Communications of the Association for Information Systems

Volume 5 Article 9

January 2001

Sherwin-Williams' Data Mart Strategy: Creating Intelligence Across the Supply Chain

Hugh J. Watson
University of Georgia, hwatson@terry.uga.edu

Barbara H. Wixom
University of Virginia, bwixom@mit.edu

Jonathan D. Buonamici
The Sherwin-Williams Company

James R. Revak
The Sherwin-Williams Company

Recommended Citation
Watson, Hugh J.; Wixom, Barbara H.; Buonamici, Jonathan D.; and Revak, James R. (2001) "Sherwin-Williams' Data Mart Strategy: Creating Intelligence Across the Supply Chain," *Communications of the Association for Information Systems*: Vol. 5 , Article 9.
DOI: 10.17705/1CAIS.00509
Available at: https://aisel.aisnet.org/cais/vol5/iss1/9

Communications of the Association for Information Systems

Volume 5, Article 9
May, 2001

SHERWIN-WILLIAMS' DATA MART STRATEGY: CREATING INTELLIGENCE ACROSS THE SUPPLY CHAIN

Hugh J. Watson
Terry College of Business
University of Georgia

Barbara H. Wixom
McIntire School of Commerce
University of Virginia

Jonathan D. Buonamici
The Sherwin-Williams Company

James R. Revak
The Sherwin-Williams Company

hwatson@terry.uga.edu

CASE STUDY

SHERWIN-WILLIAMS' DATA MART STRATEGY: CREATING INTELLIGENCE ACROSS THE SUPPLY CHAIN

Hugh J. Watson
Terry College of Business
University of Georgia

Barbara H. Wixom
McIntire School of Commerce
University of Virginia

Jonathan D. Buonamici
The Sherwin-Williams Company

James R. Revak
The Sherwin-Williams Company

hwatson@terry.uga.edu

ABSTRACT

Companies can build a data warehouse using a top-down or a bottom-up approach, and each has its advantages and disadvantages. With the top-down approach, a project team creates an enterprise data warehouse that combines data from across the organization, and end-user applications are developed after the warehouse is in place. This strategy is likely to result in a scaleable data warehouse, but like most large IT projects, it is time consuming, expensive, and may fail to deliver benefits within a reasonable timeframe. With the bottom-up approach, a project team begins by creating a data mart that has a limited set of data sources and that meets very specific user requirements. After the data mart is complete, subsequent marts are developed, and they are conformed to data structures and processes that are already in place. The data marts are incrementally architected into an enterprise data warehouse that meets the needs of users across the organization. The appeal of the data mart strategy is that a mart can be built quickly, at relatively little cost and risk, while providing a

proof of concept for data warehousing. The risk is that the initial data mart will not scale into an enterprise data warehouse, and what has been built will have to be scrapped and redone.

This article provides a case study of Sherwin-Williams' successful use of the bottom-up, data mart strategy. It provides background information on Sherwin-Williams, the data warehousing project, the benefits being realized from the warehouse, and the lessons learned. The case is a "textbook example" of how to successfully execute a data mart strategy. Video clips of interviews with key individuals at Sherwin-Williams help bring the case alive.

Keywords: Data marts, data warehousing, IS implementation, IS strategy, Sherwin-Williams

I. INTRODUCTION

Over the past ten years, data warehousing evolved from being a novelty in a few leading-edge firms to being a necessity in many organizations. Recently, it has been at the top of many organizations' strategic initiatives, along with ERP and e-commerce [Eckerson, 1999]. Data warehousing provides the foundation for many of today's current corporate initiatives such as balanced scorecarding, customer relationship management, and supply chain integration.

Even though data warehouses are widespread, there is no common agreement about the best development methodology to use. In fact, there are two competing strategies or approaches. The first is associated with Bill Inmon, who is recognized as "the father of data warehousing," for his early consulting and writings [Inmon, 1992]. He advises companies to use a top-down, enterprise data warehouse approach. The second approach is associated with Ralph Kimball [1992], another highly respected consultant and writer on data warehousing. He recommends that companies use a bottom-up, data mart approach. Both approaches provide benefits but involve limitations. When

successfully executed, both strategies result in an integrated enterprise data warehouse.

In Sections II and III, the two approaches are described, compared, and contrasted. The rest of the article discusses the Sherwin-Williams company, the data warehousing project, the benefits from the warehouse, and the lessons learned.

II. THE DATA MART STRATEGY

The data mart strategy is a "start small, think big" approach. It typically begins with a specific business need for data, usually in the sales or marketing areas. A business unit manager (e.g., VP for Marketing) often sponsors the project and provides the necessary resources and support. The initial data mart contains data for only a single or a limited number of subject areas and draws data from a small number of source systems. Because of its limited scope, a data mart can be developed quickly, at a relatively low cost, and provide a fast return on investment.

