September 2014

DATA+

EDITORS' CHOICE AWARDS

COMPUTERWORLD

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EDITORS' CHOICE AWARDS

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Security Manager's Journal: Ransomware flops, thanks to security awareness

HP Reverses Course,
Gives OpenVMS New Life

A year after saying it planned to end support for OpenVMS,
**Hewlett-Packard licenses the esteemed operating system
to a startup.** BY PATRICK THIBODEAU

A **YEAR AFTER** putting OpenVMS on a path to extinction, Hewlett-Pacakard reversed course and licensed the venerable operating system to a new company that plans to develop ports to the latest Itanium chips and is promising eventual support for x86 processors.

In June 2013, HP announced that it would not validate the operating system to its latest hardware or produce new versions of it. The move to license the OpenVMS source code to a new entity, VMS Software Inc. (VSI), amounts to a reversal of that decision.

"HP and VSI have provided what appears to be a path forward for existing VMS sites," said Stephen Hoffman, who was on the OpenVMS engineering team at Digital Equipment Corp., where the system was developed, and then at Compaq, which acquired Digital and was later acquired by HP.

Hoffman is now an independent consultant at HoffmanLabs.

Many OpenVMS users just want to be able to stay on the operating system. HP stirred up a slew of complaints among

OpenVMS users when it said it would not validate OpenVMS beyond Integrity i2 services running Tukwila quad-core processors. That decision effectively put the operating system on an end-of-life path.

The latest announcement came just days after an OpenVMS user group in France posted

> ## HP and VSI have provided what appears to be a path forward for existing VMS sites.
>
> **STEPHEN HOFFMAN,** CONSULTANT, HOFFMANLABS

an "open letter" to Hewlett-Packard CEO Meg Whitman urging her to reconsider the decision to pull support for OpenVMS. The letter described the role of Open-VMS in running transportation systems, health services and nuclear power plants in France.

VSI is funded by the investors of Nemonix Engineering, a longtime OpenVMS support and maintenance firm.

In a road map, VSI outlined plans to validate the operating system on Intel's Itanium eight-core Poulson chips by early 2015. The company also said it would support OpenVMS on HP hardware running the upcoming Kittson chip and that it will develop an x86 port—although it didn't specify a time frame for the latter initiative. VSI also plans to develop new versions of OpenVMS.

Legendary Strengths

VSI CEO Duane Harris said his company approached HP about OpenVMS because of the operating system's strong customer base. OpenVMS is used in nuclear power plants, in process control systems in all industries, by the U.S. Navy and in transportation and finance.

"It's a marquee piece of software; its strengths are legend-ary," Harris said, citing Open-VMS's disaster recovery, security and clustering capabilities.

OpenVMS is largely invisible in a world dominated by Windows, Linux, cloud-based systems, and even Unix systems such as HP-UX, AIX and Solaris. But it runs critical systems and its users consistently praise it for its reliability, engineering and capabilities.

HP has about 2,500 Open-VMS customers on support contracts. That does not include OpenVMS users who use independent support vendors, such the Parsec Group, which has 350 OpenVMS customers running some 7,000 systems.

VSI hopes to expand the OpenVMS market and sell the software to new customers. It intends to modernize the operating system's application development tools and improve its capabilities—including the number of cores it can support.

> ## "OpenVMS is the most secure operating system out there.

DUANE HARRIS, CEO, VSI

Harris believes OpenVMS's security features and fault tolerance will be strong points.

"We feel very strongly that OpenVMS is the most secure operating system out there, and certainly more secure than Windows and certainly more secure than Linux," said Harris.

Veteran Developers

VSI said it has assembled a team of veteran OpenVMS developers, some from the core DEC team that developed the operating system back in the 1970s.

VSI plans to deliver new software, beginning early next year with a port to HP Integrity i4 systems running the eight-core Poulson chip. Previously, HP said it would not validate OpenVMS beyond its Integrity i2 servers running the Tukwila quad-core processor.

"There is obviously a need to build a track record," Hoffman said of the new company, noting that OpenVMS customers "are classically conservative" and will want to see and touch the software that VSI delivers before they run it in their production environments. "That would not be particularly different from a new HP release," he added.

Noting that moving an Open-VMS application to another platform is costly and time-consuming, Hoffman said VSI "has the potential to throw customers a lifeline . . . and the customers are definitely interested."

