

Real Analytics for Real Business

Savvy organizations are strategically applying analytics to their daily operations, pointing to a more analytical future in which CIOs and their teams will have a vital role to play.

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The Analytical Competitor

Innovation and predictive analytics can transform your enterprise into a competitor on analytics.

BY TOM FARRE

Consider the following enterprises that are using business analytics to outperform the competition:

- A gaming company boosts loyalty by analyzing customers' gambling losses in real time and notifies them when they're losing too much.
- An insurance firm collects information on customers' driving habits by offering a discount if they install a monitoring device in their cars.
- After analyzing the tastes of the *Wine Spectator's* reviewer, a winery reverse engineers its wines to appeal to those tastes.

These are just a few examples of "analytical competitors," a term coined by Thomas H. Davenport and Jeanne G. Harris in their book *Competing on Analytics: The New Science of Winning*.¹ Analytical competitors beat the competition by strategically applying business, or predictive, analytics to their daily operations. They use analytics to improve business processes and make the best decisions possible,

even counterintuitive ones. After studying hundreds of enterprises, Davenport and Harris found that top performers were 50% more likely to use analytics compared with the overall sample, and they were five times as likely as low performers to use analytics.

High-flying analytical competitors all select one or a few distinctive capabilities on which to base their strategies, and then apply extensive data, statistical and quantitative analysis, and fact-based decision making to support the capabilities. In short, analytical competitors use analytics to outthink and outexecute the competition—and, Davenport and Harris believe, "trends point to a more analytical future for virtually every firm."

CIOs and their teams have a vital role to play in establishing an analytical IT architecture with the right information, infrastructure and analytical tools, as this article and others in this Technology Briefing will illustrate. "CIOs play a crucial role in helping business executives understand the concept and potential of analytical competition, as well as how it relates to the firm's business strategy and position," says Harris, executive research fellow and director of research, Accenture Institute for High Performance Business. "They can contribute to the business by serving as advocates to help build the organization's analytical capabilities."

"Who better than the CIO to understand that the data needed by the departments responsible for risk and fraud, for instance, can also be helpful to the marketing team," says Keith Collins, senior vice president

1. *Competing on Analytics: The New Science of Winning*, Thomas H. Davenport and Jeanne G. Harris. Harvard Business School Press, Boston, Mass. 2007.

and CTO at SAS, a leading provider of business intelligence (BI) with integrated analytics. “Who better to look across the business disciplines to understand where the opportunities are to leverage the power of analytics.”

Predictive Analytics and BI

Though the term “analytics” is in common parlance, business, or predictive, analytics has a specific meaning: software that includes performance management tools and applications, as well as data warehouse technology. According to IDC, business analytics software is used to “access, transform, store, analyze, model, deliver and track information to enable fact-based decision making and extend accountability by providing all decision makers with the right information, at the right time, using the right technology.”²

This definition suggests a close

relationship between BI and analytics. Indeed, Harris considers analytics an element of BI, which covers the collection, management and reporting of decision-oriented data, as well as the analytical techniques and computer approaches that are performed on the data. If BI historically focuses on collecting transactional data and presenting historical results through queries and reports, analytics extends BI with a more proactive approach to solving high-value business problems (see diagram below).

“Data mining, data visualization, forecasting, optimization and other analytic capabilities raise the business value of the kind of questions you can answer,” says T.K. George, worldwide BI product marketing manager at SAS. “A historical report, while useful, is not as valuable as finding out, ‘What’s the best thing that can happen if I make this product-line decision?’ An executive using sophisticated forecasting

techniques can outcompete an executive who relies on a simple rolling average. With analytics, you begin to see lifts and changes that impact your strategy, you may recognize new niche markets, or you may start negotiating contracts with vendors ahead of time based on your forecast of peak productivity. Predictive analytics can improve your ability to compete and innovate.”

Analytic capabilities are making a difference across a wide range of companies large and small, George notes, including those in manufacturing, healthcare, life sciences, government and education. Analytics is also finding traction within business functions such as the office of the CFO, where it supports performance management, activity-based costing and compliance management. Similarly, Davenport and Harris found analytical competitors winning big in industries as diverse as gaming, cement manufacturing, insurance, professional sports, wine making and freight carriers, as well as among the more familiar online service providers, banks, retailers and telecommunications companies.