If the data mart is successful (thus providing a "proof of concept" for data warehousing), the project team expands the data mart by adding more subject areas, users, and applications. It is at this point that great care needs to be exercised. In a worst-case scenario, separate data marts are developed and maintained by different business units with little or no attention paid to integrating the data either logically or physically.

The better case is to recognize at the outset that the initial data mart will grow and that this growth should be anticipated and planned. From the beginning, the project team should develop consistent data definitions, an integrated data model, and common dimensions and measures (i.e., "conformed" dimensions); implement a scalable architecture that accommodates growing data, users, and network traffic; and select an appropriate portfolio of end user

data access tools. These are challenging tasks because they require planning and foresight; and cross-departmental participation, agreement, and governance.

The data mart approach is appealing because it provides usable data faster, at a lower cost, and with less financial risk. The difficulty, however, is in successfully growing a data mart, integrating new subject areas, data, users, and applications along the way. Some firms end up with multiple data mart "silos" that only perpetuate their data integration problems.

III. THE ENTERPRISE DATA WAREHOUSE APPROACH

In most organizations, the development of an enterprise data warehouse is a desired end goal; however, the data mart approach may not be able to accomplish that objective. Bill Inmon argues that it is unlikely to do so because the architectures of marts and warehouses are "genetically" different. Illustrating this point in a personal conversation with the authors, he said, "You don't plant a seed, see it grow into a tumbleweed, and then become an elm." Unless companies address up front the need to handle a large volume of data, integrate and reconcile data across multiple sources, and provide organization-wide governance, they are unlikely to successfully develop an enterprise data warehouse.

The enterprise data warehouse strategy does not preclude the creation of data marts. The marts, however, are created after the warehouse is built, and they are populated from data pulled from the warehouse instead of from source systems. Users access these "dependent" data marts instead of the warehouse, resulting in faster system response time and a simpler and more customized data view that meets their needs.

When successfully executed, the enterprise approach results in an integrated data warehouse that contains many subject areas and supports multiple users and applications. However, as is the case with most large IT

projects, there is the risk that it will never be completed, or the end result fails to meet user and organizational needs.

IV. THE SHERWIN-WILLIAMS EXPERIENCE

Sherwin-Williams successfully followed a data mart strategy and evolved a single data mart into an enterprise data warehouse. In 2000, the company won The Data Warehousing Institute's Best Practices in the Architected Data Marts category for their work. The following sections describe the company, the business drivers behind the initiative, and the data warehouse project. The article ends with a description of the warehouse benefits and lessons learned from the initiative.

COMPANY BACKGROUND

Sherwin-Williams (www.sherwin-williams.com) is the leading developer, manufacturer, and distributor of architectural coatings and related products. Founded in 1868, Sherwin-Williams today manages 130,000 products across 300 diverse brands (Figure 1). Twenty-eight mergers occurred during the last 10 years alone. In 1999, Sherwin-Williams had $5 billion in annual sales, 36 plants, and 14 distribution centers located across the United States, Canada, and some countries in Latin America.

The company sells its products to 2300 company-owned retail stores and to thousands of external customers. Some of the customers are mass merchandisers like Wal-Mart and K-Mart, while others are department stores like Sears, cooperative stores like Ace and True Value, and "box stores" like Lowes and Home Depot. They also sell to automotive, craft, and tire stores.

Sherwin-Williams views service as a key to their competitive success. It strives to serve its suppliers by optimizing ordering processes and providing helpful feedback about supply quality. Customer service ranges from providing high quality products to developing strategies that increase sales.

Figure 1: Sherwin-Williams Brands and Customers
(Courtesy of Sherwin-Williams Company)

BUSINESS DRIVERS FOR THE DATA WAREHOUSE

As acquisitions occurred between 1990 and 2000, Sherwin-Williams experienced significant increases in business complexity – tens of thousands of customers, hundreds of brands, and over 100,000 products. This growth presented significant challenges for the Sherwin-Williams team to integrate the many diverse businesses, to present “one face” to the customer, and to maintain productive vendor relationships. Sherwin-Williams realized that they needed a single, integrated view of their entire business across all of the diverse business units and up and down the supply chain. One senior manager stated the often heard lament, "You can't manage what you can't measure.”

It quickly became clear to the Sherwin-Williams’ Consumer Group that it needed to make better use of the information that resided in their diverse systems. The acquisitions introduced seven major order systems and innumerable legacy systems, none of which spoke to one another. The systems resided in different geographical locations on different hardware and software platforms, using different business terms. The Consumer Group could not wait for a large ERP system to be put in place to replace the myriad operational

systems. They did not have the time to wait for an implementation that could take years when any competitor could come in and undercut them at any moment. The business users needed a system that could be implemented rapidly and in phases, something that could deliver quick payback to the bottom line.

