

Business Intelligence Network™ Research Report

Using Operational Business Intelligence for Intra-Day Analysis and Decision Making



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INFORMATION BUILDERS CASE STUDY:

THE HILLMAN GROUP

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INFORMATION BUILDERS CASE STUDY: THE HILLMAN GROUP

ORGANIZATION BACKGROUND

Distributor and manufacturer of fasteners, keys, and other small hardware items

The Hillman Group is a leading supplier of small, inexpensive, durable hardware items and a manufacturer and distributor of key duplication and engraving systems. The company's principal product lines are fasteners (nuts, bolts, screws, etc.); keys; letters, numbers, and signs (LNS); and engraving products and systems. Other than its manufacturing lines, the company is basically a distribution company, buying fasteners in bulk, primarily from China and Taiwan; packaging these products; and selling them to retail outlets.

Customers are retail outlets such as traditional hardware stores, home centers (e.g., Home Depot and Lowe's), lumber yards, mass merchants, grocery and drug chains, and pet stores in North America, Canada, and Mexico. Thus, the company markets to both professional contractors and do-it-yourselfers. Most retailers view Hillman products as "destination" products, products that generate significant store traffic and higher than average gross margins. In summary, Hillman's is a high-margin, recession-resistant business that has never had a down year in sales or operating profit.

The market leader with a complex distribution system

The company has the leading market position in North America in fasteners (30% market share), keys (42% market share), LNS (43% market share), engraving (17% market share), and metal shapes and threaded rod (60% market share). It has over 650 suppliers (half are outside North America) and offers over 50,000 SKUs to more than 20,000 customers with over 35,000 ship-to locations.

Founded in 1964, Hillman is headquartered in Cincinnati, Ohio, and has more than 1,800 employees, including 675 direct sales and service people. Annual revenues have quadrupled over the past 10 years, with revenue in 2005 of \$383 million. The company has 12 distribution centers across the U.S., Canada, and Mexico.

For this case study, we interviewed Jim Honerkamp, VP and CIO of the information technology (IT) group within Hillman. Honerkamp was hired by the company in 2004 to direct the design and implementation of solutions to the business problems described later in this study. Honerkamp was honored as one of *Computer World's* Premier 100 IT Leaders of 2003.

THE BUSINESS PROBLEM

Continued growth in a mature market

In the early 2000s, Hillman's management decided it was time to address new and changing business requirements. The company faced a maturing market for its core products and well-established competitors. The primary way to grow revenue would be driven by new products and services or through acquisition.

Integrating disparate systems without physical consolidation

One concern was the changing nature of the company's strategy for growth. In 1982 after 18 years in business, the company founder, Max Hillman, decided he could not grow the company any further without an outside financial backer. He sold the business to Sun Distribution (a division of Sun Oil), which began to expand the company nationally. In the mid-'90s, a growth-through-acquisition strategy diversified the company and resulted in seven acquisitions between 1995 and 2006. Anticipating future acquisitions, Hillman wanted the ability to integrate and access many different systems without having to physically consolidate them.

A need to agree on business definitions

While Hillman wanted to grow revenue, the company realized it had no single definition of what revenue was. It needed a common, standardized set of business definitions to which everyone could agree.

Faster, more effective distribution of new product information

The company also needed a better way to communicate information about new products to a remote sales and service force. The current method of mailing hard copies of product sheets and marketing information was an expensive, slow, and difficult process. This requirement drove the company toward a Web portal that could provide access to the information in electronic form. "The key was to deliver information to more people more efficiently and in a friendlier format by giving people across the organization access to digital assets," stated Honerkamp.

Better customer service

Another issue was the fact that the sales and service force needed a wide variety of analysis and reporting capabilities in order to provide good customer service (e.g., sales call tracking). The existing rudimentary portal simply took the familiar mainframe "green-bar" reports and reformatted them. But this approach lacked access to real-time data and any ability to effectively manipulate report formats or data by the sales/service staff.

