Enterprise Data Management - Warehouse Integration Solutions

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ABSTRACT

Recent studies have indicated that organizations involved in the design and deployment of data warehouses over the past 3-5 years are now positioning themselves for information delivery. Gartner has reported that trends of large-percentage growth in BI budgets will continue through 1999, with an average growth rate of 30-45%. With the shift in focus moving from data access to data analysis, it is becoming increasingly critical that data warehouses be integrated with analysis tools and business intelligence applications to provide business users with rapid ROI.

This paper will discuss concepts that address the importance of integration techniques for enterprise data management. The author will also outline a case study reviewing the process of data preparation for robust analysis and visualization.

INTRODUCTION

Many organizations today do not know critical facts about their business, making it extremely difficult to measure success. Companies spend millions of dollars each year buying information to assess trends in customer behavior when more valuable results could be harvested from internal organizational information. In addition, as industries have become increasingly competitive and complex, it is of paramount concern that differentiation be achieved.

Any organization is only as good as its ability to bend with ever changing market demands and differentiate itself from its competition. This flexibility comes only with a clear understanding of the core competencies and customers an organization supports. Therefore, the application and management of knowledge is key to its success. Pivotal to this success are integration techniques for Enterprise Data Management and the application of the right tools and methodology for the delivery of information.

THE MARKET DRIVERS

Organizations are aware of the need for more than one tool to support information delivery within the user community. In addition, the business community is moving away from passive tool usage and concentrating efforts toward the proactive selection of tools that provide business critical solutions.

STRATEGIC PLANNING

There are clearly some strategic planning assumptions that anyone involved in the delivery of information should consider. First, their will be a need for broad accessibility of tools, technology, and applications to all business customers and suppliers.

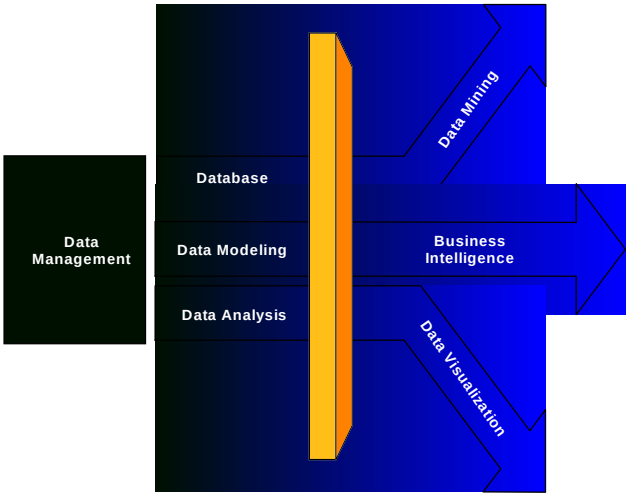
Second, it can be assumed that based on this demand, the vendor community will respond by offering applications that meet the needs of the business community. The industry will move away from offering technical solutions to offering ‘business smart’ solutions.

Another assumption that can be made from this market analysis is that the tools that will allow for information delivery will become more robust and grow to meet the needs of multiple levels of users. The emphasis has shifted to high value, low maintenance applications that can be used by the business community.

Finally, those involved with the delivery of data management, access, and reporting strategies need to be prepared to manage the integration of all tools, processes, and structure around the desired business solution. This means breaking down barriers between information technology groups and the business community, having an understanding of the business goals behind a given process, and applying the right mix of technology and enterprise data management to meet those goals.

All too often IT has made the inaccurate assumption that 'if we build it, they will come.' This assumption can be fatal to any information delivery process.

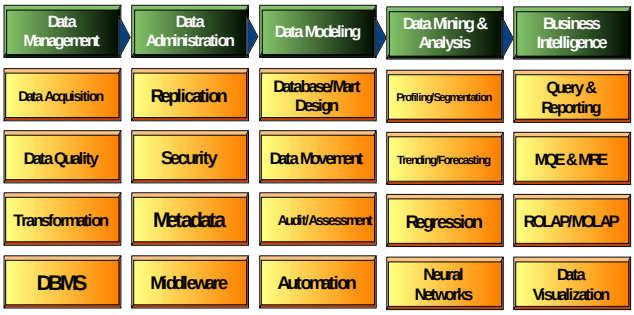
ENTERPRISE DATA MANAGEMENT



Enterprise Data Management (EDM) is a process accomplished by applying the following basic steps:

- Defining business information needs
- Identifying data that will satisfy those needs
- Guiding users through the process of using data to discover hidden relationships and trends
- Introducing tools to present information for the purpose of continuous discovery

These steps are applied to five major concentration areas for the design and deployment of information delivery solutions:



These elements are defined as follows:

Data Management:

This is the staging area for data warehouse/mart data collection from operational or transactional data stores. This service line also incorporates the organization of non-volatile, integrated data by subject area over time in preparation for information access and delivery.