Thomas Seitz, president of Sherwin-Williams' Consumer Group, believed that the logical solution was a business-focused data warehouse that would be built with a prioritized set of business requirements as a guideline to move ahead incrementally (Video Clip 1). The warehouse would have to deliver real benefits to the business at each step. In 2001, Sherwin-Williams replaced all of the acquired legacy systems with a single-order system that presents a single face to the customer. The data warehouse made this transition possible by creating a robust decision support infrastructure that supports a single view of the supply chain while allowing the proper operational support to be put in place to run the business.

Click Here for Video Clip1:
Thomas Seitz, President,
Sherwin-Williams Consumer Group
(419KB)

Download Windows Media Player 7.

THE DATA WAREHOUSE PROJECT

The data warehouse began with a business requirements assessment, during which the Consumer Group worked with consultants to identify requirements for the data warehouse (the timeline is shown in Table 1). It quickly became apparent that all of the requirements could not be met at once. Therefore, the project team decided to begin by giving the business a preview of what the warehouse could do before moving into an enterprise solution. Because

data warehousing was new to Sherwin-Williams, the team believed that a project with a quick return on investment was needed to garner support and to help the company embrace the warehouse concept.

Table 1: Data Warehouse Timeline

May/June 1997	A data warehouse as part of an ERP initiative is considered. The ERP initiative is ultimately abandoned.
July 1997	Six weeks of interviews for the business requirements for a data warehouse.
September 1997	Findings from requirements assessment are published. Sales analysis is the top priority.
March 1998	Official kickoff meeting held.
February 1999	Phase 1 of the sales analysis mart is rolled out. Eight accounting reports are published.
March 1999 - present	Monthly improvements made to accuracy and data integrity.
December 1999	Contribution reporting for 1999 completed.
January 2000	Kicked off new project for raw materials purchasing.
February 2000	Contribution reporting for 2000 completed.
March 2000	Kicked off new project for Wal-Mart category management.
July - August 2000	TDWI awards Sherwin-Williams an award for "Best Practices."
December 2000	Wal-Mart point of sale and raw materials purchasing marts completed.

The approach was to build one data mart and then use it as a springboard for the enterprise warehouse. Once the first mart was completed (and its success became apparent), the team created an enterprise architecture on top of it, and the first mart was built back into the enterprise architecture. Each subsequent mart was logically separate but related to the other marts through common data definitions and dimensions. All the marts were physically combined on the same computing platform and shared many of the same processes, such as for data extraction, transformation, and loading. Highly scalable hardware and software were selected so that the anticipated growth in data could be accommodated. Taken together, the data marts provided an enterprise data warehouse.

Determining the order for the data mart implementations involved several major considerations. The team investigated the immediate business needs and

the payback of the mart. They considered whether it was a large long-term payback or smaller short-term payback. They also looked at data readiness because data quality was a potential problem with all of the source systems. If source data was not ready to be fed into a data mart, that mart was postponed six months to a year until a data quality initiative could address the important issues. Finally, the team considered the sponsorship of the data mart. Some business areas had very strong executive sponsorship for a data mart, whereas others had weaker support.

From the beginning of the data warehouse project, a steering committee was formed to evaluate the project's priorities. The steering committee included the Executive Vice President of Sales and Marketing, the division and corporate IT directors, and the five business groups that formed the Consumer Group division. The committee was formed because, over time, priorities shift and organizational change is inevitable. To complicate matters, business users likely have little knowledge of what a data warehouse can offer. According to business user Pat Macko, National Account Manager, Ace Hardware, "I often don't know how to ask for what I need." Thus, the project team stayed on top of business requirements by talking to the steering committee members and learning what business changes were occurring from quarter to quarter. The team learned to be flexible and responsive; they had to build a warehouse that could do almost anything.

Sales Analysis Mart

Sherwin-Williams' data warehousing project was designed to provide decision support along the entire supply chain. As a result, the warehouse contains data that follows the supply chain from the acquisition of raw materials through the sales of products to customers. Figure 2 shows the supply chain, the data marts that were developed, and the access of the marts by users through a

Web browser. The following sections discuss the development chronology, the business need, the contents, and the use of each mart.

