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The Power of Knowledge

Picturing Success: Nationwide's Data Warehouse

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Introduction

There is a straightforward correlation between the financial services industry and the data needed to handle even the most basic financial transactions. From a manufacturing perspective, data is the only "natural resource" of financial services, and this is even truer for insurance companies. Data must be collected, edited, processed, and maintained so that securities brokerages, banks, and insurance carriers can serve their customers as well as other stakeholders. Data analysis is essential for all modern financial service providers and was always part of the equation within the insurance business, especially when considering the crucial role of actuarial science to all forms of insurance.

The current demands placed on financial services make a data warehouse much more than a "nice to have" piece of technology. While it has been possible for companies to develop information systems that worked together and produced all necessary analytics, the reality has always seemed to fall short of this mark. Reality has intervened to place the vast majority of insurance companies in a purgatory of information systems that support core operational needs but make it difficult at best to collect information and analyze it in reasonable timeframes. Facing this dilemma, Nationwide Insurance, the primary property and casualty (P&C) component of the Nationwide Mutual Insurance Company, worked to create a data warehouse to meet the needs of its business units.

Highlights

- The intake, processing, and analysis of data are essential to all modern forms of commerce. For the financial services industry, data is the primary component of even the most basic transactions. Financial institutions recognize the importance of converting data into information that supports their tactical operations and strategic goals, but achieving desired results can be difficult.
- Insurers often face challenges when attempting to make use of their vast stores of operational data. The realities of historically siloed operations and the organic nature of systems created as a result make data consolidation, reporting, and analysis difficult at best. The most powerful technology available to facilitate these important tasks for insurance companies is a data warehouse. Regardless of the size of the investment or the dedication of IT staff, implementing a data warehouse tends to be problematic at best.
- Nationwide Insurance has consistently used information technology over the years to meet the needs of its customers and business partners. From pioneering work in support of its agency force and distribution channels, to the use of automated underwriting and executive information systems, this multiline carrier has made prudent investments that deliver results. Nationwide's data warehouse implementation benefited from previous "warehousing" attempts and the team's successful partner-based approach to providing the "authority source" for enterprise information.
- This TowerGroup Research Note is a case study that explores why Nationwide Insurance has been successful in its implementation of data warehousing and how this resource continues to provide positive ROI for the company.

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A data warehouse represents an opportunity for many companies, insurers included, to consolidate data and information from disparate sources while preparing it for analysis at the same time. When successfully developed and maintained, a data warehouse can become the source of "data truth" for a company. In order for this to happen, a great deal of data management, business goal setting, and IT project management must occur. In Nationwide's case, a combination of technology, business vision, and partnership all contributed to a data warehouse that enjoys a high degree of functionality, utilization, and a promising future.

Background

Access to information is a key differentiating factor for every successful business. Over 40 years ago, automation of insurance processes meant the computerization of clerical tasks that made up the vast majority of every carrier's business. These clerical tasks included accepting applications for coverage, passing forms between departments for underwriting and filing, and producing insurance policies, bills, and other required documents for customers and regulators. Generating reports for executives, operational management, and regulators required a department unto itself.

Over the next four decades, insurers employed various advances in information technology (IT) as they sought efficiency through computer automation. The resulting applications and systems now show the effects of organic (i.e., largely unplanned) growth, which was often made worse by external factors such as budgetary constraints, regulation, and internal discord between business areas and IT departments. Consequently, the computer systems within many insurance carriers usually were waiting for the next new hardware platform, program enhancement, or infrastructure upgrade to maintain business performance at acceptable levels.

Why Data Warehouses Are Important

The practice of data warehousing is no longer an emerging IT construct. Many industries use products from vendors such as NCR Teradata, SAP, Oracle, SAS, and IBM to collect, consolidate, and store critical business information in a data warehouse for later retrieval and analysis. The road is littered with the stories of first adopters, failed projects, and scope creep. Nonetheless, data warehouses can work. Although the insurance industry had its share of less than successful forays into using large data stores for business intelligence projects, today's implementations are stable and provide a source of data that has the purity required for successful analysis.

Insurance carriers need to focus more on the customer, become more "customer-centric," to meet the challenges of the new world of financial services, where traditional lines of distribution are evaporating. Insurers need to take advantage of the deep knowledge they collect in the normal course of operations and leverage it for retention and customer service activities. The exercise of collecting, codifying, and transforming data from different operational sources into a data warehouse is often traumatic but also cleansing at the same time. The effort results in better understanding between operational areas and IT departments, which also serves to improve the customer-based view of data that is becoming essential to the financial services industry.

