

Is Business Intelligence a Smart Move?

Sixto Ortiz Jr.

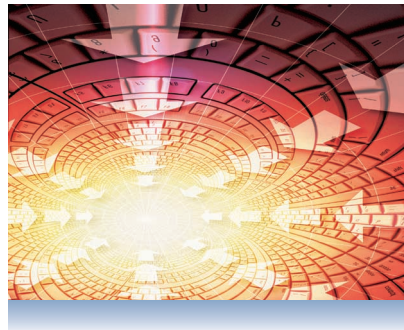
As businesses continue to use computer systems for a growing number of functions, they face the challenge of processing and analyzing huge amounts of data and turning it into profits.

In response to this, vendors are trying to upgrade their business intelligence (BI) products, which are sets of tools and technologies designed to efficiently extract useful information from oceans of data.

If successful, upgrading the technology would not only help users but could also let BI vendors widen their products' audience. However, despite the recent improvements, widespread adoption still faces several key challenges, such as high costs and the need for BI systems to integrate and interoperate with the many heterogeneous corporate data sources.

SETTING THE STAGE

BI has existed for about 20 years. It began with the use of custom queries that data analysts developed at the request of key corporate personnel who needed to process large data sets to make decisions, explained Andreas Kolind, an analyst with Datamonitor Technology, a market research firm. Over the years, BI has evolved from custom, single-purpose, in-house appli-



cations to prepackaged, multipurpose, commercial products.

Using BI

As Figure 1 shows, a BI system queries a data source, uses techniques such as online analytical processing and data mining to analyze information in the source, and reports the results of its work.

BI is related to data mining and analytics. Generally, experts trained in statistical analysis have used data mining to discover meaningful patterns in large data sets, frequently to formulate predictions. Analytics takes BI to users who aren't experts by embedding tools with simplified interfaces and reporting capabilities into business applications.

Analysts currently use BI for such purposes as understanding customer buying patterns, identifying market-

place opportunities, gauging project effectiveness, or optimizing inventory management.

According to Datamonitor, the biggest BI users in North America in 2000 were the financial services, telecommunications, and manufacturing industries, as Figure 2 shows. Leading BI vendors include Brio Software, Business Objects, Cognos, and Informatica.

Driving force: Data glut

A primary driving force for BI improvements has been the growing torrent of business data, which is increasingly difficult to analyze quickly and thoroughly.

Steve Duplessie, founder and senior analyst for the Enterprise Storage Group, a storage industry research firm, said, "The real problem is that data growth rates are at least 100 percent per year, and [database] search indexing capabilities haven't been able to keep up."

Today's high-speed processing and networking technologies are producing increasing amounts of data faster. In addition, beyond the typical operational data that enterprise resource planning systems generate, companies now use computing systems for functions such as human resources and accounting, and various Internet-based applications, including interactive Web sites and e-business systems.

NEW BI TRENDS

In the past, BI was so complex, expensive, and time consuming that companies generally used it only for large-scale projects at the departmental level. Now, though, BI is becoming simpler and Web-enabled, and companies are using it throughout the enterprise to deliver project and employee performance evaluations, reports, alerts, and other analyses. Businesses are also using the technology with partners, customers, and suppliers.

Even public-safety agencies such as the Oakland County (Michigan, US) Courts and Law Enforcement Manage-

Industry Trends

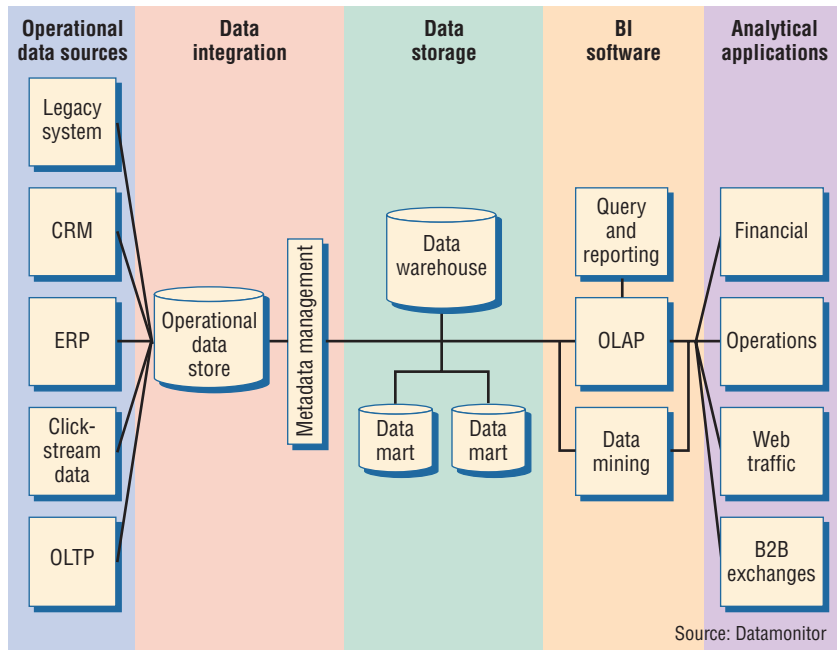


Figure 1. Using techniques such as online analytical processing (OLAP), business-intelligence software queries and analyzes information from data warehouses and data marts, which integrate data pulled from sources such as customer-relationship management (CRM), enterprise resource planning (ERP), and online transaction processing (OLTP) systems.

