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Speeding the Time to Intelligence

Effective information management through Business Intelligence
Competency Centers and performance management

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Speeding the Time to Intelligence

Effective information management through Business Intelligence Competency Centers and performance management

BY BILL LABERIS

A company's success or failure can hinge on the "time to intelligence"—the time it takes to get accurate and timely information into the hands of the workers who need it the most.

Most companies generate data that ought to yield valuable strategic information. But all too often, the benefits of this information go unheeded. The data may be in need of cleaning, it may be stashed in different business stovepipes, and it may not be served up through an interface that most business users can understand. Worse, strategically critical nuggets of data can languish beyond the reach of workers due to corporate politics or a lack of executive mandate.

These problems are exacerbated by the sheer increase in the number of knowledge workers throughout organizations, which has amplified the need to present actionable information in intelligible form to workers who may lack specialized data extraction skills. As a result, Claudia

Imhoff, president of Intelligent Solutions, a consultancy in Boulder, Colo., says there is now a push to "operational BI," in which the data that can't be more than 24 hours old must be fed to this new generation of workers.

Reducing the time to intelligence for these workers is not just a matter of technology. People and organizational issues often stand in the way of the successful use of BI. A Business Intelligence Competency Center (BICC) tackles the thorny human and corporate issues that can mistakenly wall off vital data from the employees who need it. That's because a successful BI strategy is integrated into a company's fabric so that it generates high-quality information, the use of which becomes second nature.

It's All About the People

In successful implementations, such as at Hartford Life, the BICC is a team with members drawn from different corporate departments, including IT, operations, finance, marketing, sales, and human resources. Individuals from these different departments participated in Hartford Life's first successful BICC usage, which generated a multimillion-dollar jump in sales from the broker-dealers who partner with Hartford Life's U. S. Wealth Management division.

Other businesses have managed to cut the time to intelligence dramatically thanks to the implementation of a BICC. "Reports that used to take staff about two weeks to compile can now be done with the click of a button. ... The time saved can be spent writing new business," says Anne

Ulyate, manager of Group Intelligence at Mutual & Federal (M&F), part of the Old Mutual Group and one of South Africa's leading insurance companies.

With a strategic approach to business intelligence ingrained in a company's fabric thanks to a BICC, data should be served up so that it may be understood and acted upon by the large number of rank-and-file employees who need it. To that end, companies would do well to implement an effective performance management (PM) strategy, complemented by advanced and easy-to-use PM tools.

Performance management tools enable companies to set strategic targets and then track their performance in hitting those targets. These tools include real-time, Web-based dashboards that keep users apprised of key changes and trends thanks to clear and colorful charts and graphs. It is widely known that information expressed graphically is likely to be understood far more quickly than, say, a string of numbers. Thus, a well-designed graphical display can

accelerate time to intelligence to the point of instant communication, shaving off seconds, minutes, or even hours from the time at which data is presented to the time at which it is understood.

What's more, such PM tools can discover and display information that many corporate users might not suspect is there. In one example, a pipe and supply company in the Pacific Northwest learned that its top revenue-generating customers were not its most profitable. Using the activity-based modeling in SAS' performance management solution to analyze customer profitability, managers observed in a graphical interface that the company's sales force was neglecting the highest-profit customers in favor of those generating the highest sales volumes.

"This shows a huge leap for companies that understand there is richness in their data, but don't know how to help employees who don't have the sophistication of training to access that data," says John Colbert, vice president of BPM Partners in Stamford, Conn.

With the SAS® Enterprise Intelligence Platform—and the BI and performance management solutions that run on that platform—companies can automate their planning, budgeting, management reporting, financial consolidation, business process management, and operational performance management. Results are generated from business-specific key performance indicators (KPIs) via a dashboard, portal, or other customizable interface. The data is presented in color-coded temperature charts and "data movies," which allow users to manipulate a motion-enabled, graphical environment.

The bottom line is that successful users have found that both a BICC and the use of PM tools can sharply cut the crucial time to intelligence—the amount of time needed to discover, present, evaluate, and act on critical data. The following articles will explain in detail how to arrive at and implement an effective business intelligence strategy, using both a BICC and performance management technology. ▶

Driving Success in the Business Intelligence Competency Center

As organizations move to the next phase, it's all about the people.

BY STAN GIBSON

At Hartford Life's U. S. Wealth Management Division, broker-dealers are critical to the success of the unit's investment funds, so it's important to keep them happy. Thanks to a Business Intelligence Competency Center (BICC) using SAS® technology, the financial services organization was able to detect the broker-dealers who were in need of a marketing push, which generated a multimillion-dollar gain in sales.

"We built a predictive model to identify broker-dealers who were at risk," says Rachel Alt-Simmons, director of the Business Intelligence Group in the U. S. Wealth Management Division at Hartford Life, which then aimed a marketing campaign at the broker-dealers to keep them in the fold. The resulting revenue boost is typical of the returns Hartford Life is reaping thanks to SAS technology and the BI Group at the company, says Alt-Simmons.

Hartford Life is not alone. Recognizing that critical business information that goes unheeded can cost a company time, money, and competitive advantage, numerous organizations have implemented BICCs. The outcome, in many instances, is a marked decrease in "time to intelligence"—a result of the increase in the speed with which raw business data is transformed into meaningful business intelligence on which employees can act. With a performance track record spanning a half-decade in some instances, now is a good time to take a hard look at what makes for a successful BICC.

The A-Team

Sometimes referred to by another moniker, such as a Center of Excellence (COE) or, as at Hartford Life, the Business Intelligence Group, a BICC is a team with members drawn from different corporate departments, typically including IT, business, and analytical resources. A BICC should encompass the four critical dimensions of information management: infrastructure, knowledge processes, human capital, and corporate culture. Properly executed, a BICC can help ensure that money spent on business intelligence systems is well invested, generating timely and accurate information for the employees who need it most, and ultimately helping a business to better serve its customers and surpass its competitors.

