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E-Data Conversion and Migration Using Data Optimization Techniques

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Abstract: *Organizations receive lot of e-data from across different vendors. All these data are of different format and different contents. This makes it difficult for the organizations to organize, compare, save, update and modify these data. In order to overcome this problem and for the validation purpose of the organizations, we convert all the e-data into a required format automatically using the e-data conversion technique. Moreover, the data in an organization will be saved and backed up in local systems. This makes it difficult to maintain the database through a common server. This paper proposes to migrate data to the database server to provide remote access and easy handling of data, implementation and maintenance. Finally the research yields an optimized searching technique for easy retrieval of data from the server.*
Keywords: *E-data, Database Server, Conversion, Migration, Web services, Search.*

1. INTRODUCTION

Most of the organizations perform the function of selling the goods or providing services to consumers for profit. While performing these functions, the organizations ties up with subordinate companies and a lot of the transactions occur among the business people. Variety of data is involved in the transaction of an organization. Variety of documents is exchanged in different formats.

Starting in 1975, a system was developed as a tool in addressing specific business function [1]. With the help of this system, business function can be automated. Since there is a specification in business function of the system and also there is no integration among the systems; data should be shared manually in the inter-area business functions in the organization. Thus, duplication of data is likely to occur in high rate. In order to avoid the duplication ERP is used. Enterprise resource planning integrates some or all business functions in an organization through a single database. By using this system it is expected that all the transaction that occur in an organization can be automated and there is no need to share the data manually.

Different vendors have different standard formats to submit any contract or tender notices. This makes it difficult for the organization to collect all the data from these different formats and manually convert it to a uniform standardized format of that particular organization. The conversion is essential to evaluate the quotations from the vendors and to choose the best one. Manual conversion increases the workload and decreases the efficiency of the organization.

In order to overcome this problem the organization needs to have an automated conversion system which would help

them to increase their work efficiency Therefore an automatic data conversion system is created in order to help the organizations increase their work efficiency.

Moreover, the data from across different vendors, are collected by the organization and stored in local drives or systems. ERP, which helps to make a business function automated, requires all the data to be stored in the server. Thus, the data is required to be available for remote access by the organization, anywhere anytime. This is achieved by the creation of an automated tool to migrate data across database servers. This provides an global availability of data which prevents data loss and allows remote access to the data.

Basically, an ERP system can support several functional areas of operation, e.g., sales & marketing, SCM (production planning, material management), accounting & finance, and human capital management [1]. Our main area of research is limited to data conversion and migration involved in the business function area. We leave the remaining areas open for subsequent researches.

2. ERP ARCHITECTURE

[2]-In an enterprise, some systems may be developed by the enterprise itself, while others may be developed by different vendors using different databases, languages, and technologies. Each system differs from each other, which makes it difficult to upgrade the organization's businesses, strategy, and information technologies effectively. With the communication infrastructure and ERP functionalities encapsulated in components, an ERP system can easily meet these requirements. A typical ERP system should at least

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have the following features:

- Componentized- different business functionalities are designed as different components.
- Integrated- components are integrated and seamless data flow between components allows them to collaborate as aone function.
- Flexible-system is expandable and compatible with the old systems, the change to the business processes and strategies are easy to fulfill.
- Real-time- the components work in real time, online, and batch processing modes should be available.
- Profitable-system must have the potential to reduce the cost or increase profit, since these are a company's basic requirements and motivations.
- Secured- security schema has to be enforced to protect various enterprise resources regardless whether it is appropriate or sufficient.

The business logic in ERP system employs client/server architecture to create a distributed computing environment. Generally, the three-tier architecture will be used, which contains three layers of logic:

1. *Presentation layer (front):* A unified graphical user interface (GUI) or browser that collects input, generates requests, and returns the results back to the user.
2. *Application layer (middle):* Application programs that collect the requests from the presentation layer and process the requests based on the business rules, functions, or logics.
3. *Database layer (back):* DBMS that manages the operational and business data throughout the whole enterprise and the user access to this information. It may also include the operating system and the related hardware. –[2]
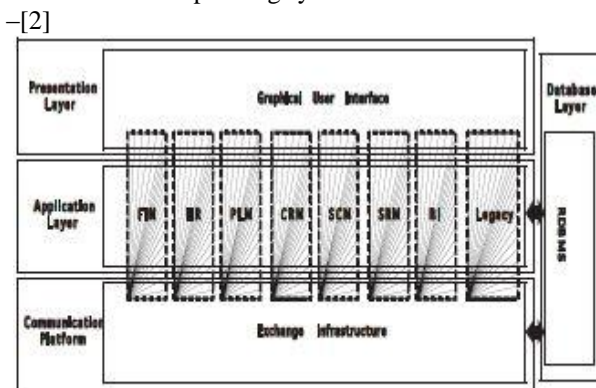
FIGURE 1 The Architecture of Enterprise Resource Planning

3. IMPLEMENTATION METHODOLOGY

In this research, waterfall process model is used in the development of data optimization system. Planning, analysis and design of the data optimization system are the stages carried out during the research.