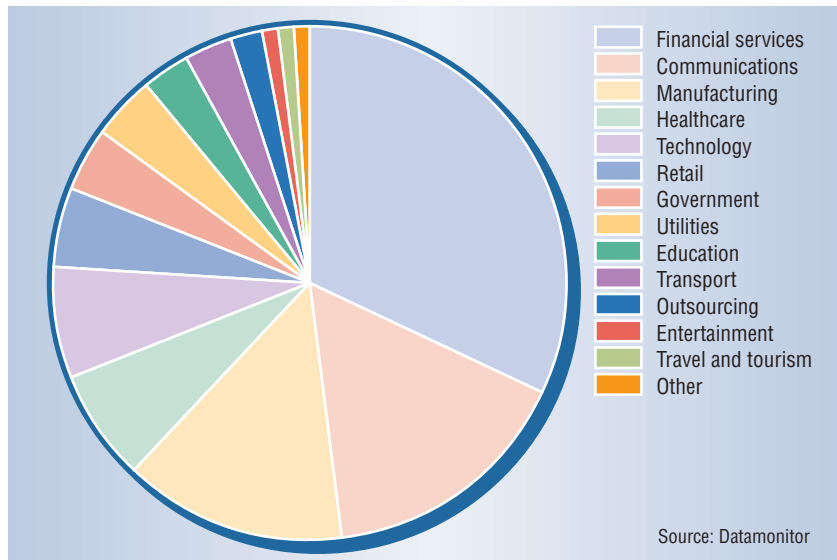


Figure 2. The financial services, communications, and manufacturing industries are the biggest users of business-intelligence technology.

ment Information System use BI to analyze complex crime statistics, recognize trends, and more quickly develop solutions.

Users are also turning to BI for deeper analysis than the technology could provide in the past. “The improvements in processing power and the sheer volume

of data available mean that deep analytics are in greater demand in the most sophisticated companies,” explained Datamonitor’s Kolind.

Integrating BI into business apps

An emerging trend in BI is embedding analytical capabilities in back-end customer-relationship management, supply-chain, and ERP systems, said Kolind. These products are attractive because the BI software is designed to work with a specific back-end system, and buyers can do business with a single software vendor, rather than one each for the BI and back-end systems.

“Tight integration of [BI] application intelligence right on top of the storage itself creates a powerful tool,” noted the Enterprise Storage Group’s Duplessie.

Ultimately, vendors will continue the integration trend by increasingly incorporating BI technology directly into databases, predicted Dan Vesset, research manager for data warehousing and information access at IDC, a market research firm.

Real-time, Web-based BI

E-commerce is the driving force behind real-time, Web-based BI. In large e-commerce operations, companies receive considerable data online and store it in their databases.

Analyzing some of this data in real time can be advantageous. For example, real-time analysis could help an online retailer determine whether customer purchasing patterns and marketplace conditions indicate the company could increase profits by lowering prices right away.

Businesses also use real-time BI systems to analyze buyer activity and recommend products that customers may want to buy in addition to those they are currently purchasing, such as a CD to go along with a book.

Similarly, businesses use real-time BI to notify decision makers when account activity reaches a predetermined level. For example, if a customer buys more than a certain amount of a product, the

BI system could immediately notify the vendor. The vendor could then offer a quantity-based discount to encourage further big purchases.

In the past, BI systems often used the non-real-time extract, transform, and load approach, which processes data a batch at a time. A new approach, on the other hand, enables real-time BI by processing a data set that is transferred in its entirety via messaging.

Despite these improvements, Web interfaces are still not as rich as Windows interfaces, said Frank Buytendijk, a research director at Gartner Inc., a market research firm.

BI and Web services

Web services are platform-neutral technologies designed to ease the delivery of network services over intranets and the Internet.

Web services enable interoperability via a set of open standards, including XML; the simple object access protocol; the XML-based Web Services Description Language; and the universal description, discovery, and integration protocol.

Via Web services, companies can use the Internet to access and analyze data in multiple locations, including information stored by partners and suppliers.

Informatica Corp. recently released a new version of its Web-services-enabled BI tools, said Helen Dwight, the company's senior director of marketing in platform technology.

