



Chapter XIV

From Data to Decisions: Knowledge Discovery Solutions for Intelligent Enterprises

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ABSTRACT

To compete in today's environment, organizations have to develop an ability to use intelligently the knowledge assets already inherent within them as well as the new intellectual capital they create daily. Many companies have already adopted some type of business intelligence (BI) tools such as report writers, spreadsheets, and, more recently, OLAP to gain a competitive advantage in decision making. However, these tools are woefully inadequate at analyzing data patterns. Thus, superior tools and methods are required. Knowledge discovery is about understanding a business. It is a process that solves business problems by analyzing the data to identify patterns and relationships that can explain and predict behavior. It enables an organization to better understand its core business processes by searching automatically through voluminous data, looking for patterns of events, and presenting these to the business in an easy-to-understand graphical form. Knowledge discovery is then a competitive necessity for today's organizations. This chapter describes various knowledge discovery tools and technologies that can help to create intelligent enterprises.

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INTRODUCTION

The exponential increase in information, primarily due to the electronic capture of data and its storage in vast data warehouses, has created a demand for analyzing the vast amount of data generated by today's organizations so that enterprises can respond quickly to fast changing markets. These applications not only involve the analysis of the data but also require sophisticated tools for analysis. Knowledge discovery technologies are the new technologies that help to analyze data and find relationships from data to find reasons behind observable patterns. Such new discoveries can have profound impact on designing business strategies. With the massive increase in data being collected and the demands of a new breed of Intelligent Applications like customer relationship management, demand planning and predictive forecasting, the knowledge discovery technologies have become necessities to provide high performance and feature rich Intelligent Application Servers for intelligent enterprises. The new knowledge-based economy entirely depends upon information technology, knowledge sharing, as well as intellectual capital and knowledge management. Organizations are moving to new electronic business models both to cut costs and to improve relationship management with customers, suppliers and partners. If an organization knows patterns of customer demand, it can reduce inventory requirements and unused manufacturing or service capacities.

Knowledge management (KM) tools and technologies are the systems that integrate various legacy systems, databases, ERP systems, and data warehouse to help facilitate an organization's knowledge discovery process. Integrating all of these with advanced decision support and online real time events would enable an organization to understand customers better and devise business strategies accordingly. Creating a competitive edge is the goal of all organizations employing knowledge discovery for decision support. They need to constantly seek information that will enable better decisions that will in turn generate greater revenues, or reduce costs, or increase product quality and customer service. Knowledge discovery provides unique benefits over alternative decision support techniques as it uncovers relationships and rules, not just data. These hidden relationships and rules exist empirically in the data because they have been derived from the way the business and its market work.

This chapter discusses all the tools required to enable the organization to go through the key processes of knowledge sharing, knowledge distribution, knowledge creation as well as knowledge capture and codification. These tools include advanced databases, AI tools such as case-based reasoning and expert systems, group collaborative systems, office automation systems and emerging technologies such as CAD and virtual reality.

ESTABLISHMENT OF KM INFRASTRUCTURE

The business world is increasingly competitive, and the demand for innovative products and services is even greater. In this century of creativity and ideas, the most valuable resources available to any organization are human skills, expertise, and relation-

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