3.1 Data optimization technology
Initially, ERP systems which package the data optimization system were used for simple functions such as accounting

and human resources planning. ERP systems are later developed as suitee of application with the advent of web technologies. The technology which has the major impact on ERP systems are web service and extensible markup language (XML).

3.2 Web services
Integration made easy and the cost is reduced by the use of web services. Information can be accessed by the vendors from the organizations' websites. Therefore, with the use of web services and the composition of web services, vendors can access many of the ERP application seamlessly. Client can communicate with legacy ERP software of the organization through web services which reduce the cost of the system.

3.3 Security in the System
Numerous industries like defense, intelligence, medical, and financial industries uses this ERP systems which leads to critical environment in providing security. First, we need to develop a security policy and a model for ERP systems. Confidentiality is the main aspects of the security which is mainly focused by the current system.
The presentation layer refers to the graphical user interface, browsers, and PCs. Since the transmission of GUI packets is impossible to restrict, the better way to provide security may be to place a CITRIX server between the user and the system.

3.4Design
To model the design of the data optimization system we use object oriented approach. The basic data requirements for the data optimization system are master data and the corresponding master forms (and fields). The other required data are the vendor documents and additional data to be migrated. Thus, it is used as guidelines to design the system database. The database design is formulated as an entity-relationship diagram (ERD). Subsequently, a class diagram which covers the features of the data optimization system is constructed. Next the deployment diagram show how the software component is deployed physically. A sample of how to draw all these diagrams can be found in [3].
Material management, inquiry, quotation, sales order, shipment/delivery, invoice, receipt, payment, return rental order, return order are the features provided as an extra part of the ERP systems with the inclusion of data optimization systems.

4. RESULT AND ANALYSIS
The data optimization process consists of 3 high-level business processed. They are E-data conversion, data migration and search optimization. The diagrammatic representation for each process is given. It clearly denotes where the ERP system is utilized.
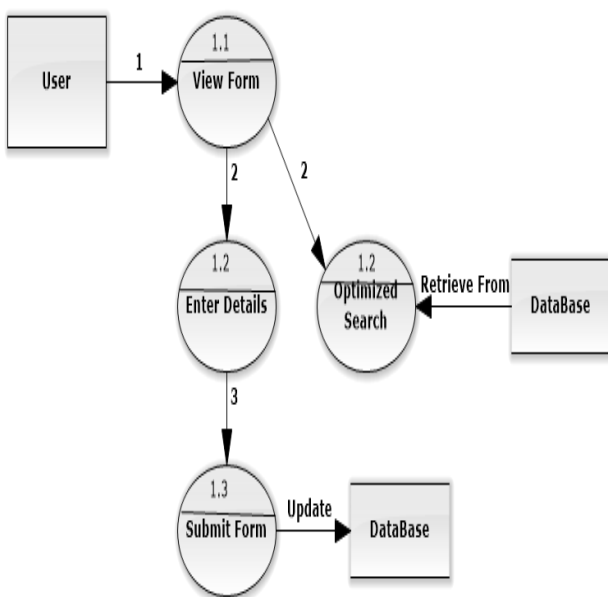
4.1 E-Data Conversion
In this stage employees can create and update the company's master data. Master data that can be created or updated are about any tenders to be opened or undergoing activities.

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WINGS TO YOUR THOUGHTS.....

Using the "tender portal" the procurement process takes place where vendors from different platforms access these data.

Inquiry or quotation can be requested by the vendor to the employee. For an inquiry, the vendor can directly contact the employee, requiring no formal procedures. In advance the vendor should think in advance whether he/she can fulfill the order or not for a quotation. Quotation is a legally binding offer, so the vendor must be able to fulfill orders based on it. The vendor posts the reply as documented in a format in the "tender portal". These documents, collected from different vendors are automatically converted to the organizations standard format for comparison, storage and update where required.

Figure 2: E-data conversion process

4.2 Data Migration

The migration activity begins when the data conversion has been completed. The data that are converted to the organization's standard format is viewed and stored in one's local system. When administrators want to cross refer document references, they are compelled to move between different employee systems to check the documents and vendors associated with each one. This process is laborious and time consuming.

The same situation yields more difficulty when administrators are spread across the global branches of the organization [5]. It provides an inefficient manner to communicate within the organization. Thus, the migration system is used to reduce laborious work making it easier to achieve the organizations goal in an effective manner.