The change in the road map for OpenVMS may already be

BETWEEN THE LINES | **JOHN KLOSSNER**
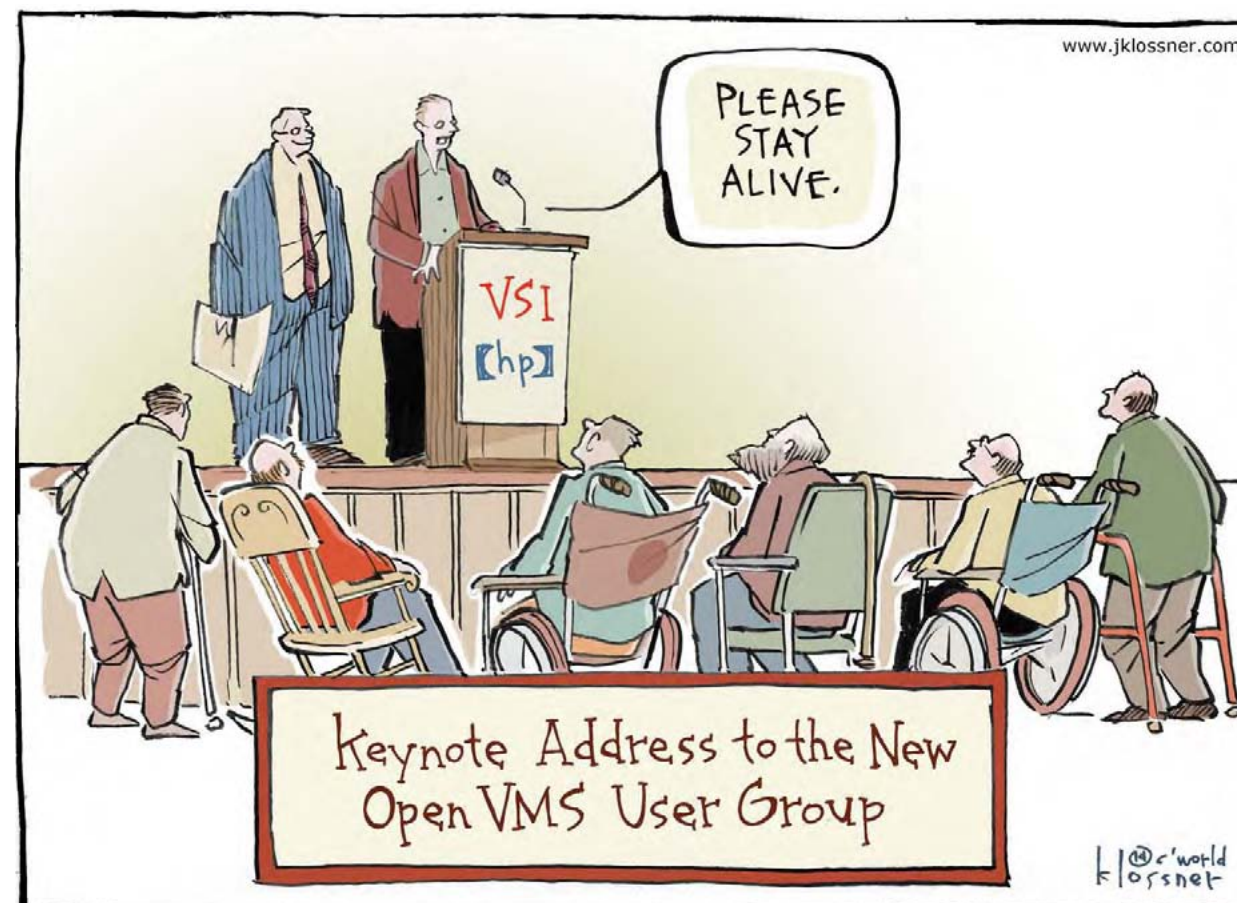
having an impact. On the comp.os.vms Google Groups discussion forum, one person wrote that "two OpenVMS exit projects here at work (a conversion to Linux and another to SAP) have been put on hold indefinitely." ◆

PAUL GLEN *is the co-author of* The Geek Leader's Handbook *and a principal of Leading Geeks, an education and consulting firm devoted to clarifying the murky world of human emotion for people who gravitate toward concrete thinking. You can contact him at* info@leadinggeeks.com.

When Your Boss Overloads You, Blame Yourself

AT WORK, DO YOU EVER FEEL like one of those circus performers spinning plates on the top of poles? With a dozen different projects going at once, you spend your time frantically running from one to another, attending to each just enough to keep them all spinning. You're exhausted from the relentless pace but know that the best you're going to do is avoid the crashing disaster of letting them drop. And it feels like none of the projects will ever end.

You're caught up in what's commonly known as thrashing, spending a disproportionate amount of your time switching between projects. Every time you set one aside and pick up another, it takes mental and emotional energy to stop one train of thought and remind yourself where you left off on the other. When you do this too often, you spend most of your time switching and little of your time in productive work.

And when this happens, most of us curse our bosses for giving us too much to do. We blame them for our stress and lack of productivity.

But you shouldn't blame your boss for this. It's as much your fault as it is hers.

A boss's job is to get as much done as possible with the resources available. Many managers interpret that as meaning they have to heap as much work

as possible on the people they supervise. Some of them may try to gauge how much you can accomplish without thrashing, but most will just keep giving you things to do to make sure you're doing as much as possible.