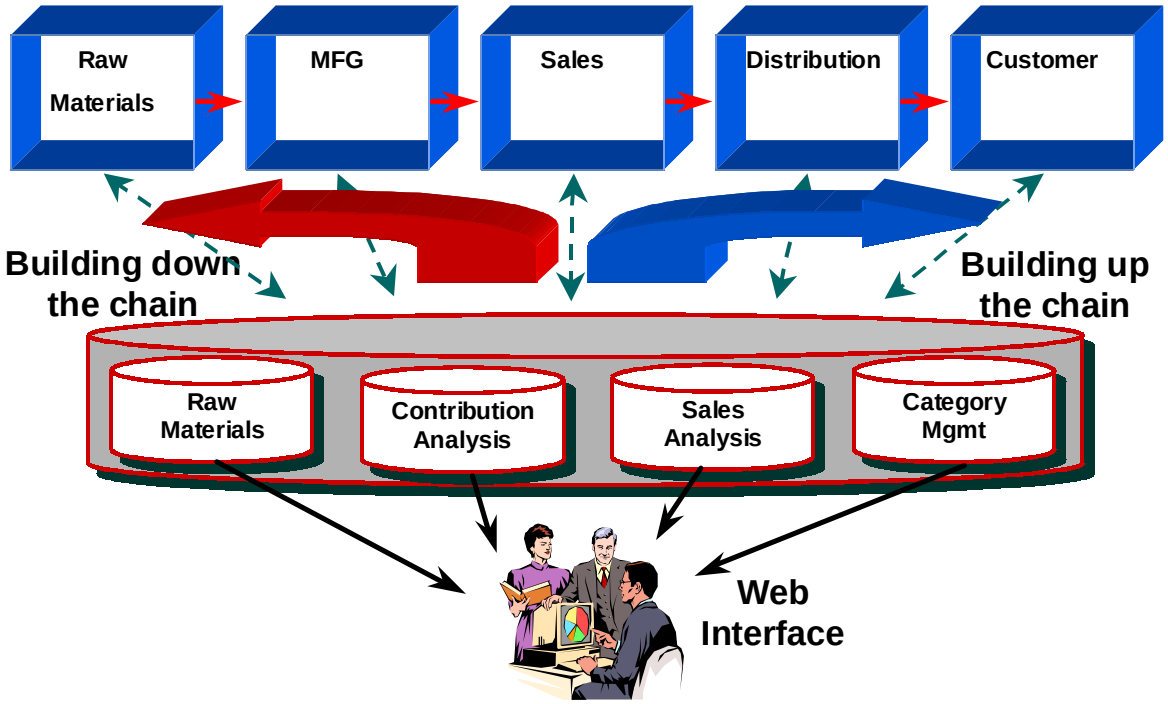

Figure 2: Sherwin-Williams' Data Marts
(Courtesy of Sherwin-Williams Company)

The warehouse project team started with the highest impact information – sales performance – and built the first data mart around it. Before this mart was constructed, Sherwin-Williams did not know the total sales for each customer without time-consuming data consolidation from many sources. For example, they did not know what in total Sherwin-Williams' twenty individual business units was sold to K-Mart on a daily basis. The sales analysis mart (SAM) was built to include sales across all business units. Key business questions that the mart had to address were:

- What are the sales for a given customer, across all business units?
- How are sales changing in the current period versus the same period last year?

- What is yesterday's sales performance against budget, by customer, sales rep, and product?

SAM got the project team moving in the right direction. It provided a "proof of concept" for data warehousing, and it demonstrated that the technology would work and that the development team could deliver useful information. Users could go to a single source for accurate data (i.e., "a single version of the truth") rather than downloading data from multiple, often conflicting sources. Over time, users became dependent on SAM and spread the word to others in the organization. After working with SAM, people began to think about what data they did not have and what they would like to have. This line of thinking led to the development of the contribution mart.

Contribution Mart

The manager of the Sales Reporting Group realized that cost information could be added to the sales data to provide a better measure of sales performance and to incent the sales force better. The contribution mart would be able to show what the sales reps contributed to the bottom line by subtracting out the direct and indirect expenses that they incurred (e.g., commissions, travel expenses, meal expenses). Although a contribution mart was not on the original list of data marts, the steering committee approved its construction. The mart answered business questions that included:

- What is a sales person's profit contribution this quarter?
- What are the costs associated with selling to a given customer, by prime and sub account?
- What are the margins, ranked by brand and customer?

The contribution mart influenced business practices significantly – incentives became based on its information.

Raw Materials Mart

Keeping the supply chain in mind, the project team next moved to raw materials purchasing. This area is not a typical starting point for a data warehouse, but Sherwin-Williams purchases a large amount of raw materials. Small improvements in this area lead to enormous benefits for the company. The raw materials mart was created to address the following business questions:

- What is the cost contribution of each raw material for a given finished good?
- What volume of a given raw material are we buying in drum versus bulk, by plant?
- How many suppliers provide us with a given raw material, and is there an incentive to consolidate suppliers?