Data Administration:

This element encompasses the replication and administrative management of the new data stores. Data dictionaries, security, performance standards, middleware, and connectivity issues are all addressed through data administration.

Data Modeling/DBMS Design:

Data modeling includes the development of smaller data stores for use in vertical business applications. Database design and data movement methods are established then indexed and summarized data is audited and assessed before final automation procedures are put in place.

Data Mining & Analysis:

Once data staging is complete, analysis techniques can be applied. The automated discovery of new information, associations, hidden relationships, and changes in large quantities of operational, transactional and summary level data allows for improved decision making capabilities. Different methods of

analysis are utilized based on specific business objectives. Trending, forecasting, market segmentation, customer profiling, and advanced statistical analyses (use of neural networks for predictability assessments) are all functions of data mining.

Business Intelligence:

Tools and techniques used to provide business analysis capabilities against data that has been staged (ad hoc as well as managed query and reporting environments - MQE, MRE). This also includes on-line analytical processing capabilities using multi-dimensional and relational databases (MOLAP/ROLAP) and data visualization. This element applies decision making processes with the meaningful delivery of business facts.

A CASE STUDY

Below is an overview of a sample EDM process where SAS tools were used to successfully deliver business critical information:

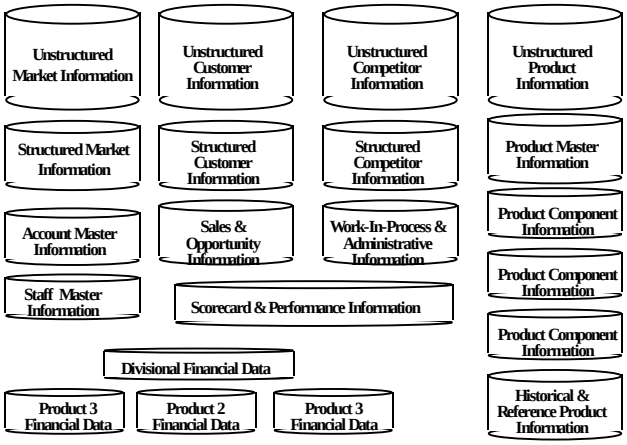


Figure 1 shows multiple silos of information that need to be accessible to 200+ users in multiple geographical locations for the purpose of departmental, operational, executive, and regional reporting. The databases range from Excel spreadsheets on user hard drives to DB2 tables stored on legacy platforms. The first step was to review critical reporting required by specific departments for making business decisions. The next step was to locate what data would meet those reporting needs and what tools would facilitate the process.

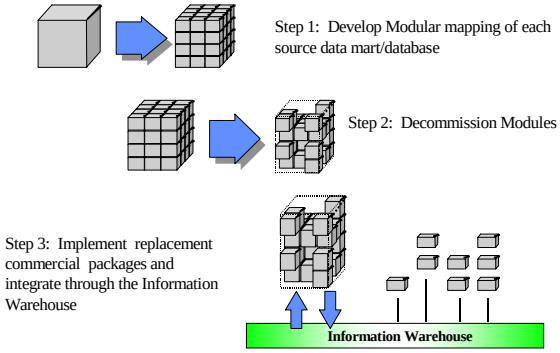


Figure 2 outlines the steps necessary to extract business critical data elements from silo repositories. It was necessary to spend a great deal of time extracting, cleansing, transforming, and normalizing data to ensure accuracy.

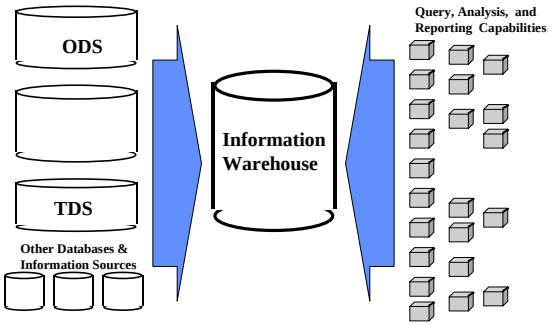
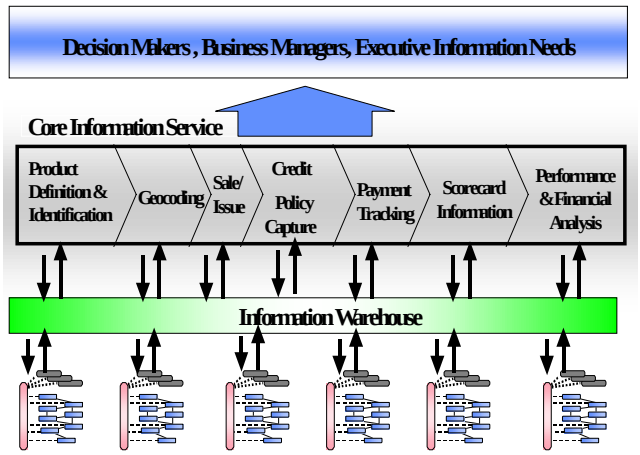
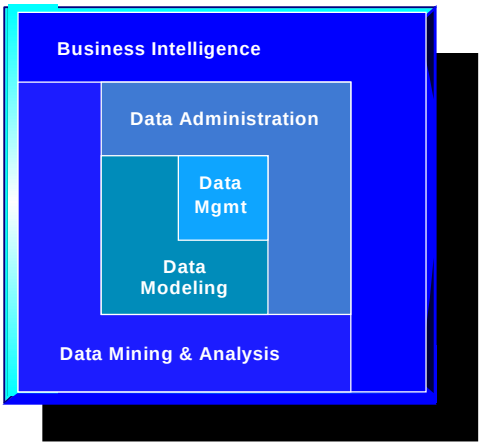