So why do I say that it's your fault as much as your boss's? Because it's your responsibility to be productive, to monitor your own work and to let your boss know what's realistic to expect given the time available and the circumstances you're working under. In other words, it's *not* your job to willingly agree to everything your boss tells you to do.

I'm not suggesting that you should just start telling your boss no when she asks you to do anything new. There are appropriate ways to make sure that you avoid thrashing and give your organization the best return on its investment in you. When you find yourself thrashing, or con-

cerned that the next thing your boss requests will push you over the edge, you have options.

Ask your boss to clarify your priorities. Calmly list all the things that you have to do, then tell her how many you feel you can address effectively at one time, and ask her to rank them in the order she wants you to work on them. You're not saying you won't do them. You're just asking for guidance to ensure that you address the most important goals first.

Clarify the impact of being overloaded. Again, calmly list everything you have to do, then tell your boss how many you feel you can address effectively at one time. If she tells you that you must do them all at once, explain the impact of thrashing on your productivity and the total amount of time you'll need to finish them simultaneously rather than in sequence.

Either way, you're not being intransigent or refusing to work. You're simply giving your boss the information she needs to get the best from you. It's not a sign of weakness to admit that you have limits. In fact, self-awareness and honesty are signs of self-respect and professionalism.

Although it's tempting to blame your boss for overloading you, it's not reasonable or fair. It's your responsibility as a professional to ensure that you can produce the best results possible given the constraints of your work. And it's part of your job to let your boss know honestly what you can and can't do. ◆

> **It's part of your job to let your boss know honestly what you can and can't do.**

Computerworld's 2014 Data+ Editors' Choice Awards for Analytics recognize 20 organizations reaping business benefits through big data initiatives. These honorees are mining data to analyze trends, make predictions and boost the bottom line.

DATA+

EDITORS' CHOICE AWARDS

AstraZeneca

An enhanced search engine brings 100 million instantly searchable documents to R&D teams. **BY STACY COLLETT**

PHARMACEUTICAL RESEARCH and development projects require collaboration among members of huge distributed R&D organizations with hundreds of millions of documents to parse. Facing such a challenge, AstraZeneca needed a big data system that would foster collaboration among teams, eliminate redundancy, help researchers zero in on relevant data and shorten research times.

"If we can save every user four minutes a day in searches, that equates to [time spent by] 85 people per year that we can save," says Nick Brown, technology services director.

AstraZeneca deployed the Sinequa Big Data Search and Analytics Platform in the cloud and now provides end users with 100 million unduplicated documents that are instantly searchable. The platform combines external medical data —including publications, patents, clinical trials and research grants—with internal content found on departmental file shares, in Microsoft Share-Point, SharePoint Online and Office 365 systems, and via EMC's eRoom collaboration system and Documentum content management system.

Built-in text-mining algorithms let users search documents at the sentence or phrase level. Users get information at 1/50th the volume of a document-level search, and each document is highly accurate, Brown adds.

One of the challenges was to simplify pharmaceutical vocabulary, so the team first indexed information and tagged it with a half-million terms in 15 to 20 categories and then deployed some smart algorithms that could, for example, tell when the term *cat* was being used to refer to a feline animal and when it was being used to refer to a CT scan. Brown uses technology from SciBite, a startup in Bexhill, England, to add rule-based logic and accurate scientific vocabularies to the platform. The system had been rolled out to 1,000 users by December 2013; it now supports 8,000 researchers. ◆

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AstraZeneca
AT A GLANCE

■ **Business objective:** To speed R&D by offering 100 million documents in one location.

■ **Project payback:** Time savings equal to the number of hours 85 full-time employees would work in a year.

■ **Advice:** "Offer simple, intuitive interfaces to users, handling the complexities of business information and even scientific information under the hood," says Nick Brown, technology services director. Also, "offer real-time responses, or face users abandoning your solution."

BlueCross BlueShield of Tennessee

A custom data analytics and reporting platform extracts valuable insights from healthcare data.

BY MARY K. PRATT

EXECUTIVES at BlueCross BlueShield of Tennessee realized in 2011 that they needed a better way to help staff, external partners and clients glean insights from the organization's data.

So the health insurance provider built a data analytics and reporting platform that displays actionable clinical and administrative information to business stakeholders, provider groups and employers. Sherri Zink, the company's vice president of medical informatics, says team members started building what it calls the Custom 360 platform by creating a "data warehousing structure that would be our single source of truth for disparate data sets, whether that data was internal or not."

Later the team created algorithms and built reporting dashboards to support business users who drill into the data for insights that help them provide more effective healthcare

Blue Cross Blue Shield of Tennessee

AT A GLANCE

- **Business objective:** To extract information from the organization's data to support strategic goals.

- **Project payback:** One project using the Custom 360 platform identified and closed 50,000 gaps in care that corresponded to $1.8 million in savings.