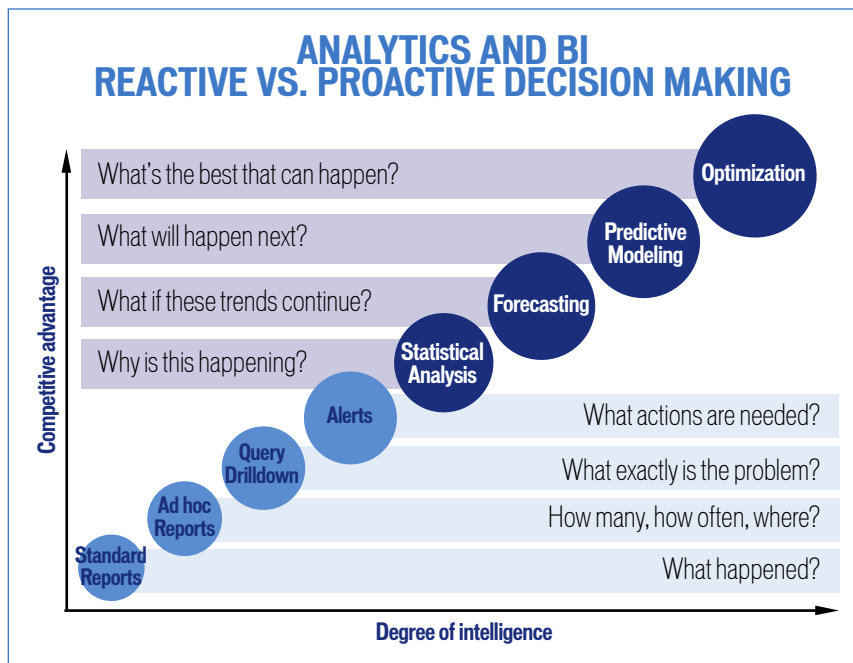
“If a company like CEMEX, which distributes cement, can find a way to compete on analytics,” Harris says, “almost any company can.”

The Role of the CIO

What do the most successful analytical competitors have in common? Davenport and Harris note four common characteristics:

- Analytics supports a strategic, distinctive business capability, such as supply chain, pricing, marketing or customer loyalty.

2. *Worldwide Business Analytics Software 2007-2011*. IDC, Framingham, Mass. (Excerpt from IDC #208699).



- Senior management is fully committed to competing analytically.
- The company made a significant bet on analytics-based competition, with millions or even billions of dollars at stake, and perhaps the company's ultimate survival.
- Analytic competitors take an enterprise-wide approach to managing analytics, which may include a BI competency center for the effective use of analytics across the enterprise.

These factors make clear the importance of the CIO's team in facilitating analytical competition. A key responsibility is serving as the steward of the enterprise data that is the basis for BI and analytics. This role isn't new to the IT department, as basic BI functionality depends on accessing and managing the growing stores of transactional and unstructured data that every enterprise generates. Now that analytics has become an essential aspect of BI, the CIO must assume stewardship of the data that can lead to analytic insights.

The challenge is that departments within an enterprise often undertake their own analytic projects, drawing upon their own data marts. If they are successful other departments may follow, leading to the silos of inconsistent data that have dogged BI professionals for years. By understanding the information needs of the business and taking control of the BI/analytics function, IT can ensure that accurate data and analysis are made available throughout the enterprise.

"The key for CIOs is to think long term and enterprise-wide about how they're going to capture, cleanse, manipulate, analyze and present data across the enterprise, to ensure there's a common version of the truth," says Harris. "Then business managers can focus on the insights they've gained from the data, rather than arguing over

CIOs can help business executives understand the concept of analytical competition, and how it relates to the business strategy and position.

■ **JEANNE G. HARRIS, AUTHOR OF**
 ■ **"COMPETING ON ANALYTICS: THE NEW SCIENCE OF WINNING"**

whose data and analysis is correct."

Also important is helping business executives realize the potential of the data that is within the IT environment, as well as the value of external and unique data sources. "One of the best ways to compete on analytics is to have proprietary data," says Harris. "Because if you have unique data, it doesn't matter what analytical capabilities your competitor has. The CIO can play an important role in helping to expand the vision of the business."

Harris cites several examples that show the value of external and unique data sources: the upheaval that FICO scores caused in consumer finance; a company that analyzes a competitor's website to understand its pricing and promotion

patterns; and the winery mentioned earlier that gained an edge by analyzing a wine reviewer's preferences, information that no competitor had. "The key is discovering what information would be really strategic to the organization," says Harris, "and then going out and getting it."

This, of course, implies a BI/analytics platform with the ability to access and mine both structured and unstructured data, including text, audio, video and the web. You'll also want analytics to be well integrated with the BI platform. An enterprise-wide data warehouse with a single metadata repository will make it easier for analysts to understand and share insights derived from the data. And any effort spent integrating heterogeneous analytics with BI could take time away from business innovation.

Fostering Enterprise-wide Analytical Competency

Another aspect of IT's role in the enterprise-wide approach favored by analytic competitors is creating a BI competency center (BICC). "The business units have their own budgets and they can afford to buy the analytic software, and they may not want to get IT involved," says Kathy Lange, senior director of analytical consulting at SAS. "We often bring the business and IT sides together in a BICC to show them the value of sharing the responsibility, with IT being responsible for governance, standards and data management, as well as information delivery in a context relevant to the decision makers."