A need to update technology, systems, and skills

On the technology side, Hillman faced a legacy application portfolio with limited capabilities, an aging infrastructure based on old technology, limited use of the Web, and a lack of up-to-date IT skills. The company badly needed to update and reorganize its business systems and technology infrastructure to remain competitive going forward.

Cultural issues

Behind all of this lurked the cultural changes that would be required to successfully transform the business. In many ways, Hillman was a large company with a small-company mind-set – it lacked formalized processes, comprehensive systems documentation, and clearly defined communication paths. Functionality such as portals, collaboration software, and business intelligence were foreign concepts to most Hillman employees. Somehow the company would have to get both senior management and employees across the board to accept and use new systems and software.

The key was better information delivery

To meet all of these requirements, the company combined a business intelligence (BI) initiative with the development of a new Web portal to deliver information to more people, more efficiently, and in a more usable format. The goal was to implement an enterprise portal with BI as the "killer application" to provide business value and drive user acceptance.

THE OPERATIONAL BUSINESS INTELLIGENCE SOLUTION

WebFOCUS offers access to disparate systems, low cost

BI PLATFORM. Hillman chose WebFOCUS from Information Builders, Inc. as its enterprise BI standard for two primary reasons. The first was Hillman’s assessment that WebFOCUS provided direct access, through Information Builders’ iWay adapters, to disparate transaction systems in a much more straightforward and elegant way than other options. As stated earlier, the company did not want a solution that required it to physically integrate the underlying data. According to Honerkamp, “This strategy drove us toward WebFOCUS. The product comes with a whole suite of iWay adapters that offered us everything we needed. With WebFOCUS and iWay, if we were to acquire another company tomorrow, I could provide consolidated reporting including the acquired company within two to three weeks.” (Information Builders’ iWay Software subsidiary offers adapters to access over 300 types of information assets.)

Second, WebFOCUS was the least expensive solution. Another plus was the fact that Honerkamp was able to hire a WebFOCUS “virtuoso” to help with development and implementation.

Direct, federated access to real-time data

DIRECT DATA ACCESS. Hillman’s operational BI solution is a “virtual” data warehouse based on a federated data architecture. It provides direct access to live, real-time data using WebFOCUS and the iWay adapters. WebFOCUS provides an integrated view of both operational and financial data, joining data across sources and making it appear as if the data comes from a single database. Data sources include enterprise resource planning (ERP) systems, order management, human resource systems, and an existing data warehouse. These source systems run on a variety of platforms, including IBM’s iSeries, Intel/Linux, and Intel/Windows. WebFOCUS servers run on both Intel/Linux and Intel/Windows platforms with an agent on the IBM iSeries to facilitate drill-down functionality for data on that platform. Users access WebFOCUS through the Enterprise Portal “reports” option (see Figure 1).

