Chapter 2.6
Planning and Designing an Enterprise Wide Database Systems for E–Business

Alexander Y. Yap
Elon University, USA

ABSTRACT

The planning and development of an enterprise-wide electronic database system for e-business usually calls for the re-engineering of information processes coupled with a push toward data content standardization across the entire organization. In this chapter, the case study involves a multi-national conglomerate that is in the process of integrating and Web-enabling their enterprise database systems. The objective of the system was to help engineers sift through millions of components offered by various suppliers and component manufacturers, where the end-result was to improved the integration and efficiency of the product development, engineering design, e-sourcing, and e-procurement processes. This research is a qualitative action research study on how different organizational, social, political, and technical forces influenced the social construction of an enterprise-wide information system. Understanding the dynamics and power of these socio-technical forces in shaping the development environment and change process of enterprise systems is the focal point of this chapter's discussion.

INTRODUCTION

In mid-2001, Invensys, a multi-billion dollar multi-national corporation initiated a project to implement an enterprise-wide electronic database system accessible via the Web. The envisioned database was to form part of the corporation's growing e-business system. This database was geared toward helping engineers sift through millions of electrical and mechanical components offered by various suppliers and component vendors. The database system was envisioned to be integrated with their e-procurement system, product data management systems (PDM),

enterprise resource planning (ERP) systems, and computer-aided design and manufacturing (CAD/CAM) systems.

The objectives of initiating this enterprise-wide system were: (1) to significantly improve the product development process by providing Invensys engineers a better and faster means of identifying/choosing product components and cutting product development cost (by lowering product development errors caused by sub-standard components); (2) to improve e-sourcing (or the online search process for the right suppliers) by having access to a much wider range of supplier catalogs internationally and locally and be able to compare/analyze them; and (3) to improve the e-procurement process and lower procurement cost.

The contribution and significance of this research is to provide meaningful insights into different socio-technical milieus and their pivotal influence in the shaping of a new enterprise-wide system. Although systems requirements and functionality are delineated and envisioned at the onset of system planning, the resulting system is often implemented and developed differently from what was initially planned due to the underlying socio-technical realities that surface and influence the systems planning as more stakeholders and systems users become involve in it. Mitigating socio-technical factors ultimately determine the path of systems development and adoption. Therefore, it is important that more studies and research are conducted to shed light on how these underlying forces come into play when shaping enterprise systems.

Invensys is a diversified conglomerate that manufactures and provides various products and services. In the United States, Invensys is a leading global provider of heating systems, air conditioning, building systems, and commercial refrigeration. In Europe, Invensys acquired the AVP group of companies which specializes in engineering processes (such as brewery and dairy systems). Due to the conglomerate's diversified global business, it was of great interest to pursue this study to see how various Invensys subsidiaries world-wide could benefit from or change with a new enterprise-wide system. What was also interesting from a socio-technical research point of view was that at the time of this project's implementation (2001-2002), Invensys Corporation just acquired Baan, a leading ERP solutions provider (Baan was re-acquired by another company in 2003). This created an underlying situation that Baan, being an enterprise solutions provider, would have considerable influence in the direction of this enterprise-wide project.

RESEARCH INTEREST AND APPROACH

The objective of this research is to determine the key factors that affect the planning and development of enterprise-wide systems. We were hired as information systems consultants tasked to plan and design the implementation of this project from 2001-2002. When hired, we realized it was a great research opportunity, because it would allow us to experience how an enterprise-wide systems development goes through the intricacies of a conglomerate environment. The retrospective value of this research was discussed and agreed upon with Invensys Technology vice president, Tim Matt. This research is a result of our documented analyses and insights as to how we strategically planned and tactically developed the system on a day-to-day basis considering the organizational, social, political, and environmental forces that ultimately shaped the systems design. We want to continue the discourse of Kim, Lee, and Gosain (2005) and Gosain (2004) who claimed that enterprise information systems are subjected to institutional forces and processes, and Soh and Kien (2000) who discussed the need to fit culture with enterprise systems solutions or there will be gaps that could lead to mismatch between the solution and the enterprise's needs.

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