According to SAS, a BICC is a "cross-functional team with a

3. From SAS website, www.sas.com/consult/bicc.html.

permanent, formal organizational structure. It is owned and staffed by the [company] and has defined tasks, roles, responsibilities and processes for supporting and promoting the effective use of business intelligence across the organization.”³ Usually under the direction of IT, a BICC can provide a center of excellence for the capabilities needed to fuel analytic competition and support analytic projects throughout the enterprise.

“Most analytical competition begins with someone having a great idea about how to run the business—possibly a counterintuitive insight, such as a gaming executive realizing that it could be bad for business if customers lose too much money,” says Royce Bell, CEO of Accenture Information Management Services. “Where did this insight come from? Many analytical competitors have developed a back-room discovery function—an analytical competency center, if you will—which brings together the people, processes and technology for successful analytical competition.”

In Bell’s view, IT executives managing the competency center can act as evangelists, raising the analytical consciousness of managers in the business units. Says Bell, “The analysts in a competency center can discover business insights that help executives decide where to compete in an analytic fashion.”

Examples of analytic insights include the ability to match styles and sizes of clothes to customer prefer-

ences across different retail outlets; optimizing schedules for maintaining heavy machinery; learning which staffers to hire based on HR statistics; knowing when to remove a starting pitcher; and understanding which subscribers are likely to churn or respond to an offer. Nearly every internal and external business function can be enhanced through analytical insights.

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 **T.K. GEORGE, WORLDWIDE**
 **BI PRODUCT MARKETING**
MANAGER, SAS

Valuable as these may be, not every business executive is a born analytical competitor. Many prefer to stay in their comfort zones, making decisions by gut instinct. Savvy CIOs will work to find senior executives to sponsor analytics projects, and then aggressively communicate positive results. “Anyone who manages a BICC needs to market the results across the enterprise in a sustained way,” says George of SAS. “Business executives want to emulate success. If they hear of

successful projects, they will better understand the value that analytics can provide.”

Once analytics begins to take hold, IT needs to ensure that analytic capabilities can be deployed and delivered at scale, at speed and at the lowest cost. IT must also play the role of gatekeeper, ensuring that the right analytic capabilities are delivered where they will do the most good. Providers of analytics software offer products for both analytics specialists and more general business users. Predictive analytic tools are available to those whose jobs include performance-management tasks such as data mining, modeling, forecasting and optimization. Analytic capabilities are also embedded in job-function and industry-specific applications, such as fraud detection, campaign management, credit scoring, retail optimization and many more.

“This isn’t analytics for the masses,” says Bell. “IT has to be clear on who receives the analytical tools and has the ability to make analytical decisions, as opposed to situations where analytics are baked into the business processes and applications.” IT executives who get this right will find it’s good for their companies and their careers.

“Historically, CIOs who champion analytics have been in the minority,” says Harris. “But our research suggests that it is a smart career move. Executives who take ownership of analytics have done very well for themselves.” ▶

From the Front Lines of Analytical Competition

How are enterprises using business, or predictive, analytics to differentiate themselves today, and what does the future hold? In this interview, writer Tom Farre presents the views of two executives deeply engaged in these issues. Jeanne G. Harris, executive research fellow and director of research, Accenture Institute for High Performance Business, and co-author with Thomas H. Davenport of Competing on Analytics: The New Science of Winning, has been researching analytics in the enterprise for years. Kathy Lange, senior director of analytical consulting at SAS, works with companies striving for an analytical edge every day.

What surprised you in your research about analytical competitors?

Harris: One surprise was that there were clear differences between companies that use analytics very effectively and those that compete on analytics. Many companies get value from BI and analytics, but not every company sees analytics as a key competitive differentiator, as its distinctive capability. Executives at companies that are very good at analytics might say their distinctive capability is being customer centric or efficient at supply-chain operations.

Another surprise was that we expected to find very few companies where analytics was their distinctive capability. Yet we found at least one or more analytical competitors in almost every industry we stud-



ied. What's more, we found many executives who said, "We don't compete on analytics today, but we aspire to do so." As we studied these companies in depth, the far-reaching potential of using analytics as a differentiator became clear. CEMEX, the cement distributor, is a great example: They might not use the word "analytics" to describe themselves, but if you examine how they go to market and differentiate themselves, analytics is very strategic to what they do.

Can you give an example of an industry using analytics creatively?

Lange: We're working with some forward-thinking retailers who are doing an interesting kind of forecasting to discover what size clothes they should send to each store. Store clustering helps them understand which stores in their network look the same and which are different in terms of the sizes customers buy. They're trying to maximize their revenue by optimizing everyday prices, markdown prices and clearance prices. They're also studying the best ways to pack clothes shipments to the stores—whether to leave them in the original packs, or break open packs and switch the sizes. There's a cost to handle the goods, but if they don't get the right mix in the stores, that incurs costs as well.



What challenges do companies face in developing analytic expertise?

Lange: It can be challenging to build

an analytical capability when you're starting from scratch. There's a shortage of analytic talent in the marketplace today, and you need to develop the job descriptions and a hiring/training/mentoring program. And if you only have one expert in your group, it can be difficult to devise best practices.