Rather than crowning a "BI czar" with dictatorial powers over the deployment and use of BI systems, the BICC is a matrix-style group. The intent is to elicit and coordinate input from all parts of an organiza-

tion, and then use this input to optimize the BI environment and develop and promote best practices. The reasons for a team approach are both practical and political. If everyone “owns” business intelligence, it is far more likely that information will be used for strategic advantage. If not, there is a risk that BI will be seen as a distinct fiefdom, increasing the possibility that it would be rejected by the business as a whole.

As at Hartford Life, many businesses are recognizing that BICCs can improve performance. “We found that we are in a position to deliver information to the end users more quickly and efficiently with a BICC than previously,” says Anne Ulyate, manager of group intelligence at Mutual & Federal (M&F), part of the Old Mutual Group and one of South Africa’s leading insurance companies. The BICC is delivering value by cutting the time to intelligence: “For example, reports that used to take staff about two weeks to compile can now be done with the click of a button. ... The time saved can be spent writing new business,” says Ulyate.

M&F established its BICC in October 2005. It now has 17 members, split roughly between business and technology experts, reflecting its role as a bridge between IT, actuaries, and business services such as marketing. “The value of a central BICC is that when you have developers and business analysts working together in the same department, each learns the other’s skills and discipline, which ultimately reduces the time to intelligence,” says Ulyate. She adds that SAS was instrumental in helping M&F define its BI strategy and set up the BICC.

Business Intelligence Phase Two: The Operational Era

Since BICCs first emerged around the turn of the millennium, business intelligence has moved to a new phase, one in which BI is tied more closely to the so-called “operational” users. These are the rank-and-file employees who need vital strategic information to do their jobs.

“We’re at an inflection point,” says John Colbert, a vice president at BPM Partners, a consultancy in

When projects move forward with a technology focus versus business drivers, it’s a cart-before-the-horse scenario. Companies should make sure the needs of consumers of this information will be addressed before building out the BI platform.

 **JOHN COLBERT, VP
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Stamford, Conn. BICCs must adapt, he says, moving from a technology-first focus to a business-needs-first focus. “When projects move forward with a technology focus versus business drivers, it’s kind of a cart-before-the-horse scenario. Instead, companies should make

sure the needs of the consumers of this information will be addressed before building out the BI platform,” says Colbert. The lesson, the analyst says, is to get users involved early. “If you build it, they will come,” doesn’t work, he says. Hartford Life’s Alt-Simmons agrees: “It’s about going out, hitting the pavement, and doing relationship work to find what business needs our customers have.”

In addition, the increase in knowledge workers throughout organizations means that more people are seeking access to more data than ever before. The need to present actionable data in intelligible form to workers lacking specialized data extraction skills has never been greater.

Claudia Imhoff, president of Intelligent Solutions Inc., a consultancy in Boulder, Colo., agrees that the second phase of BI is characterized by a closer link to the workers who use the information from the BI system.

“We will build it, they will come,” was never a good idea,” she concurs. The thought leader notes that in the first phase of BI, systems were built in isolation. Data went into a warehouse and was separate from the operational environment. Over the past two or three years, there has been a push to “operational BI,” in which the data can’t be more than 24 hours old.

“We have to understand some things we didn’t before, such as the workflows of the business community,” Imhoff says. In addition, BICC participants need to understand that the consumers of business intelligence information are no longer

exclusively sophisticated analysts, but often technologically naïve operational people. “There are much larger numbers of people using business intelligence than before,” she says.

The Unbalkanized BICC

Successful BICCs maintain cross-departmental collaboration, despite the tendency of different departments to look at things in their own way.

“I have found that people tend to split themselves into two halves,” says Imhoff. On one side are the technical people, those who are focused on getting quality data into a BI environment; on the other side are those who are focused on getting data out—on BI analytics and the needs of business users, Imhoff explains. “These two halves must work with each other. If they are not communicating well, then we end up with all kinds of challenges,” she says.

Bob Thames, program manager for SAS Professional Services and Delivery, says a BICC brings together a group of people, each of whom might have a different version of the truth. “The danger is that in many organizational settings, if there’s an opportunity for people to degenerate into politics, they do. People may manipulate the data to support their own parochial interests,” says Thames. A BICC, he says, can reconcile these differences by getting everyone to speak in terms of standardized competency and performance measures.

Once a BICC is launched, it is critical to track its contributions to a company’s business mission. “Sometimes organizations move

on too fast and don’t bother to go back and measure how well they have done. The key is to measure the ROI [return on investment]. I find that many times companies get returns on investment that they didn’t expect,” says Imhoff. She adds that companies must not stop there, but must make sure the business as a whole recognizes the BICC’s accomplishments. “Even if you measure the ROI, if you don’t communicate it, who will care? You need to let the company know what you are getting out of your BI environment. Part of it is communication and public relations. You need that to continue to get excited about it,” she says.

The Executive Champion

Also critical to the success of a BICC is top-level executive support. Without this backing, a BICC lacks a mandate to effect change within an organization.

“Without executive sponsorship, apathy might take over,” says Colbert of BPM Partners. “But if senior team members believe that a BICC will empower them, and that a senior executive is behind it, they’ll take an interest. It comes down to executive visibility—and a long-term commitment,” says Colbert.

To ensure executive involvement, Imhoff asserts that the reporting structure of the BICC is crucial. If a BICC reports to IT, then the business side isn’t very happy. If it reports to a business executive, which one will it be? If it’s the top sales executive, then the rest of the company might not feel well served. The same if it’s the CFO, says Imhoff.