The migration starts with collecting all raw documents that are saved in the local system and aggregating them into categories and folders with sales references, vendor references and so on. This makes it easier to access a particular document with these references and sub folders rather than searching the database as a whole. Once the

folders are sorted and created, all documents move into their respective folders, ready to be viewed, modified, update and deleted any time as required. These folders are forwarded to the server database for the remote access.

4.3 Optimized Search

Optimized search has its role when the organization wants to look through their database. Looking through the database by scanning across folders doesn't help for a database of very larger numbers [5]. In most cases organizations doesn't want to view the entire database but just the parts which is required.

Optimization plays its key role by providing different means of searching through the database based on the organizations' data stored. This retrieves only the required data with the shortest computation time. Thus the organization can look through the database and access remote data from the server database.
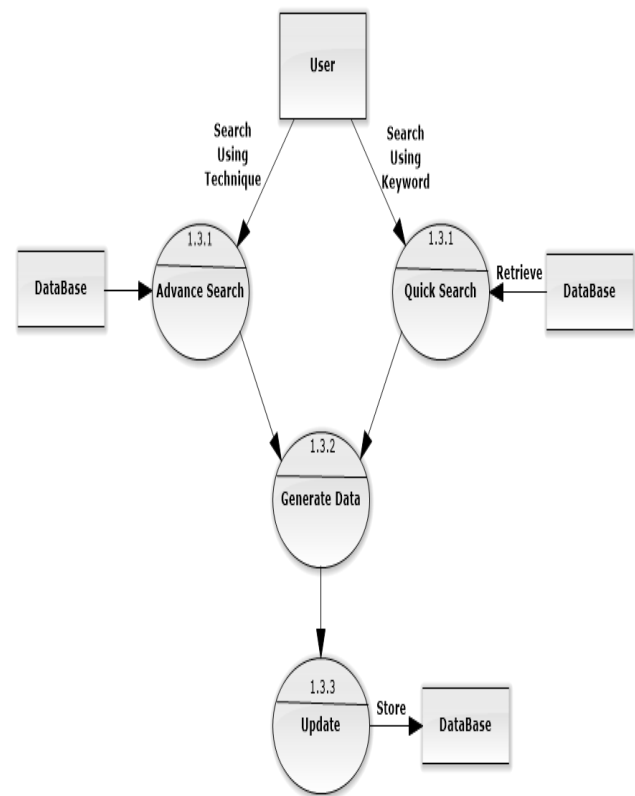
Figure 3: Optimized search process

5. ADVANTAGES

- The operational costs involved in manual labour for the conversion of data are reduced.
- Workflow across various departments is efficient and optimized.
- Individual vendor quotations are integrated into the database by a single software application.
- It provides error-free conversion of data with no human intervention.
- Data migration in real time makes the organization work efficiently with centralized data access.

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WINGS TO YOUR THOUGHTS.....

- Remote availability of data is promoted and dependence on a particular system is avoided.
- Database system is implemented on the backend to store all the information required by the ERP system. It enables centralized storage/ back up of all enterprise data.
- ERP system is helpful for managing globally dispersed enterprise companies that co ordinate with the organization.

6. CONCLUSION

An automated conversion and migration of data can be adopted into business function area. Furthermore, it identifies business processes that can be supported by the ERP system as ERP system is intended to enable an organization to run more efficiently. Enterprise Resource Planning is the technology that drives the reformation in the realm of economy and impacts people's life style indirectly. The design of the E-data conversion and migration system in this study is proposed to help data processing and information integration of the organization particularly to enable the communication and transaction process to become more efficient. The processed data and integrated information includes master data, pre- post transaction of vendor data and associated information.

REFERENCES

[1] E. Monk and W. Bret, concepts in enterprise resource planning, fourth edition, Boston; course technology cengage learning, 2012.

[2] Security for Enterprise Resource Planning Systems, Taylor & Francis Group, LLC, 2007 By wei She and Bhavani Thuraisingham, University of Texas at Dallas, Richardson, TX, USA.

[3] UML for Database Design – August3, 2011 By Eric J.Naiburg (Author), Robert A. Maksimchuk (Author), Vol.11.

[4] A. Tolk and R. D.Aaron, "Addressing Challenges of transferring Explicit Knowledge, Information, and Data in large Heterogeneous Organizations: A Case Example from a Data-Rich Integration Project at the U.S. Army Test and Evaluation Command", Engineering Management Journal, Vol. 22 No. 2, pp. 44-55, June 2010.

[5] Sorting and Searching Algorithms: A Cookbook – September 10 By Thomas Niemann (Author).