

E-Commerce Portals

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INTRODUCTION

Today, the business community has realized the portal solution as an opportunity to develop and maintain integrated and personalized environments for e-commerce. Based on the natural behavior of an individual portal, portals have been categorized into business-to-consumer (B2C) portals, content management system (CMS) portals and business-to-business (B2B) portals in this article. While the role of individual portals is different from each other the ultimate objective, however, is to deliver e-commerce and manageable e-commerce solutions via portal technology.

Enterprise resources planning (ERP) is a cross-functional enterprise system that serves as a framework to integrate and automate business processes such as manufacturing, distribution, accounting, finance, logistics, and human resources. ERP provides significant efficiency and improvement in the company's business process. Few ERPs integrated with communication modules support closer collaborative workspace for business professionals. The leading vendors for ERP software are SAP, Baan, J. D. Edwards, Oracle, and PeopleSoft. The most popular product is SAP R/3, developed by a German firm and its newer Web-based variant mySAP.com, which allows its users to work via the World Wide Web (Larsen, 2000; Perez, Hantush, & Matzke, 1999). SAP R/3 is a client/server system employing a common, integrated database with shared application modules; it handles both TCP/IP and SNA communication protocols (Lee & Martin, 2001; Lee & Whang, 2001). Many ERP vendors are moving existing desktop solutions to Web portal solutions due to the rapid advancements in Internet technology and telecommunications. However, there are still many problems needing to be solved. In particular, most ERP systems are "one-size-fits-all," which results the lack of customization from the existing applications.

This article introduces an e-commerce portal that utilizes the generic multimedia ERP (GMM ERP) architecture. There are several significant differences between GMM ERP and traditional transaction systems. First, the traditional system is integrated through a common set of definitions and pre-

defined schema in database. Second, modules are tightly coupled and integrated in the system. The main advantage of the GMM ERP provides a complete customization that supports wide-range of business needs. In addition, the portal is loosely coupled and integrated with sophisticated communication modules. The major advantages of such e-commerce portal are the adaptability and extensibility of the data structure. By utilizing the approach of generic database, the e-commerce portal allows complete customization of the database schema. For instance, the current approach is to create a predefined data structure or schema before the database can be used for storage. In other words, the application is restricted to operate in a confined static or fixed data structure environment, and the user is not able to store other additional non-predefined attributes information. However, the generic multimedia ERP can be adapted to support significant changes in trading relationships and alteration of data structure. The e-commerce portal is user-friendly, efficient, and cost effective.

This article starts with the introduction of the three main portals: business-to-consumer portals, content management system portals and business-to-business portals. After that, the article is focused on the generic multimedia ERP architecture that achieves adaptability, extensibility, and reusability in the system. Next, it provides further information on the database connection layers that support the generic multimedia data model. Then, it introduces the integrated communication modules that support interactions and collaboration among users in the e-commerce environment. Finally, this article will discuss the role of a negotiation agent in e-commerce portals and conclude with several advantages of the e-commerce portals.

E-COMMERCE PORTALS

The business community has envisioned portal solutions as an opportunity to develop and maintain integrated, personalized environments for e-commerce. Based on the natural behavior of individual portal, portals have been categorized into

business-to-consumer portals, content management system portals and business-to-business portals in this article.

Business-to-Consumer Portal

A business-to-consumer portal should consist of the following portlets:

- Products browsing
- Information pages browsing
- Shopping cart portlet
- Tell a friend
- News subscription
- Mailing list
- Negotiation agent

The attributes information of products is alterable with the unique generic data structure. The information pages are creatable and editable via the WYSIWYG editor, which provides great benefits for users without skills of Web programming. These portlets are managed via the CMS portals.

Content Management System Portal

A Content Management System portal should include the following modules:

- Category management
- Product management
- Web contents / pages presentation management
- Customer management
- Subscription management
- Mailing list campaign
- Order / transaction management

This portal provides the user a full control over the content, description and cosmetic appearance of the online store. The attributes are fully customized with the generic data structure. The generic architecture will be explained in the section Generic Multimedia ERP Architecture.

Business-to-Business Portal

The business-to-business portal is an additional portal and can be activated if a B2B relationship exists in the company. The B2B portal provides an advanced infrastructure and complicated functionality that supports a range of B2B activities such as:

- Wholesale customers management
- Supplier management
- Wholesale customer online login management
- Shipping / purchase order / order receive management

- Stock inventory / product faulty management
- Reserve/ invoicing system
- Payment transaction tracking
- Credit notes management
- Login account management
- Retail shop account management
- Customized reports such as profit and loss, outstanding delivery
- Calendar and communication module

These modules should be integrated in the B2B portal and designed with supply chain concept and workflow. In the next section, this article will explain the technique of generic multimedia ERP architecture that achieves adaptability, extensibility and reusability of data structure.

GENERIC MULTIMEDIA ERP ARCHITECTURE

In the application, there are two types of data input and output models in the product data management (PDM) and workflow management system (WfMS) (Kearney, 2002). These two models provide the best performance in information exchange and workflow coordination in the portal application.

The PDM is used to control access to documented versions of product designs, which include the traditional single data record, such as product details or company contact details. It plays an important role in the storage and access of data and documents throughout the process. Conversely, WfMS allows managers to coordinate and schedule the activities of business processes to optimize the flow of information between partners and resources. It is used to coordinate the more complex and repeatable work processes of production. Based on these two models, the application is developed with data input and data retrieval interfaces for accessing logistic information online.

The PDM is an ideal model to control product and contact information that involve two different types of database structure design: one entry of table storage and multiple entries of table storage. The “one entry of table storage” satisfies the table schema that has a one-to-one relation with other tables, and the purpose of this table is to store and access records. However, the multiple entries of table storage, when one table has been normalized by 3-N rules, results in splitting into a one-to-many relationship with another table. For instance, one invoice will have multiple purchase item details, which establish a one-to-many relationship within the entry.

The WfMS category is concerned with time-related tasks, which can handle any re-structuring, such as roles and responsibilities of parties in the supply chain logistic route. The system can automatically detect time conflicts in the existing route. When the administrator arranges for a workflow (Lang & Burnett, 2000), which may require member

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