- **Advice:** Understand who is going to play what role so you can align tasks with the right skill sets, says Sherri Zink, vice president of medical informatics. And be very connected to the business so your project advances the organization's strategy.

at lower costs. Challenges included integrating the data sets, adopting the agile scrum methodology so the team could have multiple work streams going at once, and figuring out data interdependencies as the project progressed. Program manager Denise Matthews says the team tackled challenges by getting staff certified in agile scrum, strengthening the systems that support the data project and getting feedback from users as pieces of the overall project were rolled out.

Carla Raynor, vice president of strategic marketing for BCBS of Tennessee, says she uses the information from the system to tailor marketing messages and thereby engage her target audience more effectively. ◆

Pratt is a Computerworld contributing writer in Waltham, Mass. You can contact her at marykpratt@verizon.net.

Cisco

AT A GLANCE

■ **Business objective:**
To automate service renewal data and create actionable sales leads.

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■ **Project payback:**
In 2013, Cisco increased renewal rates from 17% to more than 55% in the Americas and saved more than 8,000 hours of sales and administrative time for distribution partners each month, and more than 20,000 hours for reseller partners.

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■ **Advice:** Maintaining quality data is a partnership that involves everyone, according to John Richard, director of Americas distribution service sales at Cisco.

Cisco

A custom platform mines data on service contracts to track when clients are up for renewals. **BY MARY K. PRATT**

CISCO'S DISTRIBUTORS and resellers needed better insight into when the service contracts they sell to customers expire so they could more effectively renew them. The goal was to automate management of the contracts and use analytics to identify which ones were due to end soon — information that wasn't easy to track in the high-volume IT market, says John Richard, Cisco's director of Americas distribution service sales.

To solve the problem, the networking vendor launched the Cisco Partner Annuity Initiative and worked with MaintenanceNet to develop a system that mines data on service contracts and provides that information to distributors and resellers. The system is hosted by MaintenanceNet, and resellers and distributors can easily access it to track contracts and contact customers when it's time to renew.

The main challenge with developing the platform was handling the data, says Jed Shasteen, operations manager for Americas distribution service sales at Cisco, noting that project staffers had to take "disparate data and organize the whole company around a source of truth."

"We brought together Cisco's data and our partners' data, improved it and then gave it back to them without relying on spreadsheets or emails," he says. Another challenge, Shasteen says, was getting IT workers used to a DevOps model.

Angie Beltz, vice president of product marketing for the Cisco Solutions Group at Tech Data Corp., says her company has seen an estimated 10% uptick in customer renewals since it began using the Cisco platform. ◆

> **We brought together Cisco's data and our partners' data,** improved it and then gave it back to them without relying on spreadsheets or emails.
>
> **JED SHASTEEN,** OPERATIONS MANAGER FOR AMERICAS DISTRIBUTION SERVICE SALES, CISCO

> DHSEM needed a platform for **sharing information** and **performing analysis** in real time.

State Emergency Operations Center staff coordinate response and resources during the September 2013 flood event.

Colorado DHSEM

A cloud-based system collects, maps and shares disaster area information with state decision-makers.

BY STACY COLLETT

LAST SEPTEMBER, rainfall forced nearly 18,000 Colorado residents from their homes and caused hundreds of millions of dollars in damage to the state's infrastructure. The Colorado Division of Homeland Security & Emergency Management needed a faster way to track where flooding and damage were occurring. Faced with the need to coordinate hundreds of response personnel and to brief executive decision-makers, the DHSEM needed a platform for sharing information and per- forming analysis in real time.

The agency deployed Esri's ArcGIS Online to gather information from a wider range of stakeholders and then share insights on impacted areas. A cloud-based platform for mapping and data management, ArcGIS Online allowed the DHSEM to collect data quickly and then share continually updated maps showing road closures, traffic control points, evacuation areas, damaged fa-

Colorado DHSEM
AT A GLANCE

■ **Business objective:** To collect and share flood data in real time among federal, state and local agencies.

■ **Project payback:** Speeds decision-making, policy-making and budgeting.

■ **Advice:** "Make sure you're casting a broad net [when collecting data] and not just limiting your resources to emergency response personnel," says Dave Hard, director of emergency management. "That would include GIS folks, public works, local communities and the private sector."

cilities and georeferenced aerial imagery.

The platform also played a key role in the response to the massive Mesa County mudslide in May. "It has reduced duplication of effort and enabled new ways of thinking of how to help each other during a large disaster," says Dave Hard, director of emergency management in the DHSEM, which is part of the Colorado Department of Public Safety.

"The timely sharing of the data also helps in decision-making" on resources, policy-making and budget planning, says Colorado DHSEM director Kevin Klein, who plans to use the platform to predict and mitigate natural disaster risks in the near future. "Any hazard I can prevent, I'm much better off than trying to respond to it later," he says. ◆

Consultative Group on International Agricultural Research

A maps application, developed with scientific crowdsourcing, identifies priority areas for crops.

BY STACY COLLETT

Many people in the developing world struggle with hunger, food insecurity, poverty and threats to their livelihoods.