We assist companies in developing their analytical competency centers, or we can outsource the talent to them. We also help them think about their business processes in analytical terms. How can they link their key performance metrics to something that they can compete on analytically? What are their business pains? Do they have the right data? What's the roadmap? We help them understand the importance of getting analytics as close to the operational systems and decision makers as possible. Creating an understanding between the business and IT managers about these requirements helps to align business and IT for success.

Harris: Sometimes there's a "language gap" that can inhibit a company from competing on analytics—business executives talk about improving decision making, getting better insights through analysis, while IT people talk about things like OLAP and ETL. Recently an executive at an insurance company told me about trying off-sites and

workshops to educate the business managers on BI's potential, but it didn't do much good. The light went off when they did role-playing, with business executives playing the part of customers and asking questions. They realized that the most important questions to the customers were ones their IT systems were least equipped to answer. That helped reframe the issue in a different light. Analytics is about asking the really strategic questions and learning how to answer them.

How do you see analytical software and services evolving?

Lange: We're seeing the need to solve bigger, more complex problems, analyzing not just structured and numerical data, but also text, voice and video. We're also seeing many new consumers for analytics beyond the statisticians, including businesspeople who have the domain knowledge, not analytical skills. From a software perspective, we continue to improve our algorithms and modeling methods, so the engines that solve the problems are more effective and can take advantage of the latest computing advances, such as multicore processors and grid computing. We're also providing more visual interfaces to make analytics easier to use and the results more intuitive.

Our partnership with Teradata should accelerate data integration

and querying by leveraging Teradata's parallel database. We're working closely with customers to get analytics more integrated into specific business processes and closer to the decision makers, and presenting the results however they prefer—through Microsoft Office, for example.

From a services perspective, more customers are looking for different analytic options. Besides providing software and support, we can deliver an on-demand environment where we host the applications and offer ongoing expertise; or using our talent and expertise, we can provide the answers to their analytical questions. And we can assist them in developing their own analytical competencies and in improving their business processes.

What does the future hold for analytical competition?

Harris: It's clear that there are more companies working hard to become analytical competitors. If you are not, you're soon going to be facing a company in your industry who is. Those companies will be better able to ask the right questions, get the right answers, and execute on them—and that will give them a distinct competitive edge. So whether you compete on analytics or use it to improve your business processes, you're likely headed for a more analytical future. ▶

Integrated Analytics Plus BI Equals Business Edge

A wave of mergers and acquisitions has hit the business intelligence (BI) market, creating new choices and challenges for IT and business executives. Oracle has purchased Hyperion, IBM has acquired Cognos, and SAP has taken over Business Objects. Given the close connection between BI and predictive analytics, this M&A activity raises serious concerns for executives seeking to deliver analytical insights to business professionals across the enterprise. How significant are the limitations of a cobbled-together approach that joins BI with existing ERP and middleware brands, and what is the alternative? For the SAS perspective, writer Tom Farre spoke with Keith Collins, senior vice president and chief technology officer at SAS, a company with a long-standing, cohesive vision of the power of BI integrated with advanced analytics.



Collins

What is the context of the current mergers and acquisitions among BI vendors?

Collins: In the mid- to late-1990s, it became clear that to gain actionable business information, you had to pay more attention to your data. This drove interest in data warehousing, primarily collecting data from ERP and transactional systems. Even then the market didn't quite understand that the power of using analytics to answer questions wasn't just in capturing transactional data, it was in getting data in the right form for analysis. That created the first wave of BI vendors, who focused on data integration and simple querying and reporting. Now those vendors are being acquired by larger software firms looking to generate more revenue, but recognition is growing that querying and reporting aren't

enough. For BI to truly deliver a competitive edge, it must be integrated with advanced analytics.

Why is integration so important?

Collins: There are three pieces to integration: data, analytics and information delivery. Data alone isn't sufficient, although collecting data, cleansing it and preparing it for analysis is still 60 percent to 80 percent of every project. Having good data and using it for simple queries and reports only tells you what's happened in the business—it's a kind of rearview mirror. It doesn't help you understand where the best opportunities are, or how you might forecast better opportunities, or how you might predict customer behavior. That's the job of analytics. When we talk about the need to integrate analytics into data and information delivery, it's because you need all three to be successful.

Why do you believe SAS has an edge in integration?

Collins: We are the only BI provider with the full breadth of tools for analytics, forecasting and optimization. Since the early 1990s, we've worked to understand the optimal connection point, if you will, among the physical representation of the data, the representation of the analytical models, and the visualization of the information or integration of information into operational systems. When these systems are integrated, you can see where the data came from in your analytic model, who last managed the data, whether it is the right data for the report, and which other reports are consuming the same data—all critical to an enterprise-wide analytical capability. And

with our long-standing background in analytics, SAS is engineered to work optimally with a heavy analytic workload, as opposed to trying to plug analytics into an existing platform.