Leveraging a "Natural Resource." Data warehouses are sources of information for analysis by business intelligence tools, data mining algorithms, and ad hoc queries. They are not intended for real-time information retrieval by a customer service representative. Their value lies in the analysis made possible by having all data available in one place. A data warehouse makes possible the discovery of trends,

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categorizations, and patterns, which can then be used to control decisions and make logical assumptions that are critical in customer service events. These results will also be used in marketing campaigns and in the detection of fraud. An area of increasing interest to insurance companies is real-time access to analysis of a particular customer's worth over time. Warehouse algorithms make it possible to quantify and update concepts such as lifetime value, household profitability, and life-cycle event planning. The warehouse stores results of the calculations for real-time access by the decisioning engines that support customer-facing applications.

Core System Data Integration

Nationwide Insurance established its current data warehouse, code-named "Galaxy," in 1997, but there were several previous attempts at consolidation of the property and casualty (P&C) company's data sources. In the early 1990s, the IT department made various attempts to engage the business areas in projects to create large collections of data for reporting and analysis purposes. Although business areas and IT departments have always sought to make data and information easier to access, it was the advent of client-server architectures and personal computers that drove companies to create applications that simplified data access.

This evolution happened in typical style within Nationwide. IT first created several traditional reporting systems (integrated vertically within line-of-business silos) that tied various production data streams together. The new computing architectures allowed more progressive business units to ask for data extracts from their core systems. In a way, the new systems contributed to the organic IT sprawl even as they delivered better information to their users.

The Warehouse Concept

One of the major technological drivers of data warehouses was the availability of processing horsepower. Advances in hardware performance made the computationally intensive database structures within a warehouse more tenable to IT departments. Nationwide began to experiment with high-performance computing (HPC) systems in the early 1990s. Various multiprocessor hardware vendors courted the carrier, including Tandem with its Himalaya system, IBM with the SP2 parallel architecture using Oracle's Parallel Server database, and NCR with the Teradata system. The offerings from Tandem and Teradata included the database needed to create a warehouse, which made their solutions more integrated.

One of the early attempts at a data warehouse was known as the Integrated Information Library (IIL). This project ultimately failed as a result of scope creep and failure to successfully integrate funding mechanisms from business areas. In addition, the project was centered around the technical aspects of a data warehouse, which only served to widen the gap between business and IT. Although the IIL project was a disappointment to the company, it taught both IT and its business partners lessons that contributed to success of Galaxy several years later.

Keys to Success

The data warehouse at Nationwide Insurance enjoys its level of success as a result of the hard work and dedication of the teams that make it work. Members of the business areas as well as the Business Intelligence Solutions team (the IT unit responsible for the technical infrastructure of the warehouse) cite the following points when discussing the reason the data warehouse works as well as it does.

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Data Quality

Like the vast majority of complex computer systems employed in business today, for this data warehouse data quality is an important issue, but often one that does not get the attention that it deserves. When Nationwide was exploring high-performance computing, data quality was being tackled throughout the company. In order for advanced IT mechanisms such as data mining, online analytical processing (OLAP), and data warehousing to work, the general state of data had to be improved. This also became clear as geographic information systems (GIS) were being integrated into operational systems. For example, it is not unusual for a carrier to have multiple addresses (sometimes dozens) for the same person or commercial customer. This not only increases costs due to duplicate mailings, but it also makes the carrier look bad to its customers. Clean addresses also allow companies to reduce mailing costs by presorting mail before it is picked up by the postal service. In addition to correcting addresses and eliminating duplicates, data cleansing forces a company to review data sources and determine exactly what premium, reserves, and cost factors actually are in relation to what they are assumed to be.

To begin to remedy this situation, Nationwide purchased several tools to cleanse its data. One of the tools was Integrity from Vality. This mainframe tool is written in machine and assembler code for maximum efficiency as it identifies and repairs data sets that pass through it. Although it was not purchased expressly for the data warehouse effort, it is nonetheless an essential part of the warehouse process today. Data cleansing contributes to the axiom that a data warehouse should be the source of "data truth" for its users.