In response, CGIAR, an international organization that coordinates agricultural research, set up the Roots, Tubers and Bananas for Food Security and Income program, which identifies endangered areas and highlights opportunities for improving agricultural conditions.

At the heart of the RTB initiative is an application called RTB Maps that aggregates individual maps that show crop distribution, desolate areas, pest and disease locations, and socio-economic data. Scientists access the system online and can choose to overlay the specific maps that satisfy their research criteria. RTB Maps was built with ArcGIS server technology from Esri, a vendor of geographic information systems.

The RTB initiative is "crowdsourcing scientific thought" by eliciting input from four primary international agricultural research groups and other scientists and agronomists, says Susana Crespo, an

CGIAR
AT A GLANCE

■ **Business objective:**
To address the problem of hunger worldwide through an understanding of geographic trends in the causes of food insecurity.

■ **Project payback:**
The organization is still calculating ROI.

■ **Advice:** "When you have a big collaborative project like this, give credit to the contributors," says researcher Glenn Hyman. "[Research is] really becoming democratized now that you can put everything on the Web."

agriculture specialist at Esri.

Glenn Hyman, senior researcher at the International Center for Tropical Agriculture in Cali, Colombia, says, "Research centers [like ours] are going through our own literature to find all the data applications and knowledge that have a geographic dimension. [The RTB initiative] is a very useful way for them to share their work and look at patterns beyond their narrow interests."

For example, Hyman says a scientist at his center was researching ways to prevent the spread of crop-damaging mealybugs. Using RTB Maps, the researcher discovered a natural enemy of the bug that controls the pest in Africa, and now that technique is being used in Asia.

The application also pulls in information from social media, including videos, tweets and posts, to enrich scientists' understanding about crops. ◆

Emory University

A streaming analytics platform helps physicians predict potentially life-threatening scenarios. **BY JULIA KING**

PATIENTS in an intensive care unit typically are surrounded by machines and monitors measuring heart rate, lung capacity and other vital signs. Clinicians must take in and process multiple streams of data, which is typically analyzed retrospectively.

At the Emory University School of Medicine, a team headed by Dr. Tim Buchman, a professor of surgery and director of the school's Center for Critical Care, is using IBM's streaming analytics platform along with data aggregation

Emory University's big data team: Gari Clifford, Myffy Hopkins, Terry Willey (seated) and Sharath Cholleti.

software from Excel Medical Electronics to collect and analyze more than 1,000 real-time data points per patient per second from between four and six independent data streams.

Although Emory's "ICU of the Future" project is still in the research phase, it promises to help physicians recognize potentially life-threatening scenarios and intervene proactively.

"By displaying heart rate and oxygen saturation rate simultaneously and updating it as frequently as allowable, we can detect life-threatening clinical events that folks at the bedside are missing," says Buchman, who is also a practicing physician. Additionally, clinicians would be able to assess current patient data in relation to historical data from thousands of previous patients.

Essentially, the system would identify archetypes of patient types by looking at the outcomes

Emory University
AT A GLANCE

■ **Business objective:** Collect, display and analyze patient physiological data in real time.

■ **Project payback:** Developed novel visual displays of critical data from multiple monitoring devices.

■ **Advice:** IT professionals should "go into the clinical environment, join the work flow and absorb the thought flow," says Dr. Tim Buchman. "Learn how clinicians create and sustain situational awareness — how they gain access to data, how they make sense of data, and how they try to project the current state into a future state."

Although Emory's **'ICU of the Future' project** is still in the research phase, it promises to help physicians recognize potentially life-threatening scenarios and intervene proactively.

and trajectories of thousands of other patients. "It would be a quantum shift in caring for patients more rapidly and efficiently, and in a more targeted manner," says Dr. Tommy Thomas, a critical care physician at Emory.

For now, "this is all going on in a research study, but we're quite confident that caretakers will get earlier warnings and prevent significant disability and sometimes even death once exposed to these novel views of data," he adds.

Full implementation will require FDA approval, and Buchman estimates that that remains "years away." ◆

HealthTrust
AT A GLANCE

■ **Business objective:**
Uncover quality data for use in an analytics tool that member hospitals can use to manage expenditures.

■ **Project payback:**
$13 million in customer pharmacy savings in one year.

■ **Advice:** "When you look at the technology you're leveraging, use its strengths and don't try to fit that technology into what you already do, or you might not get the [value] you're looking for," says Don Eddleman, director of architecture and integration. In addition, he says, "deliver features as quickly as possible and engage your customers. That immediate feedback lets you know you're building the right thing."

HealthTrust

A business intelligence platform helps hospitals reduce supply costs and improve quality of care.

BY STACY COLLETT

HOSPITALS CONSTANTLY STRIVE to manage their costs and improve care, and HCA's HealthTrust Purchasing Group uses analytics to help them do that. A provider of supply chain and supplier contracting services to more than 1,400 member hospitals, HealthTrust developed a business intelligence platform and a customized analytics tool that allow members to examine their spending habits and identify opportunities to save money.