How mature are the megavendors in terms of their analytical capabilities?

Collins: The megavendors are trying to build an integrated platform, to become one-stop shops that provide everything an enterprise needs. In their rush to acquire querying and reporting tools, they banged the drum about business analytics, saying, “We have analytics too.” Now that they recognize what is lacking, they’re seeking partners with real analytics.

If you look at the SAP/Business Objects announcement on data mining, it was a repackaging of SPSS’ Clementine, which is a decade old. There’s no real integration there, only sharing at the results level. If you look at IBM/Cognos having a reselling agreement with SPSS, it’s clear that on their own they don’t have the breadth and depth of analytic tools. Regarding integration, we see IBM pushing its database brand, its hardware brand, its middleware brand, and now they’ve got Cognos, their BI brand, all existing somewhat independently. You don’t get a clear vision of an integrated platform.

For enterprises that use SAP, wouldn’t choosing SAP/Business Objects for analytics be good enough?

Collins: Some people may like that story. In fact, I heard a quote from an executive in charge of manufacturing at a pharmaceutical company that said, “My business users don’t understand forecasting well enough to need SAS. They’ll get good enough com-

puting from SAP.” For organizations with sentiments similar to these, we believe that business users’ needs are being underestimated

Historically, analytics have typically been handled in the “back office” and served the basic need to understand what has happened in the business to get where we are today. Over time, the power of analytical models has grown to where they are much more

For years, we’ve been improving not only our BI platform, but also our business solutions that have analytical and domain expertise baked in.

**■ KEITH COLLINS, SR. VP AND
■ CHIEF TECHNOLOGY OFFICER, SAS**

integral to organizational dynamics. Forecasting, predictive models and advanced modeling are emerging as key operational components. Organizations are beginning to embrace the value that analytics can drive in the business to be more efficient and more effective. Now, analytics are pushed out to the “front office,” and they begin to have a direct impact on company performance. Analytics drive new behavior from customers, suppliers and others that will have an impact on revenue and costs of the organization. There are tangible monetary benefits now that get associated with analytics. There’s an inherent need for a business-focused analytics environment that supports a range of techniques and processes for the collection, classification, analysis and interpretation

of data to reveal patterns, anomalies, key variables and relationships—leading ultimately to new insights for guided decision making.

While big vendors are saying, “We’re good enough,” we believe our customers deserve better.

How does SAS make it easy for business users to profit from analytics?

Collins: There was a time when people thought you could “black-box” analytics, but it’s best to implement analytics in your business processes and as close to the decision makers as possible. That’s the reasoning behind our analytical solutions. For years, we’ve been improving not only our BI platform, but also our business solutions that have analytical and domain expertise baked in. SAS offers horizontal applications for IT, marketing, customer intelligence and risk management, and vertical applications that are industry specific. These solve complex problems that require deep understanding, such as how to apply analytics within a particular industry and how to structure the data, but we’ve brought them to market using terms and processes familiar to non-analytical specialists.

With our Retail suite, for instance, we have business users focusing on retail optimization for everyday pricing, markdown pricing and promotion pricing. In our Customer Intelligence suite, we’ve brought together the disciplines of predictive analytics and campaign management to target customers better, as well as marketing optimization to maximize lift. Our underlying data integration ensures the quality of the enterprise data that feeds these business processes. That’s the beauty of an integrated platform for BI and analytics. ▸

Know Thy Customer

Business intelligence and predictive analytics help organizations target the right people and yield the highest return.

BY TOM FARRE

Business intelligence allows organizations to gather, integrate and report data from within the enterprise to help business users make informed decisions and improve processes. Add predictive analytics to the business intelligence model, and you will not only better understand your customers' decision-making processes, but also be able to predict their future decisions and build better management processes to do so.

Uniting BI and predictive analytics is how SAS helps its customers one-up their competitors. From gambling to retail buying decisions to healthcare intervention, the following case studies demonstrate how SAS unites BI and predictive analytics to allow businesses to improve processes and decision management to gain a competitive edge.

Harrah's Hits Customer Loyalty Jackpot

In the high-stakes world of the U.S. gaming industry, success is often measured by glitz and glam. But

Harrah's Entertainment, the world's largest gaming company, demonstrates that success is not always based on size or stature.

With a [customer relationship management](#) architecture that includes SAS software for [predictive analysis](#) and [business intelligence](#), Harrah's has combined advanced technology with innovative marketing expertise to encourage its best customers to return to its casinos again and again. As a result, Harrah's Total Rewards card is the industry's most sophisticated national multibrand customer loyalty program, and the company ranks No. 1 in profits as a percentage of revenues.

"By focusing on technology and relationship marketing, we've been able to leverage our distribution advantage and engender loyalty across every key market," says David Norton, senior vice president and chief marketing officer.

Through Harrah's Total Rewards program, customers earn credits each time they visit and play. Accumulated credits are traded for rewards, cash, coupons or complimentary services, and tallied to determine customer loyalty levels of gold, platinum or diamond.

