A warehouse methodology has to address all of these steps. Building a data warehouse is iterative; therefore, it is critical there be multiple entry points into the chosen methodology. Use of a proven methodology, coupled with collaboration between the IT department and business users, will greatly enhance the chances of successfully building the system. Figure 4 shows a proven data warehouse methodology representing an end-to-end solution with multiple entry points. This methodology represents the steps through which service providers and a user company's staff can make decisions regarding the warehouse and then implement and maintain that warehouse.

Health Care Management

Anthem Blue Cross Blue Shield's common repository for claims, revenue, and services provided by hospitals and physicians totals 1.3TB of data for the company's midwestern business operations.

CECILIA CLAUDIO

From a business standpoint, there has never been much dispute about the advantages data warehousing offers a company with large-scale information needs. Less well known is that data warehousing can be a great help to the human condition, especially in terms of health care.

Health plan policyholders are concerned about receiving the best treatment possible for as little cost as possible. With medical costs in the U.S. ever escalating, consumers, physicians, and employers alike often view these goals as mutually exclusive and that it is now nearly impossible to obtain quality, or even adequate, health care for a reasonable price.

Anthem Blue Cross and Blue Shield, one of the largest health care management companies in the U.S., is trying to ensure this perception proves inaccurate. Developing from its beginnings as a one-product—indemnity—one-state—Indiana—health insurer in 1944, Indianapolis-based Anthem has grown into a $6.5-billion (fiscal 1997) integrated health care provider with significant market share in two separate regions—the midwest and the northeast—in the U.S.

This growth has meant a significant IT challenge: how to integrate several disparate data warehouses into a single repository to create a "single version of the truth" for all users. Now, charged with managing Blue Cross Blue Shield plans in Ohio, Kentucky, Indiana, and Connecticut, Anthem faces an insatiable need for information about its more than six million policyholders and 350,000 providers, as well as the care they provide and their costs.

"We're moving from an insurance environment, where customers and health care providers submit claims and we pay them, to managing the health care our customers receive by working closely with the providers," says Anthem senior vice president Bill Milnes. "And we've found that you can't manage health care without managing information."

In 1995, with a $10.6-million contract, Anthem chose NCR Corp.'s Teradata relational database management system (RDBMS) as the platform on which it would build a consolidated database, thus creating a single repository system that would significantly improve companywide access to data. Anthem also chose a 16-node NCR WorldMark 5100M massively parallel processing server to accompany the RDBMS as its common repository for claims, revenue, and services provided by hospitals and physicians, and other vital information for Anthem's midwestern business operations. The consolidated data warehouse contains 1.3TB of data—enough, if put on paper, to fill 27,000 four-drawer filing cabinets.

Better access to information is helping Anthem improve the quality and reduce the cost of care for its policyholders by reducing fraud, negotiating lower rates with providers, accurately managing risks, and saving lives by increasing the knowledge of network physicians. The integrated data warehouse makes it possible for the company to enhance the quality of patient care and deliver more responsive customer service while reducing the costs of health care.

Lives and Money

Anthem has not only accomplished its goal of unifying its disparate corporate parts (it merged with Blue Cross Blue Shield of Connecticut in 1997)

Metadata

Metadata is popularly defined as data about data. In a relational database, metadata is the representation of the objects defined in that database—specifically, the definitions of its tables, columns, databases, views, and any other objects. In data warehousing, "metadata" refers to anything that defines a data warehouse object, such as a table, a column, a query, a report, a business rule, or a transformation algorithm.

Understanding these definitions is critical for all aspects of the data warehouse development process. Metadata management should tightly control everything—from developing programs that extract data from the source operational systems to transforming

but realized financial savings and productivity gains. The time now saved in searching for information in the NCR data warehouse (up and running since mid-1996) also allows users more time to analyze the data they collect. For example, when reviewing data for a particular medical procedure—coronary artery bypass surgery—Anthem found certain providers have superior success rates. Therefore, Anthem now funnels patients to these providers, reducing the procedure's mortality rate from more than 4% to less than 1% for Anthem policyholders while reducing costs to their employers.

The warehousing solution has also helped Anthem's negotiating staff. Armed with detailed data, sorted by region, product, procedure, and price, they can negotiate more favorable contracts with the company's more than 400 provider hospitals.

Anthem's legal department uses the warehouse for fraud detection. For example, an analyst recently uncovered a $37,000 bogus claims check. A particular provider's pattern of payments didn't fit the norm, and the analyst's research revealed that Anthem had actually paid several times for the same services. The provider was then billed for the overpayments.

The data warehouse has also helped Anthem win new business. For example, it used the system to design a custom report for a major prospect showing how costs could be cut in a particular geographic area. The system's ad hoc reporting capability was something the competition could not provide and made the difference in Anthem's winning the account. Anthem now has plans to give external users, such as doctors and hospitals, who need detailed data and direct access to the reporting capabilities of the warehouse.

Reporting Consistency

Before Anthem's mergers and the construction of the enterprise warehouse, the company had plenty of data—and an acute shortage of accurate answers. Users seeking answers to specific queries had to employ data sources from several disparate mainframe environments. This practice proved not only daunting and time-consuming but a breeding ground for inaccuracies and conflicts of data. Invariably, one department's findings would be different from another's. Worst of all, it left little time for data analysis—the lifeblood of the insurance business.

Users performing ad hoc complex queries now find reporting consistency throughout the company on enrollment, utilization, valuation, rate filing, loss ratios, provider profiling, and financial and marketing research. Moreover, with a single version of the truth available for all users at any time, Anthem quickly answers business questions essential for maintaining an edge in the competitive health care management market.

Scalability

Anthem also wanted a system that could grow as the company grew. Teradata was viewed as the most appropriate technology for databases of the size and complexity demanded by the company's midwest operations, with an anticipated growth rate approximately 10 times the current 1.3TB in the next three years. Incorporating common hardware building blocks across high-end symmetric multiprocessing, clustered, and massively parallel processing systems, NCR's scalable WorldMark servers and Teradata RDBMS will allow Anthem to expand its system to accommodate up to thousands of processors and many terabytes of data. C

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