; Reed, 2010). However, some of these recommendations are either generic to the level of common sense or very specific, e.g. (Reed, 2010) relates specifically to upgrading to SAP ERP 6.0. This contribution summarizes our recommendations on ERP system introduction. At first, selection of ERP systems is discussed. Later on, implementation projects and the on-going operations phase are examined. In the beginning of each of the main chapters, the major phases of the respective project are introduced. These phases are discussed consecutively in the subsequent sections of the chapter.

This contribution does not focus on any particular ERP system and it is based on both: personal experience of the authors and technical literature. Most recommendations are applicable not only to introducing an ERP system from scratch, but also to the migration from one ERP system to another as well as to major upgrades.

### SELECTION OF AN ERP SYSTEM

#### Phases of ERP System Selection

Deciding which ERP system should be implemented and choosing an appropriate implementation partner, is the foundation of a successful first-time implementation of ERP or of an evolution of ERP within an enterprise. Choosing the wrong system and/or partner may have fatal consequences for the company. Hence, one of the main objectives of ERP system selection is to minimize the risk of such mistake.

Selecting a system and a vendor is a complex decision problem that requires a structured approach and represents a project of its own. This project is costly in terms of time and labour, and it requires interdisciplinary knowledge about business processes and information technology. A few process models for software selection have been proposed (Ritschel & Schmieder, 2010; The 6 Phases of Software Selection, 2011; Lin et al., 2006). All these models intend to lead to an optimal decision and to avoid pitfalls during the decision process. We will structure our remarks according the five phases shown in Figure 1. The picture shows a simplified model. Some phases may be performed concurrently, and some may require feedback.

The selection project is defined, prepared, and initiated during **project setup**. The **as-is analysis** serves to write down an up-to-date business model describing the relevant organizational units, business processes, and legacy systems effected by the ERP implementation. **Business process design** covers the definition of to-be business processes and organization as well as the identification of both functional and non-functional requirements. During **system evaluation**, a market research is performed and viable ERP systems are assessed with respect to the requirements. Considering the gathered information, a decision is made in the last phase, **system selection**.

#### Project Setup

The most important task of project setup is project planning. The project plan of the system selection project will be relatively simple at first, since there are many uncertainties in the beginning. However, a rough timeline should be defined, at least. Furthermore, a first scenario for a follow-up system implementation project should be developed, in order to prognosticate, when a new system may become available. The latter is