

Chapter 5.19

Capturing and Comprehending the Behavioral/Dynamical Interactions within an ERP Implementation

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ABSTRACT

The behavioral and dynamic implications of an ERP deployment are, to say the least, not well understood. Getting the switches set to enable the ERP software to go live is tedious. But the difficult part is understanding all of the dynamic interactions that accrue as a consequence. Connectionist and causal models are proposed in this article to facilitate an understanding of the dynamics and to enable control of the information-enhanced processes to take place. The connectionist model facilitates the understanding of the dynamic behavioral implications of the larger ERP implementation installation per se. The underlying

connectionist model will observe and detect information transfers and workflow. Once maps of the total infrastructure are determined by the models, an analyst can suggest improvements. The models become decision support aids for process analysts in situations where ideal process flows/information transfers are sought. [Article copies are available for purchase from InfoSci-on-Demand.com]

INTRODUCTION

A class of packaged application software called Enterprise Resource Planning systems (ERP)

seeks to integrate the complete range of a business's processes and functions in order to present a holistic view of the business from a single information and IT architecture. ERP systems are integrated, enterprise-wide systems that automate core corporate activities such as manufacturing, human resources, finance/accounting and supply chain management (Klaus, Roseman, & Gable, 2000). A brief history of ERP is provided by Jacobs and Weston (2007). Additionally, a discussion of a recent ERP implementation with focus on end-user training can be found at www.diplomica.com (2007).

From a research perspective, several longitudinal studies have been conducted of ERP systems to ascertain how well they achieved their objectives (Holsapple & Sena, 2003a; Holsapple & Sena, 2003b; Lonczynski, 1998). Other more recent studies have examined research questions such as: (1) how change management issues relate to federated ERP systems (Abels, Brehm, Hahn, & Gomez, 2006); (2) what determinants of ERP implementation success are (Cegielski, Hall, & Rebman, 2006); (3) what factors bring about a successful implementation of a collaborative technology that results in productivity improvements in small businesses (Jones & Kochtanek, 2004); and (4) how organizational knowledge is shared during ERP implementation (Jones & Price, 2004). Hendricks, Singhal and Stratman (2007) provide an excellent discussion of how enterprise systems (ERP) affect corporate performance.

ERP is an important area of study since large organizations world-wide have already adopted ERP and increasingly, small- and medium-sized enterprises (SMEs) too are finding it cost effective and a competitive necessity to follow suit. Current ERP solutions are based on a three-tier client-server architecture, in which the data, the applications and the presentation layers form three logically independent levels, each distributed from the other. Typically, the data management layer contains the database and the applications layer contains the business logic, with each allocated

to separate distributed servers. The applications server often contains a portion of the presentation layer in that it serves out Web pages. The final physical component is simply the Web browser which is also a part of the presentation layer, but resides on a different processor—the client.

The comprehensive functionality of any ERP system requires a corresponding reference model for the whole enterprise. In addition to the usual software documentation, the supported processes and organizational structures as well as the structure of the data and objects are usually depicted in a reference model called the Enterprise Model. This model enables rapid access to the functionality and allows navigation through different abstraction levels and between different views in the Enterprise Model.

Enterprise Modeling is the construction of an enterprise model as a limited system that represents the larger system in question. The purpose of Enterprise Modeling is to understand and improve the enterprise, that is, to improve the symbiosis of the individual business processes and objects. In this sense, improvement means any change in coordination among the business processes and between objects that increases the benefits of symbiosis. The methodology of Enterprise Modeling is the construction of a set of views of the enterprise considered as a system. The resulting enterprise model contains business processes and objects and their relationships. Enterprise Modeling is the tool of business engineering and reengineering.

Enterprise Modeling has been one of the main themes of research in ERP, BPR, Software Engineering and IT Project Management areas, and as a consequence there are many different reference models and methodologies for enterprise modeling. Although there are numerous models and methodologies for enterprise modeling, their general structures are all similar and one of the most important components that they usually include is the business process model.

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