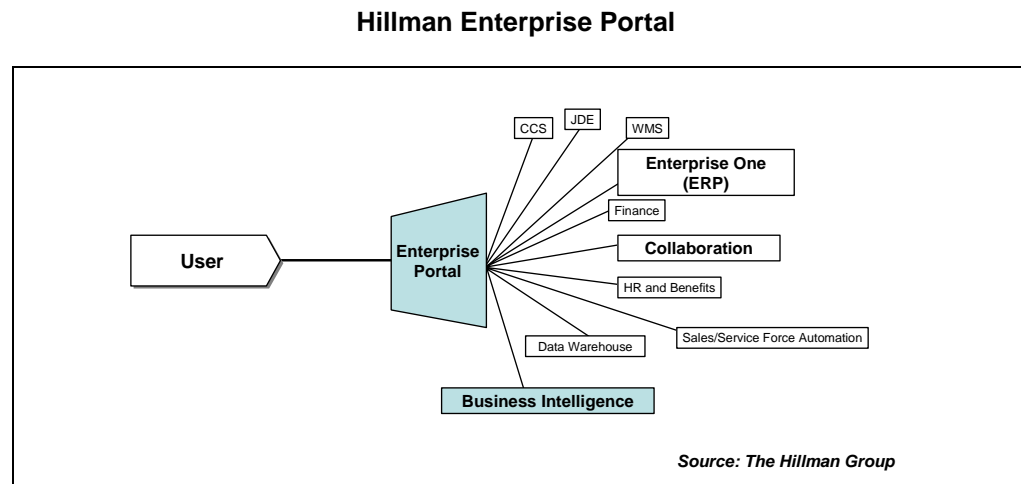


Figure 1. Hillman’s Enterprise Portal is the interface through which WebFOCUS delivers direct access to all of Hillman’s business systems and data.

(As a note, Hillman decided to phase out its existing data warehouse – it still supports one small part of the business – because it would be too expensive and time-consuming to revamp it.)

A self-service approach to BI

REPORTING. Currently, 800 IT and business users access WebFOCUS reports via their browsers. Of these, 500 are remote users. It is important to note that no WebFOCUS software has to be installed on the user’s computer to access and manipulate a report; the necessary functionality is embedded in the report itself.

The overall approach is to make BI functionality “self-service.” Reports cover areas such as revenue, fill rates, freight costs, and open orders. WebFOCUS enables reports to be “active” in several ways. The reports are highly parameterized. Users can change report formats; drill down to the transaction level from a report; export a report and its data to a spreadsheet, save it, and do further manipulation. A key feature is access to real-time data that changes during the day, and some users take full advantage of this. For example, the VPs of materials and distribution look at their reports frequently during the day to see order status: fill rates, partial orders, how many orders are on hold because the company is out of a particular item, etc. Every report or query includes the effective date and time of the data presented.

To date, a combination of WebFOCUS performance and functionality and overall system capacity supports direct BI access to production systems without performance problems. Honerkamp does not anticipate problems in the future because the architecture is based on Intel hardware running Linux or Windows and “can scale horizontally very cheaply if contention for resources develops. We will throw in more inexpensive Intel boxes.”

GIS capabilities are evolving

Another important BI tool is the addition of GIS (geographic information systems) and mapping capabilities to WebFOCUS through tight integration with ESRI’s GIS software. This enables WebFOCUS to pass data from a map to a report as well as reverse the process to drill down from a report to a map.

Honerkamp’s group recently implemented its first GIS-based BI application. This helps management make cost-effective decisions about product shipments. The application displays the locations of the company’s 12 distribution centers on a map. The next step is an overlay with UPS zone maps as concentric circles around each distribution center location. The third layer is information about upcoming product shipments. The goal is to minimize shipping costs as much as possible. For example, a shipment out of the Dallas location might fall in zone 3 while that same shipment out of Jacksonville is in zone 4 and more expensive. The company is developing additional GIS applications (see “Future Issues” section).

A plus for Hillman is the fact that WebFOCUS works well with the ESRI GIS software. Honerkamp states, “WebFOCUS is not just reporting capability; it is also geographic capability. We view it as a single, consolidated tool.”

ERP, portal, and ETL software are key components

OTHER COMPONENTS. Other important components of the BI solution are a new ERP system, the enterprise portal software, and extract/transform/load (ETL) software.

ERP system – Hillman is in the process of migrating to a single ERP platform, Oracle’s JD Edwards EnterpriseOne on an Intel/Windows platform. The company chose EnterpriseOne for two reasons: (1) one Hillman location was already using the JD Edwards World ERP product (a predecessor of EnterpriseOne), and (2) JD Edwards World is strong in the distribution business. Ultimately, the new ERP platform could become the basis for a new data warehouse if the company chooses to go that route in the future.

Portal software – IBM WebSphere is used for portal development. The reason: The enterprise portal component had to be compatible with the EnterpriseOne environment, and EnterpriseOne was built specifically to work with WebSphere.

ETL software – IBM WebSphere Information Integration (II) is Hillman’s ETL tool. This has been implemented in two areas. In one, WebSphere II pulls data out of transaction systems on a nightly basis (6 million transactions) and pumps the data into the advanced planning and scheduling system (APS). APS is where Hillman does forecasting on which to base buying decisions.