HealthTrust deployed MicroStrategy's enterprise BI platform and Cloudera's Hadoop-based data management platform to handle the ever-increasing types and volumes of data it processes.

The system analyzes past procurement and contract data, automated data extracts from hundreds of member hospitals, and supply data from distributors to help hospitals get a clearer picture of their overall expenditures and the variety of supplies they use.

"Hospitals tend to use different supplies for similar procedures without realizing it," explains Brian Abbate, senior business analyst at HCA. The analytics tool identifies cases where that is happening and shows their impact on cost.

For the project to succeed, HealthTrust had to persuade customers to trust the data, find or train people with the skills to manage the new platforms (which it did with the help of consulting firms), and integrate data with business partners.

HealthTrust's big data team: Michael Arnold and Kristin Caldwell (seated), and Don Eddleman, Syed Nasar, Jerry Robertson, Bobby Brown and Ashley Johnson.

One year later, "we have identified almost $13 million in savings to our members in their [pharmacy expenditures alone]," says Don Eddleman, director of architecture and integration. He adds that HealthTrust also improved its methods for ingesting, organizing and sharing data, which helped it reduce cycle times, improve quality and detect characteristics about the data more quickly. ◆

Idaho National Laboratory

A digital library puts infrastructure data at government officials' fingertips. BY MARY K. PRATT

THE U.S. DEPARTMENT of Homeland Security has a vast collection of data that can help local, state and federal agencies plan for and respond to emergencies. But the disparate nature of this data, which includes more than 100,000

Idaho National Laboratory's big data team: Wayne Simpson, Mary Klett and Dale Christiansen.

Idaho National Laboratory

AT A GLANCE

■ **Business objective:**
Develop a searchable library of data to make it easier for government entities to study, plan for and respond to emergency situations.

■ **Project payback:** The $500,000 project yielded a system that made it significantly easier to find and access information required to prepare for emergencies.

■ **Advice:** If you undertake a normalization effort involving big data, remember that no single tool can do it all, says Wayne Simpson, an architect in information management at Idaho National Laboratory.

facility records, 20,000 documents, 50,000 images and 5,000 Web pages gathered from various government entities, made searching for specific information and insights impossible.

In October 2013, the Idaho National Laboratory took on the challenging task of using all that data to create its Infrastructure Protection Digital Library. "Our job was to normalize the content so it could become searchable and useful," says Wayne Simpson, an architect in information management at the lab.

Simpson says the project required him and his colleagues to find ways to deal with the variety of ways people store the information—in databases, as documents, on Web pages or as PDF files. Working with data feeds and crawlers, team members built a system that could access data however it was stored. Then they normalized the data and pushed it into search tools. They're now adding tools that can help users analyze data and predict how emergencies could impact infrastructure in their regions. Michael Norman, director of the DHS's Infrastructure Information Collection Division, says the library saves people hours of work by making information easy to find. It also helps ensure that government officials don't miss a critical piece of data. ◆

[" Our job was to normalize the content so it could become searchable and useful. **]**

WAYNE SIMPSON, ARCHITECT, INFORMATION MANAGEMENT, IDAHO NATIONAL LABORATORY

Intel's advanced analytics team developed a predictive analytics engine that was rolled out globally, yielding an annual increase in incremental revenue of $20 million.

Intel

An advanced predictive analytics system helps prioritize resellers with high-volume potential.

BY STACY COLLETT

THE TREND TOWARD smaller mobile devices has changed channel dynamics for Intel. In the past, companies bought parts from Intel and built their own computers. As a result, "we had a very clear view of the whole market," says Lilian Kubail, sales insights manager within Intel's sales enablement organization. Now large OEMs are building smaller laptops and tablets and then selling those products to distributors, who in turn sell to resellers, making it harder for Intel to track who is selling its products.

Intel
AT A GLANCE

■ **Business objective:** To help the Intel sales organization optimize its account management and thereby increase estimated incremental revenue; to identify and prioritize which resellers have the greatest potential for high-volume sales.

■ **Project payback:** The project cost less than $800,000, including labor, and it returns $20 million per year.

■ **Advice:** "Have a really strong business partner who shares the vision and is willing to help and influence the organization when change needs to be made," says Ivan Harrow, director of business analytics in sales and marketing IT. "Technology on its own will never solve all the issues — there has to be a good partnership between IT and the business organization."

To help sales staffers find those accounts and engage with them, Intel developed its own advanced predictive analytics solution.

The project involved combining existing information on resellers with external data on which organizations are making big investments in the market and growing their businesses. Then the IT team looked at interactions with Intel's websites to see which organizations were looking for information, and which products were being accessed.