To create the raw materials mart, the team took a hard look at the raw materials business. Sherwin-Williams buys from thousands of raw materials suppliers that supply everything from paint materials to materials for cans and labels. The company buys about two billion dollars of raw materials each year, and these materials comprise a large percentage of production costs. From a business perspective, even though raw materials do not directly tie into sales, material costs have the biggest impact to the bottom line.

When the raw materials mart was constructed, the project team built four fact tables – purchase orders, receipts, forecasts, and invoices – into a star schema design [Kimball, 1992]. The fact tables then could be combined through the dimensions that they shared, such as raw material and supplier. Before this mart was built, Sherwin-Williams was never able to view information about purchase orders, receipts, forecasts, and invoices at the same time for the same analysis. The new design allowed the company to analyze raw materials in new ways.

Category Management

At the same time that the raw materials mart was put in place, the project team was able to build a data mart for category management. This mart contained point-of-sale data from major customers such as Wal-Mart and Home Depot. It allowed Sherwin-Williams to partner with their customers to better manage products by category on their customers' shelves. This information extended the supply chain coverage to include the customer by addressing business questions, such as:

- How can we help our customers reduce their costs?
- Are we meeting our penetration goals for major accounts?
- How do we compare to the competition?

The categories in the mart were the retailers' product categories. This mart was innovative for Sherwin-Williams because the company used to think about their own warehouse and manufacturing categories, not those of the retailer. With the diversity of retailers that Sherwin-Williams had, each called the categories something different. Sherwin-Williams wanted to get out to the retailers' shelves and be able to use the data warehouse to analyze product flow. The category management capability earned the respect of the company's major accounts.

WAREHOUSE ARCHITECTURE

The data warehouse contained data that was extracted from mainframe and Unix-based systems. The technical architecture is shown in Figure 3. Point of sale information was downloaded from the Web into an IBM box with a set of EMC disk drives. The EMC drives were easy to upgrade and provided strong disk management capabilities. The warehouse itself served as a source system. It fed data into customer relationship management applications and other key systems within Sherwin-Williams.

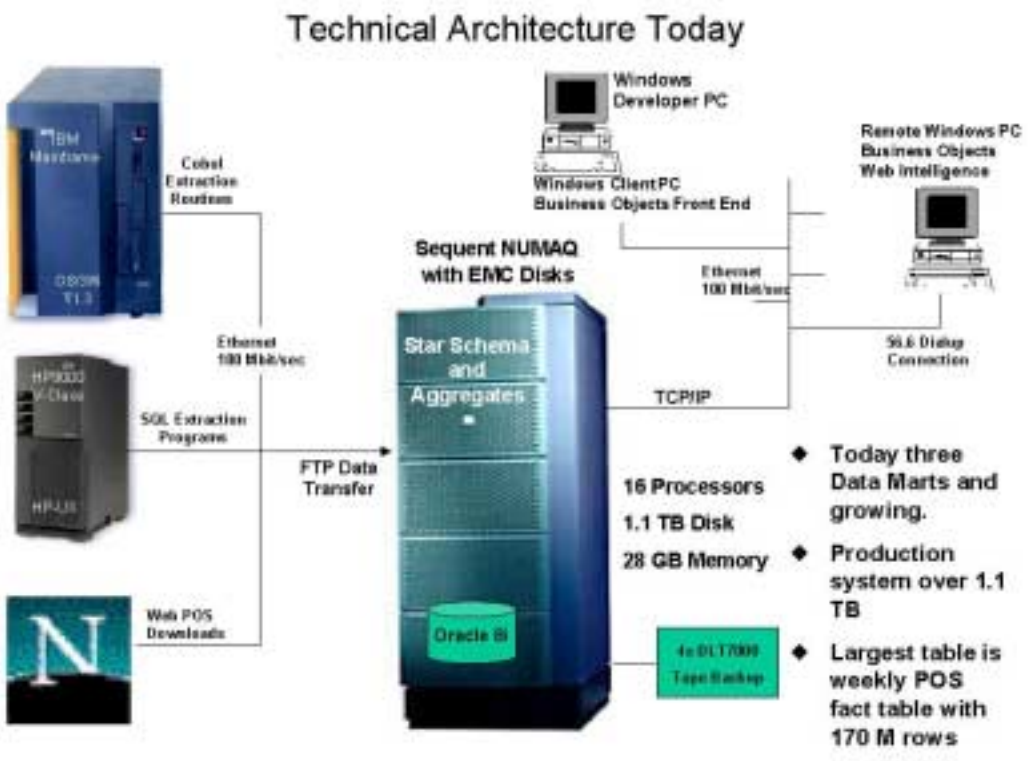

Figure 3: Data Warehouse Technical Architecture, March 2001
(Courtesy of Sherwin-Williams Company)

The hardware architecture was SMP (symmetric multi-processing), using NUMA (non-uniform memory architecture) technology. This architecture was selected because the technology was linearly expandable. When the system needed more processors, processors were added. If memory was needed, more memory was added. The NUMA technology enabled Sherwin-Williams to partition the subject areas, and it had phenomenal up time. In 18 months, the hardware did not have any unscheduled down time. Oracle 8i was selected as the DBMS because the software was compatible with all of the tools that were on-site and with most tools on the market.