"Using information gathered almost exclusively through card use, we have assembled a centralized, award-winning data warehouse containing information about how our customers interact with us," explains Harrah's President and CEO Gary Loveman.

Specifically, SAS retrieves data from the company's Teradata warehouse, organizes and normalizes the information, and builds predictive models that reveal which customers should be targeted for loyalty incentive programs.

Identifying Potential Value

Historical data will show how often a customer visits Harrah's casinos, explains Norton, but predictive models will reveal which customers are likely visiting other casinos in the market as well. With the predictive capabilities of SAS, Harrah's gains an accurate estimate of each customer's potential value.

"There really is this discrepancy between predictive and observed value that leads a customer to fall into an opportunity segment," explains Norton. "SAS allows us to be very surgical and much more aggressive when marketing to those opportunity segments."

Without SAS, he says, Harrah's would have to send blanket marketing materials to everyone on its mailing list, which would lower the profitability of its campaigns significantly. Instead, the company can divide customers into more than 80 different segments for each marketing campaign and target only those who are most likely to respond.

"Our profitability around marketing interventions is much higher because of the precision of understanding that SAS provides," Norton explains.

Healthways Curbs Healthcare Costs

Gambling isn't in the cards when it comes to healthcare. Healthways Inc., the leading provider of Health and Care SupportSM solutions, relies on SAS to help identify people who would benefit from their preventive care services and achieve improved health outcomes. [SAS Enterprise MinerTM](#) helps Healthways predict hidden relationships in millions of

member records to determine patient risk levels and develop more targeted intervention and prevention plans.

"Healthways helps millions of people maintain or improve their health," says Adam Hobgood, director of statistics at Healthways Center for Health Research in Nashville, Tenn. "SAS predictive analytics has the power to accommodate the massive volume of clinical and operational data used in our predictive models. Thanks to SAS, we can turn that data into evidence-based knowledge for predicting the groups of members in greatest need of our support programs. In addition, by identifying high-risk patients and implementing preventative actions against future conditions, we hope to head off the increased costs of care before they occur."

Using SAS Enterprise Miner, efficiency in comparing predictive models has allowed Healthways to accomplish in three days what would have taken weeks. SAS software's user-friendly interface enables users with or without extensive programming experience to quickly perform sophisticated analysis. As a result, Healthways has increased its competitive advantage by helping employer groups and insurers improve member health outcomes and reduce escalating costs.

"Healthways' solutions are designed to help healthy individuals stay healthy, mitigate and slow the progression of disease associated with family or lifestyle risk factors, and promote the best possible health for those already affected by disease," says Matthew McGinnis, senior director of Healthways Center for Health Research. "The ability to zero in on the members who will benefit from our interventions will be even more

critical in the next 10 years as the rates of obesity and chronic disease are expected to increase astronomically. Nurses, dietitians, respiratory therapists and behavior change experts become more effective as we uncover and deliver insights to them about member needs. SAS Enterprise Miner should continue to drive greater and greater efficiencies for our clinicians."

SAS Enterprise Miner is enhanced data mining software that combines a rich suite of integrated data mining tools with unprecedented ease of use, empowering users to explore and exploit corporate data for strategic business advantage, all in a single environment.

Using the [SAS Enterprise Intelligence Platform](#) as a foundation, SAS offers targeted business solutions that support enterprise intelligence, customer intelligence, financial intelligence, supply chain intelligence and more—as well as turnkey solutions for other vertical markets, such as financial services, healthcare, transportation and manufacturing.

StateFleet: Improving Business Outcomes

Predictive analytics helps prevent risky business planning at StateFleet, a full-service fleet leasing organization that delivers fleet leasing and fleet management services to the New South Wales Government. StateFleet uses risk modeling to help predict the resale value of vehicles once they have reached their end-of-lease periods.

With a fleet of more than 25,000

vehicles and valued at approximately \$540 million (U.S.), StateFleet regularly purchases between 11,000 and 12,000 vehicles per year. This figure, which is used to determine the leasing cost for its clients, has long been one of the organization's key challenges. According to StateFleet General Manager Michael Wright, the need for risk modeling to assist in the prediction of external market factors that impact future resale value is critical.

Adding further to StateFleet's challenges was the provision of reporting capabilities to its clients. This challenge was difficult to meet with a legacy reporting system that required the constant attention of a dedicated data analyst and costly vendor support.

Immediate Results

In partnership with SAS, StateFleet implemented a SAS Business Intelligence™ solution delivering advanced analytics and self-service secure reporting. The results were immediate. Data is automatically verified and cleansed by the SAS solution, is aggregated and made available to StateFleet staff and clients using the SAS Information Delivery Portal™, part of the SAS Enterprise Intelligence Platform™.