**Item master data
synchronized on an
ongoing basis**

WebSphere II also supports Hillman’s global data synchronization (GDS) effort. Here, WebSphere II synchronizes product information across three transaction systems, each with its own item master database. WebSphere II takes the contents of each of the three item masters; scrubs, transforms, and standardizes the data; loads the standardized data into a GDS database; and then updates the original sources with the standardized data so that they all reflect the same item information. The GDS database is Hillman’s “single version of the truth” and is published to UCCnet, a global, Internet-based supply chain management data registry for e-commerce. (UCCnet was developed by the Universal Code Council, which also developed the UPC code for products.)

The GDS process is currently done on an ad hoc basis, but the plan is to automate it and run it nightly. Cleansing and standardizing the data on an ongoing basis will facilitate migration to EnterpriseOne (i.e., moving data from legacy ERP systems to the new, consolidated system) and avoid major data integrity problems in the future.

IMPLEMENTATION STEPS AND ADVICE

**First identify
barriers and
requirements**

IMPLEMENTATION STEPS. The BI solution was an integral part of a much larger effort to implement a wide variety of enhancements in five functional areas in addition to BI: collaboration, content management, self-service and information access, learning management, and application integration.

The company used a Business Value Assessment methodology and worked with a third-party consultant on the overall project. The project began in November, 2004. Here is a summary of the major implementation steps in the BI area.

In the first phase of the project (November/December 2004), a group of high-level executives, including Honerkamp as CIO, identified (1) barriers to implementing BI and (2) desired BI portal capabilities and business transformation requirements. Barriers included the fact that data existed in silos and the cost of integration was

prohibitive, the cost of building the appropriate infrastructure could be prohibitive, and self-service applications were unfamiliar to users. Desired portal functionality included dashboards, drill-down, ad hoc query, geographic/spatial presentation, and pervasive/mobile device access. Business transformation needs encompassed development of business rules and key performance indicators (KPIs), tactics to foster user adoption of the new system, real-time access to data, and Web access rather than phone access.

Release 1: New technologies and daily revenue reporting

The next step (Release 1, January through June 2005) was to bring in new technologies and build an internal portal that could serve as the foundation for external access in the future. Preparation for the first release included agreement on a common definition of revenue, establishing a BI security framework, and the development of daily revenue reporting as the first WebFOCUS application. This was the “killer application” delivered with the first-generation enterprise portal. The user could drill down into the revenue report in a variety of ways – by channel, by product line, by customer, etc. The report compared actual revenue to plan and employed “traffic light” graphics (green/yellow/red) to highlight problem areas. According to Honerkamp, “The CEO began using the report on a regular basis and questioning managers about the data. Not wanting to be unprepared, others started using the reports as well, and the snowball began rolling.”

Other Release 1 BI capabilities included gross profits reporting, freight analysis, and customer service ad hoc reporting.

Release 2: Extend BI applications to increase ROI

Release 2 (July 2005 through June 2006) focused on the second generation of the enterprise portal and on BI applications that would begin to deliver ROI. WebFOCUS now ran against real-time production data in four disparate business systems and could drill down into each one. Product-margin reporting allowed the company to scrutinize its suppliers and, in many cases, Hillman shifted its sourcing from the U.S. to China or Taiwan. (Product-margin erosion was the company’s most critical issue in 2006.) Fill-rate reporting helped the company change its product-buying patterns. The remote sales force could now access reports using the enterprise portal.

Release 3: GIS applications

Release 3 (July 2006 and ongoing) emphasizes self-service and process integration, including GIS-based applications (distribution center optimization, route optimization, territory optimization, customer analysis, product penetration, etc.).

Get the technology to work together and identify a killer app

ADVICE. Based on his experience over the past two years, Honerkamp offered this advice to others grappling with the issues Hillman has faced. First, there are a number of technical issues, and it is important to get all of the technology working together. One example was the fact that the company wanted a single sign-on at the portal level. This required considerable investigation and experimentation before the company successfully integrated all systems involved.