Once data was gathered, "the tricky part was figuring out which data sets were the most relevant," says Ivan Harrow, director of business analytics in sales and marketing IT. The analytics engine takes the data and uses a methodology called "unsupervised clustering," which looks for hidden patterns in unlabeled data. Once the clusters have been defined, it goes through "supervised classification" where business rules are applied to the data, and then the output is ranked from highest to lowest sales volume potential.

The predictive analytics engine was tested at Intel's Asia-Pacific online sales center in late 2012 and then rolled out globally. It yielded an annual increase in incremental revenue of $20 million. ◆

> "The tricky part was figuring out **which data sets** were the **most relevant**.
>
> **IVAN HARROW,**
> DIRECTOR OF BUSINESS ANALYTICS, SALES AND MARKETING IT, INTEL

Keller Williams Realty

A new BI system and real-time dashboards identify trends in home sales.

BY MARY K. PRATT

KELLER WILLIAMS REALTY INTERNATIONAL collects and analyzes transaction data from its 700 franchised offices and 100,000 agents in more than a dozen countries. The data

The Keller Williams big data team: Jason Tang, Cary Sylvester, Wendy Hale and James Elsea.

> **You can drill in and get enough comparisons** to really see, clearly, where there's a trend.

DANNY THOMPSON, EXECUTIVE DIRECTOR OF OPERATIONS, KELLER WILLIAMS REALTY

Keller Williams Realty

AT A GLANCE

■ **Business objective:** To cull business insights from real estate transaction data to support forecasting and predictive analytics.

■ **Project payback:** By using its BI tools to analyze training effectiveness, the company increased the number of agents attending training events — a move that delivered an ROI within the first year of deployment.

■ **Advice:** Make sure data needs are considered upfront in every project, and don't underestimate the time it will take to untangle information pulled from older systems, says Wendy Hale, senior BI developer/analyst at Keller Williams.

analysis enables the Austin-based company to identify trends and develop insights that help it make informed business decisions. Those insights have been so valuable that the company was able grow during the past five to seven years, even as the real estate market suffered a severe slump, according to Cary Sylvester, vice president of technology innovation and communication.

Keller Williams first implemented a business intelligence system in the late 1990s and migrated to Tableau Software's desktop and server analytics and BI tools in December 2013.

At the same time, the company added real-time dashboards that executives use to monitor all transactions in the U.S. and Canada. "You can drill in and get enough comparisons to really see, clearly, where there's a trend," says Danny Thompson, who as executive director of operations uses Tableau to determine the effectiveness of corporate coaching.

James Elsea, a senior BI de-veloper and analyst, says Keller Williams uses Tableau to drive strategy by looking for connections among pieces of data. Like any deployment, implementing Tableau involved challenges. Among other things, the company needed to beef up its servers and improve data quality, he says, emphasizing that it must remain diligent about data standards to ensure that the quality doesn't decline. ◆

Kennesaw State University

An applied statistics program at a Georgia university digs into real-world data from large companies.