Although some companies might

consider having the BICC report directly to the CEO, that is often not the best approach, since CEOs frequently are not fully conversant in technology and may not have enough time to devote to BICC issues. “You need someone who is paying attention to you,” says Imhoff.

Perhaps the optimal reporting structure, says the consultant, is to align the BICC under the chief operating officer. She notes that Hartford Life has taken such an approach. “That was brilliant,” she says. “It made sure that BI lined up with strategy.”

Hartford Life’s Alt-Simmons agrees that having the BICC reporting to the office of the COO is an important contributor to success, but asserts the key to executive buy-in is “starting small and not trying to take over the universe in one fell swoop.” Connecting with the rank and file is also important, says Alt-Simmons. To that end, Hartford Life holds monthly workshops to teach users best practices in using different BI tools, Alt-Simmons says.

Aiman Zeid, a business intelligence consultant at SAS, says upper management can be most often convinced to support a BICC initiative when organizational gaps or problems can be exposed. “Everything has to ultimately show a value—either cost savings or profit gain, whether it’s improvement in efficiency or better data quality,” says Zeid.

Changing Targets

As time goes by and successful projects are completed, a BICC should pick new targets on which to

focus its attention. For example, the initial aim of a BICC may be to optimize marketing efforts by discovering the highest-value customers and aiming efforts at them. Once that goal is accomplished, a BICC might then focus on human resources issues such as high employee turnover. Studying workforce patterns within a company and comparing those with industry norms, for example, could provide clues as to how to apply incentives to optimize employee retention.

Having secured its broker-dealer base, Hartford Life targeted its Business Intelligence Group at workflow automation. The result was to cut four weeks from a six-week annual information management process, according to Alt-Simmons.

Measuring and Monitoring

Once a BICC is launched, its progress must be monitored and its performance must be measured. “You can’t assume that whatever you put in place is perfect,” says Zeid. “You need to review the engagement model to make sure the process is working properly. If you don’t, there’s a huge risk that you could be wasting money. You could also lose credibility with the business side of the house,” Zeid warns. Key factors to measure are the time

Even if you measure the ROI, if you don’t communicate it, who will care? You need to let the company know what you are getting out of your BI environment.

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to intelligence and whether business users are actually using BI properly and as an integral component of their daily work processes—whether or not they have accepted and integrated BI as part of their business culture.

Companies should also assess the performance of their BI tools. These may consist of a unified suite from a single vendor or a collection of different tools from various vendors. Although a BICC can help any organization that has a BI strategy, a company is likely to reap more certain results if it has a strong technology foundation for BI. A sound approach is to select technologies that cover all of an organization’s

needs and that work well together. The SAS Enterprise Intelligence Platform, for example, provides a framework for integrating, storing, analyzing, and reporting large volumes of data. Such an end-to-end business intelligence platform can enable organizations to implement a comprehensive program for continuous performance improvement across the enterprise.

Conclusion: Be Bold

Zeid counsels that wholehearted commitment is critical to a successful BICC implementation. “If there’s one thing to avoid, it’s a meek approach. Be bold about it. You’re going in to fix a problem, dealing with the politics, processes, and obstacles. If you don’t overcome those, you won’t be able to show progress,” says Zeid.

With several years of experience in BICC operation in hand, BICCs show no signs of fading in importance. Today a significant amount of money is being spent on business intelligence technology, but the truth remains: You risk wasting a large portion of it unless you manage the process through a BICC. ▶

Stan Gibson is former executive editor at eWeek and a Boston-based information technology writer.



A BICC Built for Success

Experts at SAS remove the guesswork and build in confidence.

To assist customers in getting the most out of their business intelligence investments, SAS stands ready with consulting expertise in building Business Intelligence Competency Centers (BICCs).

Companies that neglect to form a BICC until they are sure they need one may miss out on improving their competitive advantage. Still, some analysis is advisable in order to determine whether a BICC is needed, how it will relate to the company as a whole, and how many individuals from which departments should be asked to join the BICC. Just as every company is different, it is unlikely that any two organizations would be well served by identical BICCs.

In the case of Hartford Life, the industry-leading insurance company was using the SAS software suite, but recognized the need to take better strategic advantage of the business intelligence

that was being generated by the SAS tools. Advice from SAS was critical in building a BICC, which Hartford Life calls the Business Intelligence Group.

“I was trying to do this thing on my own. The SAS account executive suggested some books, conferences, and training. SAS had a hand in guiding me,” says Rachel Alt-Simmons, director of the Business Intelligence Group in the U. S. Wealth Management Division of Hartford Life.

In addition, any BICC can be greatly aided by the use of an integrated suite of BI products. The SAS BI product family is a complete end-to-end platform that includes data quality, analytics, finance, and human resources components. With solutions that are engineered to work together, the business community only needs to become familiar with a single set of BI tools. “Having an end-to-end platform goes a long way to providing the right an-

swers and the same answers,” says Bob Thames, program manager for SAS Professional Services and Delivery.

Thames, an executive with more than three decades of experience in organizational change, has done extensive research in performance management and has developed a change model and assessment process. He has found that building a BICC depends on the human factors just as much as the technology underpinning.

“Applying technology is only one piece of the equation. Getting people on board and ready to use the technology is at least as important,” says Thames.