Figure 3 shows the 'virtual warehouse' established to allow sharing of data across different platforms. Once the warehouse was established, a complete review of tools and technologies was done to determine where managed query and reporting could be applied. SAS front-end tools were selected in addition to some departmental specific 'home grown' applications.



Once the data has been staged and the virtual warehouse built, front end tools and applications are selected and customized to meet the needs of the users. The original reporting requirements identified at the onset of the process are revisited to ensure that the business goals have been met. All 200+ users are able to access business critical information via intranet and Internet using EIS, GIS, and OLAP tools.

THE BENEFITS & REQUIREMENTS OF EDM



The benefits of EDM in this case study included:

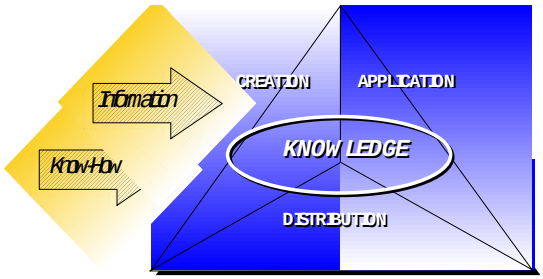
- **Data access, accuracy, & reusability**
- **Identification of new business opportunities**
- **Enhanced customer service**
- **Strategic market segmentation approaches**
- **Risk management**
- **Forecasting & trending analysis**
- **Competitive assessments**
- **Information reporting & presentation**
- **Education on knowledge discovery techniques**

Enterprise information delivery requires establishing an integrated approach to meet business needs.

IT needs to sell business deliverables and assign ownership of business requirements to the business sponsors. This should include:

- Leverageable requirements - tracking ROI
- Emphasizing high-value deliverables, that can be provided in a short span of time (less than six months), limit the scope of the project to a single subject area
- Establishing multiple deliverables
- Avoiding unrealistic goals
- Leaving room for incremental feedback to drive additional requirements.

THE MILLENIUM - KNOWLEDGE MANAGEMENT



Recognizing that intellectual capital is as important as financial capital

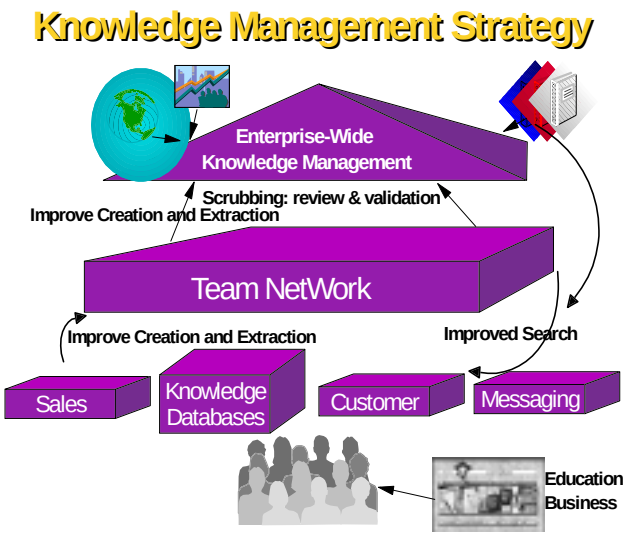
Knowledge management includes the integration of:

- Enterprise data management
- Expert systems

- Multimedia data management
- Collaborative messaging
- Electronic commerce
- E-mail and scheduling

Knowledge Management (KM) takes information delivery one step further. KM encompasses the application of technology based strategies, processes and structure to allow for the delivery of business critical information. KM solutions allow for leverage of business knowledge to increase an organization's intellectual capital by accessing, managing, and sharing information. This includes the implementation of integrated strategies and techniques to improve process flow, data management, and the visualization of business critical information, increasing a business' ability to perform in today's highly competitive marketplace.

By utilizing these integrated techniques, organizations better prepare themselves for the onset of competition in a marketplace where bigger, better, faster, more continues to rule.



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