"One of the major benefits is that everyone is dealing with clean data," Wright says. With immediate access to reports that are now based on clean and accurate data, StateFleet clients can conduct in-depth analysis of their fleets, obtaining crucial information relating to issues such as vehicle utilization, fuel usage and maintenance costs.

One of the main advantages of SAS is the relative ease with which the models can be refined, Wright says. "Already, the models we have developed are proving to be more accurate

than anything else we have used in the past," he says.

The importance of the SAS-based predictive analysis capabilities for StateFleet can be measured in the millions of dollars. In combination with the industry standards, such as the Red Book and StateFleet historical sales data, the organization determines vehicle lease rates that deliver optimum value to clients while reducing its own risk exposure.

"Accuracy is absolutely critical," Wright says. "Even a 1% error across the board in residual prediction could result in a \$3 million deficit."

Another facet of StateFleet's operations that is being afforded protection by the SAS solution is optimizing the resale value of each vehicle it purchases. SAS is used to generate a comprehensive report detailing the current balance of vehicle makes and models before StateFleet commits to purchasing new vehicles.

"If we were to have too many of one make of vehicle coming back to the market at one time, then the resale value could drop by as much as \$2,000 per vehicle," Wright explains. "So once again, having SAS deliver clean data and accurate reporting is a major advantage for us in this business."

Catalina Marketing Understands the Customer

Resale takes on another meaning when it comes to retailers: reselling the customer on coming back. As the largest customer behavior marketing company in the world, Catalina Marketing ana-

lyzes and predicts shoppers' buying behaviors to generate customized point-of-sale color coupons, advertisements and informational messages for retail stores and pharmacies nationwide.

A pioneer in customer relationship management, Catalina was the first to install computers at retail stores that made a coupon or advertising decision based on what was happening during that one transaction. "It worked. Our retailers were able to offer coupons that shoppers would use, and our company skyrocketed in size," says Eric Williams, executive vice president and CIO.

Catalina's marketing network is installed in more than 23,000 stores and 14,000 retail pharmacies in the United States, and in 7,000 stores worldwide, collecting data from more than 250 million transactions every week.

"We want to not just be on the leading edge, but on the bleeding edge in the marketplace in terms of what we can offer our clients," says Laurie Wachter, senior vice president of analytics for Catalina. "SAS solutions have allowed us to actually predict what customers are likely to buy, and that has revolutionized our ability to make our clients' coupons and messages relevant to shoppers," Wachter says.

Acquisition, loyalty and attrition models are just some of the ways Catalina Marketing helps its clients become more relevant to and create relationships with their customers. Using SAS, Wachter says her team can build three to four times the volume of models that a modeler working with another tool can build.

"Using SAS, we've automated the execution of our models and scored them against our entire 140 million consumer database for the implemen-

tation of marketing campaigns literally in days,” Williams says.

Catalina Marketing maintains a database of shopper purchasing information over a three-year period of nearly 140 million consumers. As Catalina Marketing built this network, executives knew they needed a data mining tool that could handle incredible volume—as much as 650 billion-row data tables. The company also needed a solution that was easy to use because nonprogrammers needed the ability to do some of the modeling.

New Products = New Customers

Using SAS, Catalina has developed the “Innovator Model” to help its clients acquire new customers for innovative new consumer packaged goods products that leverage new technologies, offer new tastes, or in some way deliver a brand-new product to the marketplace.

“What the Analytics team can do through SAS is identify products that bear different similarities to aspects of a product a company wants to introduce,” Williams says. “We can find the combinations of other categories

or brands or flavors that suggest the people who would be most likely to try the new product. SAS allows us to play with the data and be flexible.”

In the end, the customer is always right. But knowing what customers want, what they’ll do next, and how to stay ahead of the competitors that target the same customers requires careful data mining, data management and business intelligence paired with predictive analytics—a formula that ultimately saves enterprises time and money in a competitive world. ▶

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Raising the Analytic IQ

A partnership between SAS and Teradata delivers real-time insight and foresight to mutual customers through best-of-breed data warehousing, BI and analytics.

BY TOM FARRE

Successful analytics-driven companies pursue an organization-wide approach to managing data and analytics. This ensures that there is “only one version of the critical business information and analytical results for decision making,” according to Jeanne Harris and Tom Davenport, co-authors of *Competing on Analytics: The New Science of Winning*.¹

Challenges to this approach abound, however, including exponential growth in the volume of data, data located in disparate silos across the enterprise, and the terabyte-class data movements required for analytical processing. There’s also the issue of selecting vendor partners: Best-of-breed technologies make sense only if they can be integrated to deliver analytical capabilities that surpass the sum of their parts.

Thanks to the partnership between SAS® and Teradata® Corp., a best-of-breed solution for enterprise-wide data management, business intelligence (BI) and analytics is now a reality. Initiated in October 2007 and gaining steam every day,

the partnership integrates Teradata’s market-leading enterprise data warehouse technology with SAS’ rich portfolio of best-in-class data integration, BI and predictive analytics. Both companies are investing heavily in the partnership through technology transfer, a joint engineering roadmap, teaming of field-sales organizations, extensive co-marketing, and dedicated engineers supporting customers worldwide in a SAS and Teradata Center of Excellence (CoE).