That approach worked well at Hartford Life, where support for the BICC initiative came from more than just the IT quarter. “It was a bottom-up approach,” says Alt-Simmons. “We got excitement on the business side about how business intelligence can be used and leveraged.” ▶

THE SAS METHODOLOGY

SAS and its partners can assess a business's organizational structure and make recommendations as to the optimal form and focus for a BICC. SAS experts follow these steps in BICC consulting services:

1. ASSESSMENT

- Take inventory of the current BI environment
- Assess information delivery capabilities
- Identify business priorities
- Perform gap analysis
- Identify key business and IT stakeholders

3. EXECUTION

- Secure resources
- Make organizational structure changes, including implementation of change management procedures
- Announce objectives and key performance indicators (KPIs)

2. DEFINITION

- Define initial BICC scope, including skills, roles, and responsibilities of participants
- Perform benefit/cost analysis
- Determine success measurements
- Secure executive sponsorship and funding

4. OPERATION

- Monitor BICC performance
- Make necessary adjustments
- Publish and communicate performance measures

Blazing a Trail Through Unstructured Data

SAS' Gaurav Verma says the convergence of structured and unstructured data calls for a coherent information management strategy.

There's an upheaval going on in the world of business intelligence. At the bottom of it is unstructured data, which is multiplying across corporations large and small at an astonishing rate. Leading SAS Institute into this developing territory is Gaurav Verma, global product marketing manager for business intelligence. An industry veteran and expert in BI strategy, he previously held high-ranking positions at Cognos, Information Builders, and the consulting firm Doculabs. Verma spoke recently with technology author Stan Gibson with regard to trends in business intelligence and his goals at SAS.



Q: How has the evolving need for quality intelligence affected IT organizations?

A: IT professionals have been serving up to business users timely and accurate information on which to base strategic decisions. But as businesses have evolved, and look to become far more agile in responding to rapidly changing market dynamics, there is a heightened need for up-to-the minute access to quality intelligence about all issues that influence decisions at all levels of the organization. This, coupled with the need to enable autonomy at the business-unit level, exerts tremendous pressure on IT to manage information assets more effectively, efficiently, and wisely.

Managing information has thus evolved from being an adjunct support function to a critical foundation for performance management. Understanding how information about suppliers, customers, competitors, and global markets is obtained, validated, stored, accessed, and distributed is now central to organizational survival and profitability.

This paradigm is causing an escalated demand for information that is challenged by the exponential growth in

volume of data, data sources, and data stores. In turn, these data sources increase the types of disparate data that need to be managed, including structured and unstructured data. Falling storage costs compound the issue by continuing to drive the appetite for higher data volumes and data stores, including: transactional systems; office automation and collaboration; LAN file systems; databases and warehouses/marts; email, instant messaging, and voice; digital and video cameras; RFID, etc. Today, organizations see their digital information doubling every 11 months. By 2010 there is an expectation that this data will double every 11 hours. Seventy percent of that data is unstructured and semistructured.

As organizations move toward understanding and managing data assets and begin the evolution of creating contextual and highly usable information from these assets, it becomes obvious that information has a limited shelf life. Left unmanaged, information decays, content loses its context, meaning is lost as metadata remains unenforced, and unstructured data cannot be located due to lack of taxonomies and indexing. Managing all this data requires process definition and governance for design and modeling, retention and disposition of records and data, prevention of deterioration and loss of data and data models, and linking structured and unstructured data.

Q: Organizations have been utilizing reports, data warehouses, data mining, executive information systems, decision support, OLAP, and more to obtain business intelligence. What is new now, and why should IT professionals care?

A: Organizations have been investing in data and information technologies for years, but in a silo'd approach based on the type of data—business intelligence

[BI] for structured data; and enterprise content management [ECM], document management, Web content management, and a plethora of other tools for unstructured data. This is predicated by BI inherently being fact-based. It helps in the discovery of facts and the ability to quantify them if the data is stored in a specific structure like a relational table or multidimensional cubes. Content and document management technologies, tools, and methods have been used to capture, manage, store, preserve, and deliver unstructured information across an enterprise.

What's changing now is the ability to cross-pollinate disciplines to fully leverage these investments. For example, integrating unstructured information into the established processes of BI and information extraction and analysis of structured data substantially increases the confidence in the analysis if both types of data are from and about customers, partners, competitors, etc.

The other discipline that has its genesis from content and document management that is now being applied to the structured data world of BI is advanced search, which allows for high availability of BI in an easy-to-use environment. This is being driven by the understanding that information in an organization, regardless of type, is manufactured from customer, partner, supplier, and market interactions. It can be a highly valuable source of intelligence about product quality and customer satisfaction.

Q: What is the impact of the convergence of structured and unstructured data?

A: Extending the utility for unstructured and semistructured data to participate in BI, it must be transformed into structured data such that the facts (address,

complaints, parts) about key entities (customers, accounts, products) can be extracted and stored in a file or database, thereby applying a structure on the information. The real value in recognizing these entities and facts is the ability to correlate them with similar facts being derived from transactions systems, applying analysis, and predicting something before it happens so corrective action can be taken.

This convergence calls for a coherent information management strategy. Information management is not a product, but a strategy or approach for an organization to leverage information to be its most compelling asset regardless of type or source. The time has come for companies to adapt their information management strategies to give them the edge to be more efficient, differentiate from the competition, mitigate risk, and comply with the continued onslaught of regulations.

Q: Can you provide some examples of unstructured data?

A: Unstructured data in an organization can range from scanned images of correspondence and forms, documents, Web pages, collaboration logs; even voice/audio that is stored in its native format or has been converted to text using speech-to-text conversion tools. Video feeds, digital images, and RFID are also contributing to the explosion of unstructured data. Regulatory mandates have made retention of email and instant message logs—examples of semistructured data—mandatory.

It is important to note that while a Microsoft Word document itself is structured with markers, metadata, and processing instructions for the application to follow (layout, borders, size, color, font, etc.) the content is not. In

Web pages, HTML, the tags are structured but the content is not. Emails have standardized “structure,” all images have specific processing instructions for standardized rendering engines, all audio (the same), all blogs, etc. Free-form text is *not* structured.