Second, don’t try to implement a Web portal without a killer application. “Unless people have to use the application and can only get to the application through the portal, the effort won’t get off the ground.” Honerkamp also drew a distinction between the application Hillman chose – the WebFOCUS revenue reporting capability – and “toys” such as instant messaging. It is much more effective to offer a

serious application that impacts the business. In Hillman's case, providing Web portal access to the BI environment was a natural given its large, remote workforce.

SUMMARY OF BENEFITS AND ROI

Users make faster decisions based on real-time data, are accountable

Honerkamp identified several key business benefits of Hillman's BI solution.

- *Faster decision-making* – The time between identification of a business issue and the point at which a business owner can make a decision on that issue has been dramatically reduced. In the past, the analysis process might take days to weeks and involve multiple individuals. In some cases, the time has been reduced to minutes.
- *The ability to make decisions based on real-time data* – In the past, many decisions were based on gut feel because current data was simply not available.
- *Empowered business users* – As Honerkamp states, “We have given end users the tools they need to do their jobs efficiently. IT used to be a bottleneck, and often what was delivered wasn't what the user requested or wanted. IT is now free to do more projects, and our role has been elevated to that of a strategic partner rather than a tactical partner.”
- *Better accountability* – Management is better able to identify where problems are, and more willing to hold those responsible accountable.

ROI example

In terms of return on investment (ROI), here is an example of the types of hard-dollar savings Hillman is experiencing with its new BI capability. Certain customers can fine Hillman for short-shipping – that is, sending an incomplete order. For a recent two-month period, the company used the BI fill-rate reporting system to analyze instances for which one vendor wanted to assess fines for partial shipments. Because Hillman could prove that it did not, in fact, short-ship, it saved a total of \$131,000 in fines. In the past, the company had no reliable way to rebut these vendor fines.

SUMMARY OF CRITICAL SUCCESS FACTORS

Executive acceptance of data accuracy

Honerkamp states that the most important success factor for Hillman was getting the executive group to buy in to the new web portal/WebFOCUS environment and actually use it. The first step was to identify revenue reporting as the killer app that would grab management's attention. After that, “the hard part was getting the CEO to believe that what he was seeing in WebFOCUS was the truth. We had to prove that the green-bar reports he had been using were incorrect and the WebFOCUS data was complete and accurate. For awhile, the debate was spirited. But once we got over that hurdle, everything flowed.” As a result, Honerkamp's group delivered a system that is easy to use; gives the end-user the flexibility to manipulate the analysis and reporting system; and is based on more accurate real-time data.

FUTURE ISSUES

Expand use of GIS capabilities

Honerkamp’s group has identified several areas for future BI development.

Expand use of GIS-based BI analysis and reporting – The second GIS-based BI application will be route optimization for Hillman’s field service folks. These routes are not fixed, and the system will be designed to calculate the most efficient route for a particular service person. The goal is to minimize the amount of “windshield,” or driving, time. Accomplishing that also minimizes fuel costs. The company has identified other potential GIS applications as well.

Move to a predictive BI mode

Move from a reactive to a predictive BI mode – Hillman’s current BI analysis and reporting focuses on lagging business indicators, such as business indicators associated with the supply chain – revenues, orders, freight costs, etc. – that directly impact the bottom line. The goal is to become more predictive (see Figure 2). To do this, the company has to identify and agree on what its leading indicators are, know how they relate to lagging indicators, and develop the ability to react to anticipated changes in the leading indicators *before* they impact the lagging indicators (and, therefore, the bottom line).