Vendor Selection

After reviewing the aforementioned hardware and data warehouse solution vendors as well as a few others, Nationwide selected NCR's Teradata Division. Some of the factors that favored the selection of Teradata were that vendor's experience in building data warehouses in different industries, its willingness to work with the business and technical units of the company, and its data modeling knowledge, which is crucial in complex IT environments like Nationwide's.

Project Governance

The governance of this strategic project was more important than most because of its size, cost, and potential for positive impact on the business. A business advisory team (BAT) is an important component of the accountability model that steers the project. Regular meetings (at least monthly) of the teams that make up the project's governing entities assure that disputes, project timelines, and opportunities are reviewed and bought into before changes occur. Exhibit 1 shows the Accountability Model that Nationwide Insurance used to guide the Galaxy data warehouse project.

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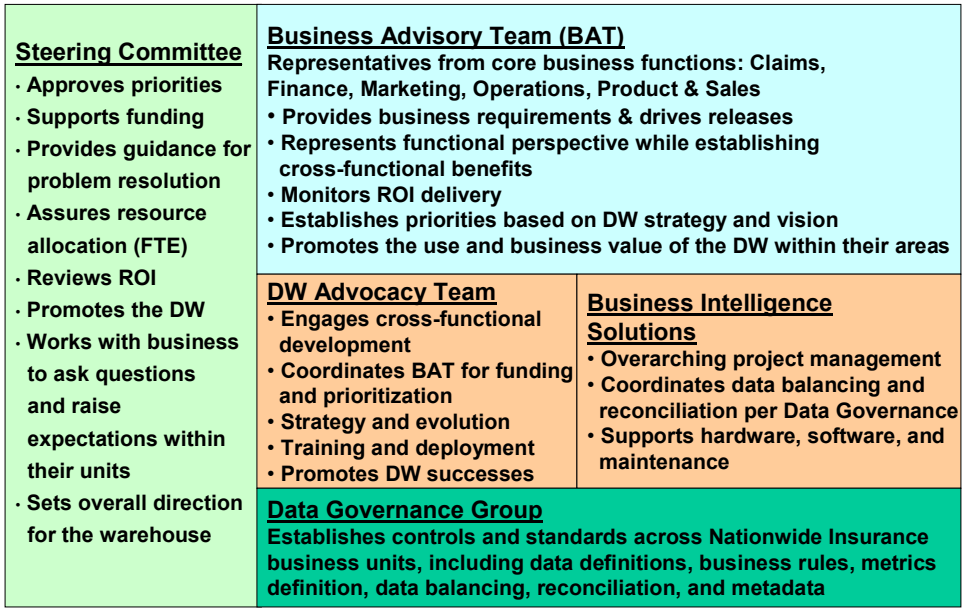
Exhibit 1

Nationwide Insurance Accountability Model



Sources: Nationwide, TowerGroup

Partnerships

Perhaps the most important aspect of the warehouse project was the partnership between the business units, the IT department, and the vendor. This high level of partnering starts with the project team itself. A team of two champions the warehouse: one person represents the business areas, and the other the IT side of the house. These two are peers and each brings significant experience to the table in the form of technical knowledge, project management, and business acumen. They act as liaisons to each other's constituency, often acting as translators of technical jargon or business terminology. To others in the company, this team appears as inseparable leaders of a project whose only goal is to serve the needs of the business.

This low-level partnering and a definitive governance structure helped to assure the necessary cultural change that had eluded previous warehouse attempts and even attempts to consolidate core systems data. The team, in conjunction with the vendor, had to recognize the skill sets needed for the project and promote the training of individuals in IT and business areas to meet those needs. Once these high-value partnerships are established, it is critical to take steps to preserve them.

Letting Business Lead

Another key aspect of success was the concept of letting the business areas experience the value of the warehouse for themselves. This step helped to remove the specter of conflict of interest from the IT areas as the project matured. In the past, too many large-scale IT projects suffered from the concept that advances in technology alone were a good enough reason for a business area to contribute to project funding. Business units have seen such projects fail to deliver on major components of their plan and are naturally suspicious of them. Exhibit 2 depicts the structure of the business advisory team for the data warehouse and its relationship to other project units.