From an “encapsulating structure” perspective, all data is the same and can be indexed and made searchable. But what about the knowledge buried in the content by itself and how it relates to other data elements? Content derivation, assimilation, and integration is part of the story—once the content can be parsed, then basic outliers of context can be derived.

Q: How can SAS® technology enable a business to cut costs and innovate?

A: What our technology enables is the ability to extend the utility and fully leverage organizations’ existing investments in BI, ECM, and so on, by integrating unstructured information into the established processes of business intelligence and information extraction and analysis of structured data, substantially increasing the confidence in the analysis of both types of data from and about customers, partners, competitors, etc.

The value in correlating similar facts from both structured and unstructured data and applying predictive analytics allows for corrective action to be taken before a business impediment may occur—this can range from early warnings of a spike in warranty claims for manufacturers and the ability to prevent public recalls; to detecting fraud in banking, insurance, and government agencies; to customer churn from telcos, etc.

Q: How is unstructured data managed in a business application?

A: One good example is warranty cards.

While most of the information you fill in on a warranty card is structured as machine-readable, there is always space for free-form text. These warranty cards are scanned in and the machine-readable sections are used to populate a warranty system. The free-form text, however, stays as an image. If all the information regardless of type is analyzed, it can provide a far more robust early warning system for product defects. We are seeing lots of interest in this among customers in the automotive and high-tech industries in particular.

Another good example is customer correspondence. Letters that are sent to a company from customers get routed to a mailroom where they are scanned and the image is associated with a customer through a customer ID or some other customer record. When the customer calls the company's call center, the agent pulls up the customer record, which can include the correspondence as an image and would have to be read to make any inferences on the content; unless the correspondence has been processed and all action notes have been appended to the customer record in the transaction system.

There are behavioral signs about customers in the correspondence that can be a key information asset for an organization. For example, if an insurance company is trying to come up with the probability of customer attrition, they rely on their business analysts to leverage their BI solution to compute the same. But there is a lot of additional insight available in the unstructured data accumulated from customer interactions via online chat sessions, email, correspondence, and rants on the telephone. All of these

can be expressed as free-form text, a form of unstructured data, on which text mining—words and associations with words—can be done to come up with the probability of customer attrition. Many people are now referring to text mining as “content intelligence.”

Still another example is that of pharmaceutical companies, which need to leverage the information from notes they get back from clinical trials. We're starting to see the trend move beyond the early adopter phase.

Q: Can you talk about some SAS® products that analyze unstructured data?

A: The SAS Enterprise Intelligence Platform can apply data integration and analytics to both structured and unstructured data. Text mining, which is data mining applied to text, combined with natural language processing, with an emphasis on analysis of large document collections, is part of the core platform allowing the combined analysis of related structured data. Among traditional BI vendors, no one has that strength. Other vendors are integrating with search. You can search unstructured data that has been tagged for search. But then you have to read the search results, manually consolidate the information, and make your own inferences.

Q: Service-oriented architecture generates a lot of buzz. Is SAS implementing an SOA?

A: SAS products are built on an SOA foundation. We have a library of reusable services, including data integration, data quality, data mining, text mining, analytics, forecasting, and predictive modeling. These services shield users from complexity and only provide the most relevant information when needed, in a format that is easily understood.

Q: How do SAS® products help businesses better cope with the burdens of regulation, such as Sarbanes-Oxley, HIPAA, and other measures?

A: SAS products are particularly valuable in detecting regulatory compliance and fraud. They can help customers look for trends and patterns across structured and unstructured data that might indicate noncompliance. It's increasingly important to scan unstructured data such as email messages, instant messages, and word processing documents to look for tell-tale patterns.

Q: In what direction are you guiding SAS® development?

A: As organizations continue on the logical path through information evolution (operate, consolidate, integrate, optimize, innovate) into an information-driven “intelligent” entity, they need to focus on the four key dimensions of influence—infrastructure, human capital, knowledge processes, and culture. Our development is focused on being the enabler for this paradigm of information evolution.

With so much data, and so many needs to extract knowledge from it, we see this as an opportune time for organizations to make information management part of their DNA. To do that, all levels of an organization, especially those that are looking for the autonomy to make their own business decisions based on enterprise information, need the ability to interact with all available information assets.

Our role at SAS is to continue maturing our comprehensive platform such that we are enabling business users to take their gaze off the rear-view mirror and instead focus it on the road ahead. ▸

Picture This

Performance management dashboarding and data visualization tools enable unprecedented clarity from your data.



BY SANDRA GITTLEN

Consider this: A pipe and supply company in the Pacific Northwest recently found out that its top revenue-generating customers were not its most profitable.

While this notion might take a second to get your arms around, for companies employing performance management tools with data visualization, it's crystal clear.

The company used the activity-based modeling within SAS' performance management solution to analyze customer profitability. Business leaders quickly found, via a rich graphical representation, that the

sales force was spending so much time with their "best" customers that they were draining significant resources from the organization.

Today, companies of all sizes are seeing the value performance management tools bring to business intelligence initiatives. While straight BI can provide insight into a specific issue, performance management tools leverage the same techniques to provide a holistic view of an organization. This next level, where business intelligence and performance management mesh, is sometimes referred to as BiPM, BPM, or simply PM.

SAS' unique approach to analytics enables companies to reach this next level—going beyond static charts and Excel spreadsheets to deliver multidimensional representations of critical data. With this unparalleled visibility into their data, companies can make real-time, market-leading decisions.

The foundation of this approach, the SAS Enterprise Intelligence Platform, offers users powerful data integration, advanced analytics, optimized intelligence storage, and a broad set of business intelligence capabilities. The Enterprise Intelligence Platform is an integrated, flexible, standards-based, centrally managed intelligence environment that empowers organizations to optimize their decision-making processes through meaningful intelligence from consistent, companywide data.