The key to building the data warehouse architecture was the vendor partnerships, particularly with IBM, Oracle, and BusinessObjects, the latter is a

business intelligence vendor. Sherwin-Williams treated their vendors like partners, and they worked together to solve problems.

The size and growth of the warehouse was estimated continually. The warehouse began with 250 gigabytes of data supporting 20 users in 1998. By the end of 2000, it contained 1.1 terabytes of data, and supported 200 users. The company plans to grow the warehouse about 2 - 4 times each year as more data marts are rolled out to the user community. In the future, Sherwin-Williams hopes to offer the warehouse capabilities to its supply chain partners.

DATA WAREHOUSE TEAM

At the start of the warehouse project, Sherwin-Williams conducted an initial skills assessment and discovered that they did not have the skills in-house to complete the project. Because there was not enough time to develop skills internally, the company had to either hire people with expertise or temporarily bring in consultants or contractors. The company decided to merge IBM consultants into project roles along with internal IT personnel. Knowledge transfer was a priority throughout the project. By 2000, the consultants had been phased off of the project, and the team included only Sherwin-Williams employees. Currently 10 IT managers and professionals form the core data warehousing team. For each data mart, there are three or four representatives from the business unit(s) that it serves. Figure 4 shows the organization chart for the data warehouse project team.

Because the project required a significant amount of business input, the team included people from the business units. One of the business team members was assigned to the project full-time to facilitate the daily interaction between the IT team and people throughout the business community. Over time, the people on the IT side focused on learning about the business, and they

Figure 4: Data Warehouse Project Team
(Courtesy of Sherwin-Williams Company)

gained a large amount of knowledge about Sherwin Williams' business processes.

An important group within the data warehouse team was the data quality group. Sherwin-Williams recognized that with 28 mergers, seven source systems, and multiple feeder systems, data would be an important issue to be addressed on an ongoing basis. The data quality team consisted of IT people, some of whom became data integrity specialists, and people from accounting, operations, sales, and other business units. A spreadsheet tracked who was accountable for what area of data, and they were referred to as the "owner of the issue." Every week the person reported back to the project team regarding the status of their issue.

DATA ARCHITECTURE

Creating the underlying data architecture for the warehouse was not easy. At first, an outside market analysis firm was hired to analyze the data, but their way of identifying customers did not meet Sherwin-Williams' operational needs. The process required a lot of hand coding and brainpower. Sherwin-Williams did not use packaged solutions because of the complexity of determining how to architect the data to present one face to the customer. According to Jim Revak, Manager of Strategic Projects and Enterprise Services, "It was pick and shovel work. It was dirty work and we had to make time to do it."

The data architecture was driven largely by IT. They began by making a list of over 70 questions, such as who owns the data; what does the organization look like; and what is the definition of a SKU. Inconsistencies were found. For example, the project team discovered that every business unit had a different definition of sales.

Although IT asked the questions, the business people owned the data and had to provide the answers. Business users included the data maintenance groups, which were advised by IT people who explained what could and could not be done. They sent the business users exception reports. For example, what should be done about the 100,000 records that have duplicates? As the data groups moved ahead, they uncovered and ultimately resolved problems within the mainframe systems and various source applications.

The users also specified the requirements for refreshing the data in the warehouse. As a result, sales data is refreshed daily, raw materials weekly, and category management monthly.

The efforts in understanding and architecting the data paid off, and Sherwin-Williams ultimately could match data across the entire supply chain –

from purchase orders and receipts of raw materials all the way through the sales of finished goods by their customers.

At first, metadata for the data warehouse was captured using a tool. But Sherwin-Williams found that the tool did not meet their needs, and the project team switched to a manual system for managing metadata. They created their own metadata about business terminology, the loading process, and changes to the system, and this system became very labor-intensive. By 2000, the team was investigating tools to automate the process.

USING THE WAREHOUSE

By the end of 2000, Sherwin-Williams had 200 employees actively using the data warehouse. There were no supplier or customer users at that time, although Sherwin-Williams planned to extend its warehouse to its trading partners in the future. The front-end software tool was the BusinessObjects client-server software package.