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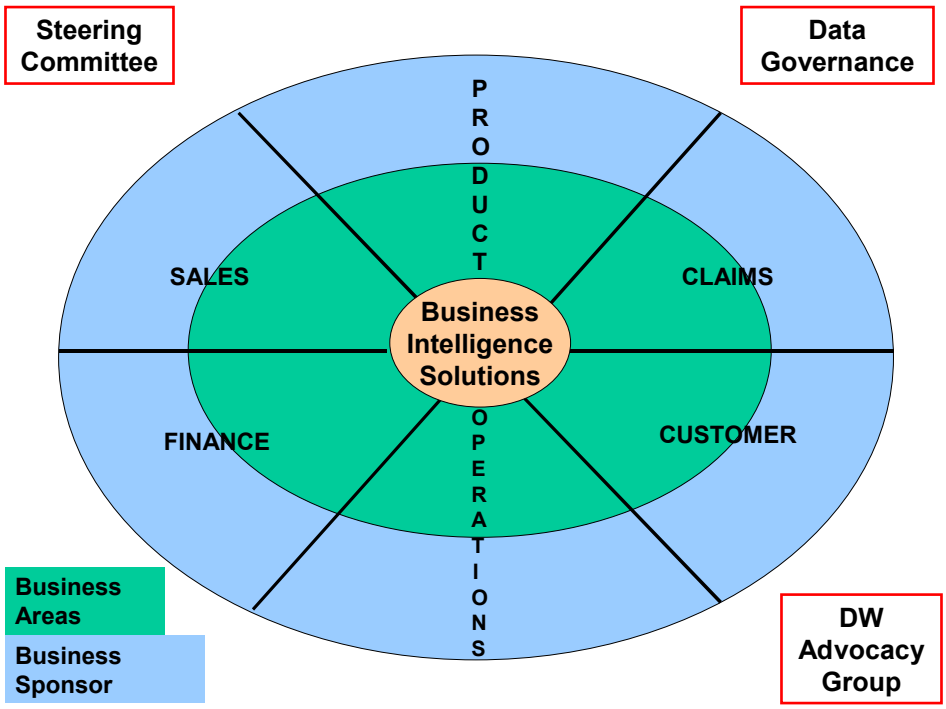
Exhibit 2

Business Advisory Team Relationships



Sources: Nationwide Insurance, TowerGroup

The Business Intelligence Solutions (BIS) group is the keeper of the technical infrastructure of the warehouse. The group's role is to shepherd the movement of data in and out of the warehouse and to develop applications. In future models of the relationships shown in Exhibit 2, each business area system group will be encouraged to take over some of this role. One aspect of this role change will be for BIS to allow the business area systems groups to take on more application development.

What Success Looks Like

In addition to meeting goals and expectations of internal groups, Nationwide has received several accolades from the data warehouse community including the 2003 ADT Innovator Award, the 2002 Data Warehouse Institute Award, as well as recognition in industry publications. One of the strongest signs of success comes from the fact that more units inside the company are asking for access and are coming to trust Galaxy as the "authority source" for internal information. This includes actuarial areas and finance, which may be the biggest compliment and validation of all. The warehouse is currently occupying over 1.2 terabytes of disk space on the Teradata equipment and is returning queries within established criteria.

Another aspect of the success of the Galaxy project is the support for its ongoing cost of operation. Part of the job of the data warehouse advocacy team is to demonstrate the value that the warehouse brings to the business units that make use of it. In this way, the funding for the warehouse does not have to be

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justified each budget cycle. And while the cost runs into the millions of dollars, there is no shortage of customers willing to become a part of this system. A final aspect of success can be seen in the decision for Nationwide Financial Services, the life insurance and financial services component of Nationwide Mutual Insurance Company, to begin to leverage the same infrastructure for its data warehouse.

The Future

As more and more areas within Nationwide Insurance ask for access to Galaxy, the future of this important project seems assured. The teams involved most directly with the warehouse refer to the future as a careful maturation of the processes and partnerships that have developed over the past 5 years. The continued evolution of the warehouse will depend upon adherence to the principles that contributed to its current success.

Conclusion

Large insurance carriers can deploy successful data warehouses in spite of popular perceptions that such endeavors are prone to failure and produce only questionable return on investment. Key success factors include the development of a reasonable scope for the project, the continuous involvement of business partners, and the commitment of executive sponsors.

While technical implementation and planning are critical, equal consideration needs to be given to issues such as cultural acceptance, training, and warehouse life-cycle planning. Implementation strategy should be organized around reasonable and agreed upon phases that promote measurable results to assure the acceptance of the technology within the business community.

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