"It's been an evolution. The first step companies took with business intelligence was to look at performance management to help them manage their budgets. The next step was to give users direct ac-

cess to BPM tools. Now, companies are using BPM tools with enhanced data visualization so that even users [who] are less familiar with analytics can grasp important trends and make critical decisions,” says John Colbert, a vice president at BPM Partners, a consultancy in Stamford, Conn.

Survey Says: Data Visualization Is Key

Performance management tools enable companies to define strategic goals and then plan, measure, and manage their performance against those goals. They feature a variety of components—including real-time, Web-based dashboards that alert users to important changes and trends—to help businesses link their financial and operational data and create solid, forward-thinking strategies.

This year, half of the respondents to BPM Partners’ BPM Pulse survey of executives from a cross-section of industries reported they already have performance management initiatives in progress. About 10 percent of respondents said they have plans to implement performance management in the short term.

The more than 500 executives surveyed ranked dashboarding, which proactively delivers information to users based on customized key performance indicators (KPIs), as one of the top three components they rely on. The executives also named data visualization as the second most important feature of performance management.

“This shows a huge leap for companies that understand there is richness in their data, but don’t know how to help employees who don’t

[Dashboards] can provide a single pane of glass where users can see what changes are occurring, why they’re occurring, and how they impact business performance.

 **DENNIS DROGSETH, VP**
ENTERPRISE MANAGEMENT ASSOCIATES

have the sophistication of training to access that data,” Colbert says.

With the Enterprise Intelligence Platform and the BI and performance management solutions that run on that platform, companies can automate their planning, budgeting, management reporting, financial consolidation, business process management, and operational performance management. Results are generated from business-specific KPIs via the dashboard, portal, or other customizable feature-rich display. The data appears in various formats, including color-coded temperature charts and “data movies” that allow users to manipulate an easy-to-use, motion-enabled, graphical environment. These movies and other unique graphical representations are powered by SAS’ patented JMP® statistical visualization and discovery software.

“Dashboards and data visualization help users to focus on what they know is important and to consume information more quickly,”

says Charles Pirrello, product manager for dashboards and scorecards at SAS.

Getting to the Cause of Performance Problems

However, he adds that dashboards are only a first-alert system and should lead users to more discovery. “It’s like saying, ‘we have a problem and you need to pay attention.’ Their true value is the ability to get users to dig deeper and uncover causes of poor performance using the underlying analytics tool,” he says.

Dennis Drogseth, vice president at Enterprise Management Associates, a consultancy in Boulder, Colo., says dashboards can be incredibly beneficial to business users. “They can provide a single pane of glass where users can see what changes are occurring, why they’re occurring, and how they impact business performance,” he says.

He adds that this information, delivered through concise graphics, is essential for companies that want to assimilate disparate pools of information, such as that flowing from their ERP, CRM, and other systems. “You have all these piles of data that need to work together. Whether it’s for problem solving or service impact and automation, this merging of historical and real-time data is powerful,” he says.

For companies to be successful with dashboarding and data visualization, Drogseth notes, they must have a “clean” version of data across the myriad source systems. “Everyone has to work off the same information to make effective collaborative decisions,” he says.

John Burke, senior analyst at Ne-

mertes Research in Minneapolis, says that getting a “clean” or “single” version of data is one of the most difficult challenges organizations face, but not doing so can jeopardize performance management efforts. “The hardest part is figuring out what really qualifies as a key performance indicator,” he says.

For instance, he says for a retailer, it might be the difference between the number of sales at close or the number of transactions per shift. “These subtleties can get very complicated,” he says. Burke recommends that business leaders, not IT, determine these parameters.

It’s All About Data Integrity

He also advises companies to narrow down the amount of KPIs they choose. “Before you start feeding data into the system, business leaders must be selective about which indicators they feel are important and will add to decision making,” he says. Otherwise, he says users will be inundated with data.

In addition to having “clean” data, the ability to pull all that data together with top-notch analytics is just as im-

portant, according to SAS’ Pirrello. For instance, he says, a state agency was patting itself on the back for having a significant drop in car accident deaths. The agency credited its own accident prevention program. However, had the agency looked at the whole spectrum of data available, including a 20-year span of statistics, it would have seen that there had always been dips every few years with fewer accidents. “Yes, the numbers they had were accurate, but they weren’t looking at the whole picture. Reports and queries will give you what you want, but to get the ‘truth’ you need analytics,” he says.

In the case of the pipe and supply company mentioned earlier, SAS’ performance management and visualization tools let business leaders see the profitability costs assigned to each customer. The tools measured how much it cost the firm for the sales force to spend money on activities associated with customers. “Until the company saw this profitability metric, they had no idea these were not their best customers,” Pirrello says.

He adds that performance manage-

ment is not just a sales tool. It can be used across all departments, including IT, human resources, finance, customer intelligence, marketing, and procurement.

For example, a doctor in Children’s Services at Duke Medical Center, who had no financial background, used a JMP-enabled dashboard to analyze his billing process. “He found discrepancies and inefficiencies that led him to improve revenue 10 percent to 15 percent over the previous year,” according to Pirrello.

In addition to reconciling historical transactions, companies can use SAS and JMP visualization tools to create what-if scenarios that help them plan for future costs and resources. “With visualization, you’re not only able to see current values, but you can see how they move through time—the direction and velocity of how they’re progressing,” Pirrello says. “You not only see where you’ve been, but where you’re going.” ▶

Sandra Gittlen is a freelance writer in Northborough, Mass.

TIPS FOR GETTING STARTED WITH PERFORMANCE MANAGEMENT VISUALIZATION

John Colbert, a vice president at BPM Partners in Stamford, Conn., encourages companies to do a bit of upfront work to make their performance management projects a success. Here are his tips.