Already the partnership has led to an important technical breakthrough: the ability to run and optimize key SAS analytic processes within the Teradata database engine—allowing customers to apply SAS capabilities and analytical functions to data stored in Teradata, while exploiting the high-performance parallel processing and scalability inherent in Teradata’s architecture. The result is faster runtimes, lower ownership costs, reduced data movement and redundancy, and faster analytical model development and processing—all valuable to current and aspiring analytical competitors.

“This partnership helps organizations optimize how they process and use data throughout their businesses,” says Mike Koehler, CEO of Teradata. “Ultimately, that gives them the intelligence and speed they need to make the best decisions and take actions faster than the competition.”

“Our mutual customers are very happy about this, because up until now, they would store large amounts of data in their Teradata

1. *Competing on Analytics: The New Science of Winning*, Thomas H. Davenport and Jeanne G. Harris. Harvard Business School Press, Boston, Mass. 2007.

systems, and then they would have to do an extraction to bring it over to SAS for analytics,” says Jim Goodnight, CEO of SAS. “This effort to move more of SAS inside the database is going to speed up processing by leaps and bounds.”

Faster Is Better

Indeed, mutual customers are experiencing significant performance gains. A leading insurance provider in North America was able to reduce its web-based claims reporting process from 40 minutes to less than one minute. This was accomplished through a set of SAS product enhancements, coupled with minor design changes to the Teradata database and changes to its Teradata architecture to support SAS® Business Intelligence. Another mutual customer, Warner Home Video, significantly enhanced the runtime of its SAS and Teradata application by doing some optimization work: The application that previously took 36 hours to complete now runs in one hour and 15 minutes.

Screaming performance is also the news behind SAS® Scoring Accelerator for Teradata, the first horizontal analytic application delivered by the partnership. The Scoring Accelerator translates and registers SAS® Enterprise Miner models into Teradata-specific functions that can be executed for scoring purposes directly within the Teradata environment. An initial benchmark running on a Teradata system achieved a 4,500% performance increase, compared with traditional SAS scoring. “An improvement of this magnitude shows how customers can significantly increase the number of

analytical models they can simultaneously process and deploy, accelerating time to value,” says Goodnight.

SAS and Teradata will continue to release additional enhancements to the BI/analytical functions that can be exploited within the Teradata database, as well as analytics solutions for specific industries. The first of these, SAS® Anti-Money Laundering (AML) for Teradata, was introduced in 2008. SAS and Teradata execu-

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 **MIKE KOEHLER, CEO
TERADATA CORP.**

tives believe it will accelerate the analysis of transactions to identify money-laundering patterns while improving regulatory compliance.

“Our AML solution will speed processing by allowing banks to sift through huge volumes of data—typically more than one billion transactions per night—in the Teradata data warehouse without having to extract it for processing,” says Scott

VanValkenburgh, director of global partners and ISVs at SAS. “Since the majority of the data stays in the data warehouse, it assists banks with issues of data integrity and regulatory compliance as well.”

Leveraging the Center of Excellence

Business and IT executives who are considering how such technology might improve their own data management, BI and analytic capabilities have a rich resource to draw from: the SAS and Teradata Center of Excellence, a key element of the partnership itself. Engineering teams from both firms are collaborating worldwide to assist customers in understanding the partnership and in leveraging its technology. In the first eight months, CoE teams have engaged with more than 90 mutual customers.

“Typically we engage customers in an on-site assessment workshop, where we review their overall data warehousing and BI architecture, discuss key business drivers, and assess their current implementation of SAS and Teradata,” says Paul Bachtel, who directs the CoE for SAS. “Traditionally, these customers have extracted data from the Teradata warehouse for use in SAS BI and analytical applications. In every case, we’ve identified ways to make that process more efficient and effective. We also provide a roadmap and timetable for customers to leverage our new in-database capabilities.”

Mike Rote, who directs the CoE for Teradata, notes another benefit from CoE engagements: bridging the gap between the IT and business sides of the house. “Teradata,



because of our heritage as a database company, is often deployed on the IT side of the company; whereas SAS, because of its heritage in analytics, is often brought in on the business side. A subtle part of the value the CoE brings is to facilitate communication between these two constituencies. Of course,” Rote continues, “having that dialogue is often a first

step toward a more effective utilization of the technologies, enabling the delivery of the required analytics in a [more] efficient manner.”

What does the future hold for the SAS and Teradata relationship? Guided by a council of customers who have contributed to its direction, the partnership will only strengthen over time. “We’re dou-

bling our investments in interoperability and integration between SAS and Teradata,” says VanValkenburgh. “Later this year we’ll make some significant announcements about how our collaboration will offer better and more comprehensive packaged solutions and combined services that will deliver even more value to our customers.” ▶

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