Linda Ferrera, Business Unit Manager for Sears explains that using the warehouse became a valuable tool for salespeople at Sherwin-Williams. The warehouse provided them with real time information regarding customer needs and brand performance (Video Clip 2).

Click here for Video Clip 2: Lynda Ferrera, Business Unit Manager, Sears (281KB)

Download Windows Media Player 7.

BENEFITS

Sherwin-Williams obtained a wide range of benefits from their data warehouse. The most obvious benefit was having a repository of information that

offered a single view of the business for sales, marketing, and all areas across the supply chain. In the past, basic reporting such as profit and loss statements were challenging because of the complexity of the business and the systems. The data warehouse provided the capability to measure quickly important facets of the business as a whole.

The warehouse foundation eased the merger process. Sherwin-Williams now can bring in other acquisitions and mergers rapidly because of the architecture that was put together. And, the exercise of creating the data warehouse forced the company to improve data integrity in general. The warehouse efforts included significant time and attention towards data quality, which led to a reconciliation of the legacy systems.

The warehouse was designed to be expandable up and down the supply chain. Sherwin-Williams is squeezed between very large suppliers and customers. On the supply side, Dupont and Dow are extremely large suppliers who make significant demands. The other side is equally demanding with customers like Home Depot and Wal-Mart. The supply chain benefits ranged from resource savings to a better ability to work with powerful trading partners. For example, the company used the category management data mart to help manage customer inventory by analyzing trends while improving off-the-shelf sales. One of the large retailers required help in managing inventory based on geography. Northern stores needed different inventories than southern stores throughout the year. Sherwin-Williams used the data warehouse to make recommendations that kept paint on the shelves in southern stores for an additional two to three months each year, and this change resulted in approximately two million dollars in increased sales per year.

The warehouse also influences the way Sherwin-Williams conducts business. The contribution analysis data mart, for example, facilitates a new way

of providing incentives to sales representatives that is based on contributions to the bottom line.

The benefits of Sherwin-Williams' efforts are well recognized outside the firm. As mentioned earlier, The Data Warehousing Institute named them the winner of the 2000 Best Practice award in the Architected Data Mart category. Sherwin-Williams was selected in 2000 as the Wal-Mart supplier of the year. A primary reason for the honor was the work that was done by Sherwin-Williams using the category manager data mart. In addition, the company was selected as Category Captain in the paint department for Wal-Mart, which means that Sherwin-Williams manages the whole department. The company also attributed the warehouse as a positive influence in earning a new contract worth over 100 million dollars.

Revak says, "But what we are real excited about is that we have built a foundation for future category management and customer relationship management initiatives." The company plans to extend the warehouse out into its customer and supplier base. Jim Petz, Director, Information Technology notes, "The data warehouse has become a catalyst for change to improve our and strengthen our supply chain" (Video Clip 3).

Click here for Video Clip 3: Jim Petz, Director, Information Technology (258KB)

Download Windows Media Player 7.

V. LESSONS LEARNED

Several lessons were learned at Sherwin-Williams that can help other companies execute a data mart strategy

1. Get business sponsorship and involvement. The data warehousing project was a joint effort between IT and the business every step of the way. Although IT provided guidance and technical expertise, business users held key roles and performed critical tasks throughout the project. Business users sat on the steering committee that set the priorities and the future direction for the warehouse. They resolved data quality and data definition issues. Further, data marts were not undertaken until the appropriate sponsorship was in place and business users were ready to commit to take their roles seriously.

2. Adapt to changing priorities. When the warehouse project began, the team created a list of thirteen subject areas to be implemented. Once they got to data mart number two, the project team thought of information that would be very important to the business: profit contribution. The team and steering committee recognized the importance of incenting the sales force based on contribution to sales, rather then sales alone. In fact, this capability had been a dream of upper management. Instead of staying with the original plan, the project team incorporated the contribution data mart into the implementation schedule and rolled it out as one of the initial deliverables of the warehouse project.

3. Start with high-impact subject areas. The best practices show that companies should focus on high impact areas as data marts are developed. The marts should contain data that is important to the company, has visibility across the organization, and can create tangible benefits in business processes. Sherwin-Williams started with the sales analysis mart when the planning committee determined that it projected returns that were seven times greater than the next best alternative. As the initial marts prove the value of warehousing, it becomes easier to justify and warehouse subsequent subject areas.

4. Don't underestimate data quality. Sherwin-Williams treated data quality as a serious issue throughout the project. Marts were not undertaken until

data quality issues were resolved. Business users were appointed to drive quality efforts and answer tough questions about data definitions, how to reconcile poor quality data when it was found, and how to fix source systems that were creating problematic data. The attention to data quality on the warehouse project resulted in the warehouse being the single source of the truth for the organization.