- 1. Lay the foundation by normalizing your hierarchies.** For instance, you should make sure transactions within your chart of accounts can be understood across all systems. “This may be tough, but it’s required,” Colbert says.
- 2. Determine the business issue you’re trying to solve.** “It’s easy to get caught up with something exciting you see in a product demonstration, but you need to know the challenge points you’re trying to address. Are you trying to understand profitability, resources, or workforce planning?”
- 3. Let IT tackle the “cleanliness” of systems.** “You need a single version of the data that feeds your performance management tool. If it’s messy, then that will be challenging. You can’t have multiple versions of the truth,” he says.
- 4. Don’t make the tool too complex.** “If you are trying for an enterprisewide approach where all users will have access to the tool, then keep in mind the lowest common denominator. Then you can start layering sophistication on top of that,” Colbert says.

The Pressure Is On

Competitive enterprises have to make the most out of their data or risk irrelevance.

Optimizing data management in high-volume, heterogeneous computing environments is a very tricky business, with the potential for both unbridled success and unmitigated failure. In fact, there are few challenges as daunting as creating integrated IT infrastructures that not only exploit the power of multivendor systems, but do so in a way that provides rapid access to homogenized data for internal and external customers.

Failure in this regard is not an option for large hospitals, pharmaceutical companies, and government agencies where the stakes include human lives and huge amounts of money. These kinds of institutions have one chance to get it right. If they don't, the damage to their reputations can be irreparable, and their ability to provide competitive products and services can be severely crippled.

This kind of pressure makes it imperative to make the right decisions when it comes to acquiring major IT systems. To meet that challenge, users should look for vendors with documented track records and demonstrated commitments to the

vertical markets they serve. In addition, these vendors must offer proven technology that excels in production environments, because learn-as-you-go is not an option for companies that exist on the competitive margin.

“Vast Quantities of Data”

University Hospital Aachen (UKA) was a perfect example of a high-volume, heterogeneous computing environment that needed to be optimized. This unique German institution combines every aspect of medical and dental patient care under a single roof. It also provides common research facilities for engineers, scientists, and physicians.

Not surprisingly, UKA evolved with many incompatible IT systems. “We had noncomparable analyses based on different analytical systems and nonuniform technology,” comments Volker Lowitsch, the CIO at UKA.

UKA stored data in a variety of sources, operational systems, and file formats, with three key systems. First, the main hospital information system, Medico, was supplied by Siemens Medical Solutions and implemented in Oracle and Windows. Second, UKA used a laboratory information system, Swisslab, supplied by Frey. And third, UKA had made a very significant investment in SAP's R/3 enterprise resource planning (ERP) system, implementing the materials management (MM), financial accounts (FI), financial controlling (CO), and human resources (HR) modules.

“We are talking in terms of simply vast quantities of data,” says Lowitsch. Approximately 3.4 million

records are updated daily in Medico. Swisslab generates approximately 10 million records per year, while in SAP R/3 there are already 4.3 million records and growing, with more coming from the rapid expansion of extractable data from the FI and HR modules.

SAS® Adds Value to SAP R/3 Data

The recent German healthcare reforms introduced a new urgency to the challenge for UKA. In Germany, healthcare administration is split between the providers (such as hospitals) and the insurance companies (Krankenkassen) that pay the bills. Since the healthcare reforms, the two are required to settle their accounts on the basis of individual case episodes. To make this possible, doctors must record their treatments according to predefined categories. The faster and more accurately UKA can do this, the quicker it can bill the Krankenkassen—and given that the amounts involved run to more than a million euros per day, reducing delay can protect UKA against huge interest losses.

Previously, UKA could not afford to leave information in SAP or Medico, because of their limited analytical functions. It therefore chose SAS to get control of its information resources, with the SAS Health Portal and SAS Business Intelligence solutions, including a balanced scorecard. SAS' technology leadership in the sector, its long-term commitment in science and research, and its proven analytical tools and multi-supplier integration platform were all important reasons for choosing

SAS. However, Lowitsch says implementing the standard interface SAS/ACCESS to R/3 was critical.

Implementation of that first interface required some effort, owing to the internal complexities of SAP HR. But the creation of further R/3 modules was less demanding, and the same was true for the Medico

With SAS we have placed our hospitalwide information management on a completely new footing. Thanks to SAS, we are now communicating with a common language at UKA.

 VOLKER LOWITSCH, CIO
UKA

interfaces. Moreover, the maintenance requirement remains low

So in early 2005, for the first time, decision makers were getting value out of their SAP R/3 data, thanks to SAS. Lowitsch says, "There was high user acceptance of the new solution, especially because of the improved data quality."

These users include clinical directors, consultants, medical and commercial controlling managers, center leaders, and managing directors of UKA's business sectors. They access information through uniform views provided by the SAS Health Portal, which was created within the framework of the pilot project, delivering end-user benefits in the

minimum time frame.

Users can now get most of their reports in real time or almost immediately (for example, 80 percent of R/3 inquiries are processed within a day) instead of having to wait for the monthly reporting cycle within SAP or Medico.

UKA has also brought all of its knowledge systems into a single enterprisewide balanced scorecard solution with SAS Strategic Performance Management, supporting strategic management and governance of the entire hospital. In addition to hard facts and figures such as case data, the balanced scorecard provides information that includes levels of patient satisfaction and the success of interdisciplinary cooperation.

"With SAS we have placed our hospitalwide information management on a completely new footing," says Lowitsch. "Thanks to SAS, we are now communicating with a common language at UKA."

