

Chapter XLI

Mobile Technologies Extending ERP Systems

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ABSTRACT

Nowadays the majority of enterprises use Enterprise Resource Planning (ERP) software to improve their business processes. Simultaneously, mobile technologies which can be used within ERP have gained further importance. This is because ERP, together with mobile technologies, offers a wide spectrum of synergies and both have a significant impact on enterprise efficiency. The improvement possibilities in ERP due to mobility range from sales activities, over logistic processes, up to effects on the human resource management.

INTRODUCTION

Enterprise Resource Planning (ERP) systems have become the IT backbone of most enterprises. Several publications, articles and surveys mention that almost 70-80% of Fortune-1000 enterprises use ERP systems to improve their business processes. ERP systems have changed the way enterprises conduct their business as many functionalities, which only a few years ago had to be done manually, now are automatically provided by the system.

Similar to the Internet, technologies have largely grown in the last years. E.g. mobile phones have become a standard communication device in most countries. In the near future mobility and flexibility will be a key issue that will enable organizations to withstand competition in an environment characterized by in-

creasing cost pressures. Using mobile technologies for commercial purposes is one option that can certainly make business processes more efficient. This chapter discusses how mobile business has opened new opportunities in ERP systems. Furthermore, we also discuss various other business processes that are influenced by mobile technologies (e.g. buying train tickets via the mobile phone). However, it should be noted that the influence of mobile technologies is not limited to consumer interactions. Also, established applications can be enriched by mobile technology resulting in new or improved functionalities. This chapter explores the impact of mobile technology on ERP systems and demonstrates some use cases where such technology can significantly improve ERP functionality.

ERP SYSTEMS

Enterprise Resource Planning Software offers a spectrum of activities which support enterprises to organize important business processes by providing multimodular software applications. ERP systems have evolved in the middle of the 1990s from manufacturing resource planning (MRPII) systems. Such systems aim to plan and steer the output generation within an enterprise. They comprise of all logistic activities, from the purchase planning and execution through the manufacturing planning, steering and supervision to the sales and after-sales activities. MRPII systems mainly cover the logistical view of the enterprise. Extending MRPII systems by human resource management and by financial management has resulted in ERP systems, that aim to cover all activities and business processes within an enterprise. Nowadays every business transaction can be monitored, analyzed and evaluated.

The performance properties of ERP systems are:

- **Branch neutrality:** ERP software is normally not aligned to a specific branch
- **Operating efficiency:** the special emphasis is placed on efficiency, not on technology
- **Modularity:** There are enclosed areas of activity within the software, called modules
- **Integration:** All business activities as an aggregate are continuously supported
- **Standard software:** ERP systems are not designed for individual purpose. In fact they are sold on an anonymous market, but of course they can be customized, i.e. adapted to fit customer needs.

ERP systems differ from each other in their complexity, range of functions and procurement costs. First it depends on the branch the enterprise operates using ERP technology. With an ascending number of suppliers or products, more modern warehouse systems or new distributions channels, the complexity of such a system increases. Second, the size of the enterprise including their whole network matters. Small and medium sized businesses don't need the same range of functions like a world wide operating multinational company. This certainly has an influence on the price of the software solutions, e.g. small sized businesses can install standard versions, whereas concerns need specially developed additional modules.

Third, the number of users working with the ERP system plays an important role. The more accounts work simultaneously, the more powerful hardware is needed to guarantee an unproblematic process. Last, the technological base used to realize an ERP system, especially the database and the programming language, is a key factor determining the complexity and the range of functions.

In the future, ERP systems will be increasingly standardized. Therefore the flexibility and mobility of user interfaces will play a more and more important role in order to generate additional advantages.

MOBILE TECHNOLOGY

Mobile technology is newer than ERP systems. The first technological achievements covered the mobile speech transmission using analog mobile phones. At the end of the 1990s, the technology has broadened by two streams: On the one side the digitalization of mobile technology, on the other side the inclusion of text and data services. Besides, the mostly used service is the short message service (SMS), originally developed for usage in the global systems for mobile communications (GSM). Today, several kinds of mobile devices are available on the market. It ranges from simple GSM mobile phones, over ultramodern personal digital assistants (PDA) connected via the universal mobile telecommunications standard (UMTS), up to radio frequency identification (RFID) tags which can simplify warehouse processes.

By using portable terminals and mobile data transfer technology, users establish a connection to wireless firm-owned network services. They are locally and temporally independent and always available. As a result they are able to make transactions from almost every place on the earth. Additionally, portable terminals are easier to operate and have a shorter boot time than locally installed user interfaces due to the fact that decentralized devices normally only include the essential range of functions. As far as security is concerned the software or the hardware normally includes personal identification processes, e.g. a subscriber identity module (SIM) card or password protection. This is necessary to ensure that third parties are not able to enter the network and see or manipulate enterprise information. As each network user has its own mobile device and the corresponding account, personalization possibilities are nearly unlimited, i.e. it is possible to define different views and accesses to

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