The Data Integration Platform tool is a server-based application that integrates data from ERP and other enterprise back-end systems into a single cohesive data set for subsequent analysis. This tool uses PowerConnects, software modules customized to work with different back-end systems. The Analytics Delivery Platform component then uses Web services technology to deliver BI results across platforms over the Internet.

Analyzing huge data sets

Traditional servers have not been powerful enough to execute ad hoc

queries of large, complex databases in a reasonable amount of time.

Netezza Corp. is developing BI tools that analyze terabytes of data quickly. This is particularly valuable to fast-moving businesses, such as large retailers, that regularly collect huge amounts of data, said Foster Hinshaw, Netezza's chief technology officer and cofounder.

A driving force for BI improvements has been the growing torrent of business data.

To improve performance, Netezza created its Performance Server, an integrated database storage server.

Companies frequently use multipurpose servers to perform BI, Hinshaw explained. However, these servers' CPUs must also carry out many other functions, which can hurt business-intelligence functionality.

The Performance Server, on the other hand, functions as a database appliance that performs only BI analysis, with hardware and software optimized for that purpose. Netezza also developed ways to execute database primitives in hardware so that they process huge data sets much faster than they would in software.

Making BI easier to use

BI has had a reputation for being hard to work with, requiring the use of mathematicians skilled in data and statistical analysis, or at least help from IT staff. This adds time and cost to the process.

However, said IDC's Vesset, BI tools are fast becoming simpler and more intuitive to use, through such additions as graphical interfaces, visualization tools, and reusable report templates.

Moreover, explained Datamonitor's Kolind, Web-enabling BI gives users easier access to tools and data, via intranet or extranet portals. In some cases, users could just add new data to

a Web-based BI template to have the information analyzed.

Integration of ad hoc data

Corporations frequently possess considerable ad hoc information outside their data warehouses in spreadsheets, e-mail, independent legacy systems, and departmental servers. This data frequently is "dirty" because it is in ASCII or other formats not found in the warehouses, explained Jim Kanzler, president and CEO of BI-software vendor Meta5. Data can also be dirty if the company and the data warehouse use different naming conventions.

To analyze ad hoc data, it must be converted into the same data formats found in the warehouse and then integrated into the warehouse. Thus, Kanzler said, to efficiently run BI on all of the information, data cleansing and transformation are critical. However, these processes can be difficult, expensive, and time consuming.

A challenge is empowering users to do their own ad hoc data integration, rather than depend on IT staff, Kanzler said. Otherwise, the process becomes too difficult for widespread use.

In response, several vendors, including Meta5, have designed tools that sort, rearrange, join, and otherwise work on ad hoc data for integration into warehouses.

OBSTACLES AND CONCERNS

Despite recent improvements, BI still faces several obstacles to widespread adoption.

Security

Datamonitor's Kolind said security is an important issue for BI. One concern is that companies are increasingly sharing data for BI analysis outside their firewalls, even over the air to wireless users.

BI security approaches include the use of passwords and encryption for many systems, the secure sockets layer protocol for Web transactions, and wireless transportation-layer security for wireless application protocol transactions.

Industry Trends

Cost

Enterprise BI tools with multiple user and server licenses can be expensive, explained IDC's Vesset. The software must be able to interoperate with many data sources, the hardware must offer high performance, and the system must be able to implement complex mathematical algorithms.

Despite the prices, noted Datamonitor's Kolind, IT departments focused last year on BI and other ways to improve corporate data use. This year, though, he added, because of the global economy, "Most IT-spending surveys rank BI as a lower spending priority."

Integration and interoperability

BI systems must be able to integrate and interoperate flexibly with the growing number and types of corporate data sources with which they connect. BI systems thus must be able to

effectively extract data in multiple formats that is stored in multiple sources hosted on multiple platforms.

The challenge is to develop increasingly flexible and effective application program interfaces that can communicate with the various sources.

LOOKING AHEAD

The corporate data flood will continue to grow, making BI a necessary tool for businesses. Because of the uneven global economy, though, Datamonitor predicts little BI-marketplace growth this year and in 2003. However, the company predicts that as the global economy improves, the market will resume moderate growth in 2004 and 2005.

In the near future, Datamonitor's Kolind predicted, improved interfaces and BI embedded in enterprise applications will continue to help nonexpert users conduct data analysis. IDC's

Vesset agreed and said this will encourage companies to expose more business information to employees, customers, and suppliers, which will substantially broaden the demand for BI.

However, cautioned the Enterprise Storage Group's Duplessie, BI will experience problems if the technology can't continue to grow along with the amount of corporate data. "Smarter systems for both hardware and software will have to happen," he explained, "or this all will become a useless exercise." ■

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