

Chapter 2.11

Developing and Customizing Federated ERP Systems

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ABSTRACT

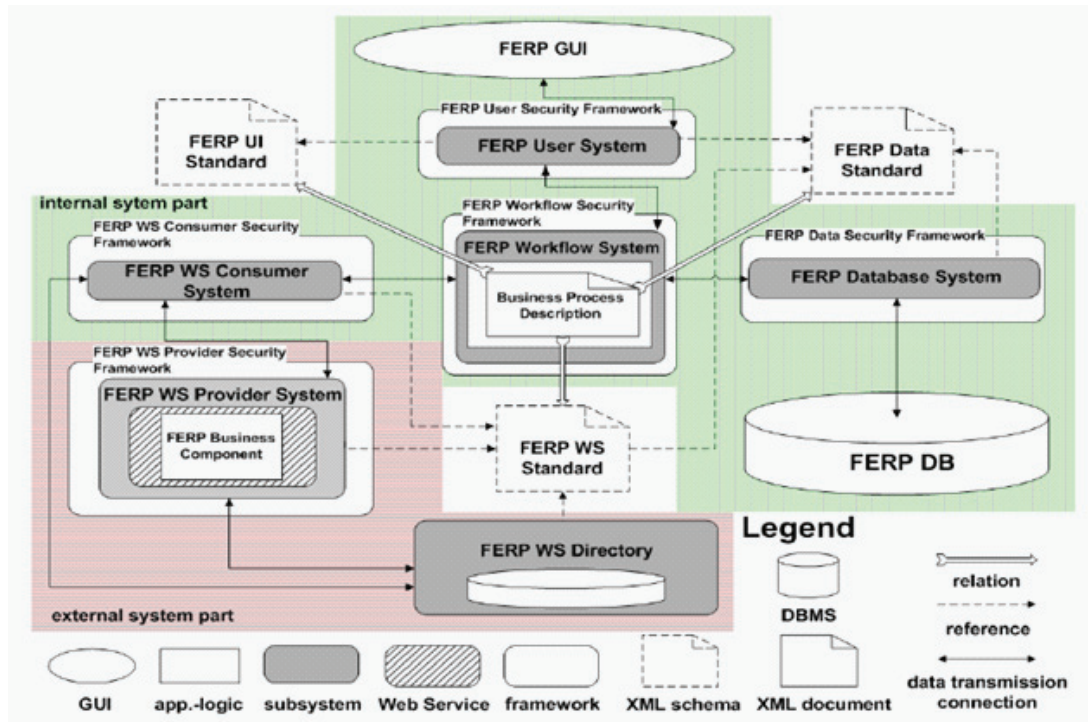
Small and Medium Enterprises (SMEs) are the most important drivers in many economies. Due to their flexibility and willingness to innovate they can stand up to larger industry players. However, SMEs – as every other company – need to further reduce costs and optimize their business in order to stay competitive. Larger enterprises utilize ERP systems and other IT support for reducing costs and time in their business processes. SMEs lack behind because the introduction and maintenance of ERP systems are too expensive, the return on investment is achieved too late and the associated financial risks are too high. However, SMEs would like to have IT support for their business. The research behind the Federated ERP System (FERP) addresses the problems SMEs face with conventional ERP systems and offers reasonable and scalable IT support. This is done by decomposing the whole business logic of the ERP system into Web services, which are linked at run-time.

The service composition is realized by a workflow system that is also responsible for creating and managing the user interfaces and the data-flow. By integrating only the Web services that are needed (possibly from third parties) the cost is reduced and the functionality can be scaled to the actual needs. However, not only a technical solution is needed but also the development process must be tailored towards SMEs. Small companies cannot afford highly-skilled staff and often do not have defined business processes.

INTRODUCTION

The business world is rapidly moving and Small-to-Medium Size Enterprises (SMEs) are competing within this vibrant marketplace with their flexibility and ability to innovate. They are an important part of the economy. For example, according to the IfM Bonn (2008) SMEs in Germany account for 38.3% of the overall turnover

Figure 1. Reference architecture of an FERP system



and employ 70.6% of all employees nationwide. In order to operate efficiently, SMEs need enterprise software, like ERP systems, for managing their business operations efficiently. However, ERP systems impose high costs due to their expensive purchase, customizing costs and re-customizing costs whenever business processes are changed. Thus, business process changes that are necessary to stay competitive become more costly as before.

This inevitably leads to the question how to make ERP systems better suited to SMEs in order to make them more competitive in the long run. The answer to this question is decomposed into two parts. The first part is a new architecture for such systems that can be introduced, operated, and maintained cheaper. The second part is engaged with the question on how to come to (new) requirements for the ERP system based on the business processes. A system that can be flexibly

changed is worthless if no one knows what the desired result is.

Within this chapter we introduce the Federated ERP System as a new architecture for ERP systems that are especially suited to SMEs. We describe the overall architectural ideas as well as our implementation. In the second part we present a technique for deriving and discovering business processes from textual scenarios – so called use cases known from the software engineering domain.

FEDERATED ERP SYSTEMS

Problem Addressed

An ERP system is a standard software system which provides functionality to integrate and automate the business practices associated with

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