Getting Drugs to Market Faster

In the common language of pharmaceutical companies, two key words are "time" and "money." It can take these companies a decade or longer to develop a new medicine. That means 10 years of great expense for the developer and prolonged anxiety for patients in need of new treatments. Meanwhile, the escalating cost of research and development, accompanied by the increasing complexity and expense of human clinical trials, threaten pharmaceutical innovation.

That's why several years ago, the U.S. Food and Drug Administration

(FDA) recommended that the industry expand and accelerate development through simulated clinical trials—a method that was already being advocated at Vertex Pharmaceuticals Inc., based in Cambridge, Mass. Vertex Pharmaceuticals is a global biotechnology company focused on the discovery, development, and commercialization of breakthrough drugs for a range of serious diseases.

Using SAS®9 technology, the company has designed simulations of clinical trials and analyzed millions of data points created by thousands of virtual patients in each simulated trial. As a result, Vertex Pharmaceuticals is potentially saving millions of development dollars and possibly increasing the speed at which it is able to advance drug candidates through the development process.

Where No Drug Company Has Gone Before

Simulated clinical trials are virtual replicas of actual clinical trials. Midstage human clinical trials commonly enroll 500 or more patients. Simulated trials take data models developed from actual clinical trials and develop clinical trial design scenarios and putative trial results that take into account variability caused by treatment effects, survival times, adverse events such as the occurrence of headaches or nausea, and other events that occur during trials. Researchers might perform 10,000 simulations of a single scenario, which means an entire trial can generate millions of observations.

“A lack of power in a company’s computer environment can seriously inhibit productive research

and development initiatives for serious simulation,” says Steven Schmidt, Vertex Pharmaceuticals’ vice president of information services. “Properly powered clinical trial simulations could save tens of millions and greatly reduce overall development costs while also helping the development team avoid the

Properly powered clinical trial simulations could save tens of millions and greatly reduce overall development costs.

■ **STEVEN SCHMIDT, VICE PRESIDENT OF INFORMATION SVCS.**
■ **VERTEX PHARMACEUTICALS**

lost time associated with repeating a clinical trial, which is potentially a year of sales revenue.”

With the parallel computing capability provided through SAS, Vertex Pharmaceuticals believes that it may be able to reduce the length of future trials by using reliable analyses from previously successful trials. “Over the course of a drug development program, market time can be critical,” Schmidt says. “If you can reduce the length of clinical trials by three months, you may be able to garner an additional \$100 million in sales on a product with \$400 million in annual sales.”

“Cyber Warriors” Defend Networks

The U.S. Navy Cyber Defense Operations Command—or NCDOC for short—is not into simulations.

Not when the Navy networks it defends are under attack every day, and war fighters depend on those networks to protect them as they complete their missions.

“Traditionally, information technology troops were not thought of as war fighters,” says Captain Steven Carder, commander of NCDOC. “We were thought of as enablers and supporters. Now that has changed. The commander of the Naval Network Warfare Command, Vice Admiral James D. McArthur, now refers to my team as ‘cyber warriors,’ and that’s where we fight: in the information domain.”

To help accomplish that important job, NCDOC relies on PROMETHEUS—a Web-based solution that monitors, reports, and thwarts malicious network activity. Using SAS Intelligence Platform components that include SAS Enterprise BI Server, SAS Data Integration Server, and SAS Intelligence Storage, the PROMETHEUS system:

- Integrates and stores large volumes of computer network defense data
- Provides customized interfaces that furnish information to Navy analysts and other information consumers
- Delivers event-correlation capabilities.

Based in Norfolk, Va., NCDOC analyzes masses of incoming and stored data using real-time information obtained from the Navy’s networks. “Our 24/7 watch is the nerve center of everything that comes in,” says Jim Granger, NCDOC technical director. “We receive information

from a variety of sources and use that information to stop attacks in progress or, more ideally, predict future attacks and stop them before they start.”

Granger’s team looks for anomalies or indications of warnings that a computer network attack may occur. In particular, they can watch for probing activities or precursors that somebody may be conducting reconnaissance for a possible attack in the future.

A Complete Solution for Network Security

Before creating PROMETHEUS, the Navy had already established a best-of-breed defensive grid by employing firewalls, anti-virus products, and analytic solutions representing the industry’s top tools for each component.

The challenge NCDOC faced was finding a vendor-independent solution that could bring all this information together into a single database for advanced analysis and reporting. In the past, most of NCDOC’s advanced

business intelligence was conducted manually by entering data from various security alerts into a database for further analysis. Over the years, however, as threats continued to increase and the network became more and more complex, the Navy saw the need for a more advanced system.

Built with SAS, the PROMETHEUS system accesses and aggregates data from all portions of the network—including system logs, Web logs, email logs, firewall logs, and router logs—and then prepares and stores that data for reporting and predictive analysis.

Granger is enthusiastic about the job PROMETHEUS is doing. “Our speed in handling incidents has increased dramatically,” he notes. “We have been able to tie together large patterns of attacks. We have seen things at multiple sites and realized they were all tied together and it wasn’t a coincidence. We have even been able to use PROMETHEUS to go back and see where there was related probing activity at these sites six

months ago.”

Additionally, Granger says PROMETHEUS has reduced query and reporting times for many common reports, noting that his team produces a hot IP list, which lists the IP address, or computer identifier, for suspected cyber criminals.

“We have certain thresholds and criteria and we say these guys are on a watch list,” he states. “Prior to PROMETHEUS, it took us about four hours to generate that list. Now, with the interface that we have, we just click and pull up an IP list within minutes.”

The stakes are high for large enterprises that rely on integrated, high-volume computing environments that provide rapid access to unified data repositories. Human lives and millions of dollars are on the line. The formula for success relies on the right combination of vendor expertise, IT acumen, and business intelligence. Bringing these three components together is a daunting challenge, but it can have lucrative