Moving to Predictive BI Applications

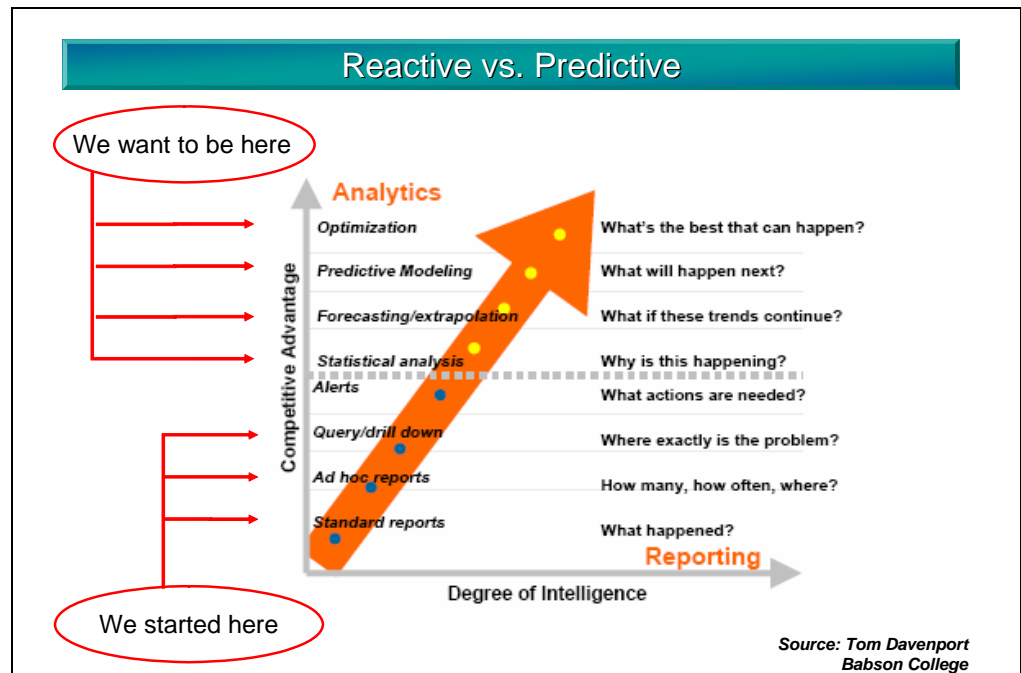


Figure 2. Hillman’s goal is to move beyond first-generation, reactive BI applications (knowing what happened in the past) to gain enhanced business value from the ability to better predict what will happen in the future.

Assess potential to integrate BI and business processes

This is also an area where Hillman can experiment with creating a closed-loop process between production systems and BI analysis. For example, the company will assess the potential to package margin analysis on an item basis and tie it to the ERP

system. Currently, product margin analysis is part of the BI solution, but decisions to change buying patterns and modify orders based on results are not automatic.

Identify leading indicators

Hillman is looking for a third party to help define this process. Examples of leading indicators are:

- *Cost of raw materials* – For example, if the company sees costs here trending upwards, it wants to be able to make pricing changes for its products sooner to offset the increasing costs, or be in a position to buy more of a raw material at a lower price.
- *Housing starts* – If the number of housing starts is going through the roof in the southwest U.S., Hillman could put promotional programs in place there.
- *Fuel costs* – This is particularly important because Hillman ships steel, a very heavy material.

Better management dashboards

Another benefit of this process will be the ability to develop better management dashboards. Currently, Hillman has only rudimentary dashboards in place.

SUMMARY**BI is a platform for increased growth and competitiveness**

Hillman's experience demonstrates the significant progress a company can make in a relatively short time if it is willing to honestly assess business problems and take the steps necessary to move forward quickly. In less than two years, Hillman has already begun implementing Release 3 of its BI platform and applications. Taking a phased approach and building a federated data architecture with Information Builders' WebFOCUS has enabled the company to reap immediate business benefits while maintaining flexibility for the future. Business users are now armed with the tools they need to make better decisions based on high-quality, real-time data.

As BI applications become more sophisticated and more deeply integrated with business processes, they will provide a solid foundation for future growth. Hillman will continue to enhance its strategic use of operational BI to distinguish itself in an increasingly competitive industry.