4. Create repeatable, open processes. Processes have to be repeatable. Sherwin-Williams built one data mart at a time, using the same processes over and over again to shorten the development time and roll-out schedule. The processes were expandable, and the technology was flexible. Oracle and UNIX were used to create an open architecture that could be accessed with almost any tool on the market. The open architecture allowed the project team to grow the data mart architecture into a robust enterprise data warehouse.

5. Expect to reengineer data marts. As users work with the data marts and understand their potential, they will request additional data and functionality for the marts. This will result in the need to reengineer the marts. Each data mart has its own iterative develop-use-redesign process.

6. Measure success along the way. The time will come in the lifetime of a data warehouse when the CFO will ask: "Where did our money go? What are we getting from our investment?" These questions should be anticipated, and appropriate measures of success should be established and tracked. At Sherwin-Williams, the data warehousing staff works with business users to determine the ROI for the various data marts.

VI. CONCLUSION

The experiences at Sherwin-Williams illustrate the feasibility of the data mart strategy. Great care was required, however, to ensure that the initial data mart could expand into an enterprise data warehouse. The process began with a

clear business need: to have a single, integrated view of the entire business across the supply chain. The need was met incrementally, by creating data marts that were developed based on value, the size and speed of the return on investment, the readiness of the source data, and the strength of sponsorship. These factors helped ensure that each mart would have an immediate, high impact. The plan was flexible, however, and changes were made when needed, such as when the value of developing a contribution mart was recognized.

Once the first mart was completed, the team created an enterprise architecture on top of it, and the first mart was built back into the enterprise architecture. Over time, data marts were built, repeatable processes to support the marts were created, and the marts were integrated into the enterprise architecture. The architecture provided processing, disk storage, and software that could scale to accommodate more subject areas, data, and users.

Considerable business unit involvement was required. In addition to sponsorship, personnel from the business units played important roles in governance, developing the data warehouse plan, determining requirements, serving in liaison roles between the business units and IT, and working on data quality issues. Like many organizations, Sherwin-Williams initially did not have in-house data warehousing experience and expertise. As a result, they hired consultants and contractors to help with the work, but they transferred knowledge and quickly phased external hires off the project.

By the end of 2000, the data warehouse served over 200 Sherwin-Williams employees. The data warehouse provided information that offered a single view of the business for sales, marketing, and all areas across the supply chain. The warehouse helped support mergers and acquisitions by providing an architecture that integrates data from new companies more easily. And, the exercise of data warehousing forced the company to improve data quality in

general. Future plans are to extend the reach of the warehouse to trading partners such as Dupont and Wal-Mart.

Editor's Note: This article was received on March 13, 2001 and was published on May 10, 2001

REFERENCES

Eckerson, W.W. (April 28, 1999) "Evolution of Data Warehousing: The Trend toward Analytical Applications," Boston: The Patricia Seybold Group, pp. 1-8.

Inmon, W.H. (1992) *Building the Data Warehouse*, New York: Wiley.

Kimball, R. (1992) *The Data Warehouse Toolkit*, New York: Wiley.

ABOUT THE AUTHORS

Hugh J. Watson is a Professor of MIS and a holder of a C. Herman and Mary Virginia Terry Chair of Business Administration at the University of Georgia. He is the author of 22 books and over 100 journal articles. Over his career he has focused on the use of information technology to support decision making. Most recently, he has been studying data warehousing. Hugh is the Senior Editor of the *Journal of Data Warehousing* and a Fellow of The Data Warehousing Institute. He serves on the Editorial Board of the *Communications of AIS*.

Barbara H. Wixom is Assistant Professor of Commerce at the University of Virginia's McIntire School of Commerce. She received her Ph.D. in MIS from the University of Georgia. Barbara was made a Fellow of The Data Warehousing Institute for her research in data warehousing. Her publications appear in the *MIS Quarterly, Information Systems Research*, *Communications of the ACM*, and *Journal of Data Warehousing.* Barbara is an Associate Editor of the *Journal of Data Warehousing*.

Jonathan D. Buonamici is Manager of System Integration at Sherwin Williams Corporation. He spent the past three years as a Database Administrator

and Data Architect with Sherwin's DSS System, and he served as the Data Architect for the project awarded the 2000 Data Warehouse Institute Best Practice Award.

James R. Revak worked as a leader of data warehousing projects and technologies for eight years. He managed three enterprise data warehouse projects, two of which were recognized as Best Practice Award Winners by The Data Warehousing Institute.

Communications of the Association for Information Systems

ISSN: 1529-3181