Chapter 3
Software Components for ERP Applications

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ABSTRACT

The demand for ERP systems grows rapidly along with complexity and integration of enterprise systems. ERP is an enterprise oriented information system for resource planning which integrates various departments and systems. This chapter identifies a set of key characteristics of ERP system and then map onto a software component model which has been customised for ERP characteristics. A component based software process model for ERP projects is proposed and its significance during the ERP implementation is indicated.

INTRODUCTION

Enterprise systems are complex and expensive to create a dynamic organizational change. There are common issues across all IT related projects such as cost, time, and people, are well known. A modern definition of Enterprise Resource Planning (ERP) is the computer-based and an integrated software package (composed of various self-executable sub-components that are working together) which has been designed to process organisational transactions and to facilitate integrated and distributed real-time planning, production, manufacturing, and customer responses. The current trend in business sectors require continuous change in business requirements hence requires system to adapt changes quickly. According to a report by Advanced Manufacturing Research (AMR), we find that the entire enterprise applications market which includes Knowledge Management (KM), Customer Relationship Management (CRM) and Supply Chain Management (SCM) software will top $70 billion by 2007. Many researchers and practitioners have suggested that it is easier and less costly to mould business processes to ERP systems rather than vice versa (Davenport 1998, Holland and Light 1999).

PROBLEM OF CURRENT ERP DESIGN

In the traditional software projects, the software is developed by the software engineering after collecting the requirements from the customer and they are the end users for the developed software system. But in the ERP projects, the software is developed for once considering the basic requirements of the customers and the best practices adopted in the industry for a particular domain, say, finance, banking and so no. During the actual implementation of the ERP software, it is customized to meet the specific requirements of the customer. In simple, we can say, the ERP product is developed once to suit many customers. Current ERP designs in industry lack reusability and interchangeability of domain application components. To develop a successful and dominant company in the ERP market, a strategic move to a component based-based ERP design and marketing will be required. ERP vendors should be in a business of specifying the ERP components as well as building them. Once the design of specifications for ERP components is produced, developing each component can be outsourced to third-party developers thereby compressing the duration of an ERP implementation.

CBSE AND ERP SYSTEM CHARACTERISTICS

ERP provides new business opportunities as it integrates several business processes together to provide a unique business contact. Appuswamy (2000) predicts the holistic integrated business transactions and analysis has provided the synergy to keep business processes dynamic and to deal with customer needs in real-time. ERP system is an integrated business software system and its characteristics that allow an organisation to:

- Automate and integrate various business processes hence we need a component to support business process modeling and integration strategies
- Enterprise wide support for sharing common data and practices across the enterprise systems
- Able to share access product services and information in real-time
- Seamless integration
- System configuration

In summary, characteristics of ERP systems are to provide:

- Seamless integration
- Packaging
- Vendor management
- Change management

Figure 1 (Christiansson and Jacobsson 1999) shows the composition of component based information systems. The development of component-based systems is different from the development of traditional systems. A component-based information system can be viewed as a three-layer system. The innermost level is the component infrastructure i.e. the components themselves and the necessary glue-code to make them inter-operational. The middle layer is the software application, i.e. the grouping of cooperating components into software applications. The outer layer is the information system infrastructure i.e. the information systems that the different applications supports or consists of. These layers are described in Figure 1.

Software reuse has emerged supporting software quality as well as an important factor for productivity. Software component has been identified as a self-contained unit of abstraction which can be independently used to compose systems. Computer hardware systems and other industrial applications are mostly composed and assembled rather than being built where as soft-

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