BY JULIA KING

IN 2006, professor Jennifer Priestley and her colleagues at Georgia's Kennesaw State
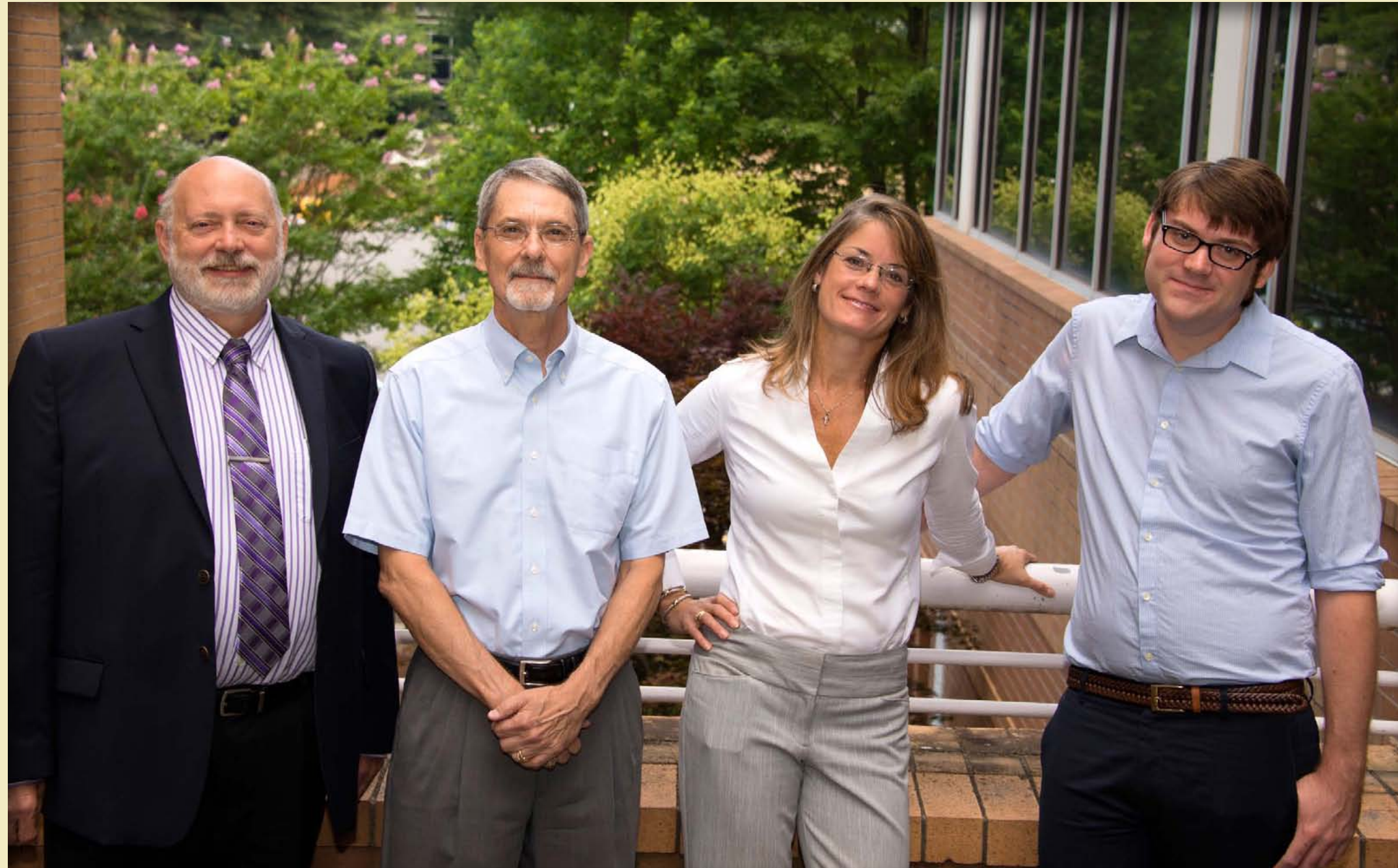
Kennesaw State's big data team: Ken Hoganson, chair of the computer science department; Lewis VanBrackle, chair of the statistics and analytical sciences department; Jennifer Lewis Priestley, professor of statistics and data science; Joe Dolan, a student pursuing a master's in applied statistics. Not pictured: Mark Anderson, dean of the college of science and mathematics.

> **Once the data is extracted and cleaned,** we emphasize to students that they're only halfway done. Next, the real work starts, which is **translating the data into meaningful information** to support someone else's business decision-making process.
>
> **JENNIFER PRIESTLEY,** PROFESSOR, KENNESAW STATE UNIVERSITY

University were charged with building a new undergraduate program in statistics. What they created is an applied statistics program that incorporates real data from large companies like CompuCredit, Southern Co. and SAS Institute.

"Everything is scrubbed and anonymous," Priestley emphasizes. In fact, she adds, "the data is a complete disaster, which is actually fabulous because it's real."

Working with the real-world data, students in both the undergraduate and a newer graduate program learn how to extract, load and clean data, and how to create transformations of variables to be analyzed,

Kennesaw State University

AT A GLANCE

■ **Business objective:** Create an academic program that teaches students to use big data and analytics to solve real-world business problems.

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■ **Project payback:** 100% job placement for graduates;

employers of these degree holders potentially save millions in training costs.

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■ **Advice:** A partnership with a university could become an organization's most powerful weapon in its arsenal to tame big data, says Kennesaw State professor Jennifer Priestley. Organizations willing to share their data with universities for educational purposes help to create a ready-made supply of talent.

Priestley explains. Students also learn how to tell a data story.

"Once the data is extracted and cleaned, we emphasize to students that they're only halfway done. Next, the real work

starts, which is translating the data into meaningful information to support someone else's business decision-making process," she says.

Today, Kennesaw State offers 50 applied statistics courses and every one of them incorporates use of a real-world data set. The university's master's degree in applied statistics has become its flagship program.

"For me, working with real-world data was invaluable," says Joe Dolan, a graduate student now working as an intern at a media analyst firm. "From what I've seen throughout my time in the job market so far, it's nowhere but up for me." ◆

Kisters
AT A GLANCE

■ **Business objective:** Create a central access point for information on floods and droughts, provide a cross-domain view, and serve both professional users and everyday citizens.

■ **Project payback:** A holistic view of flooding and drought situations.

■ **Advice:** "It's important to get the data right," says Michael Natschke, head of water solutions at Kisters. "If not, you get no value from it and you can't turn it into information."

Kisters

A central Web portal combines spatial and weather data to monitor flood and drought conditions. **BY STACY COLLETT**

IN 2012 AND 2013, Belgium endured heavy rainfall as Europe's jet stream changed paths and brought flooding to central Europe. The Flemish Environment Agency needed a better way to inform citizens and water management officials about forecasted flood conditions.

Kisters, a German engineering and technology company, developed a Web-based portal that integrates complex spatial and sequential data such as inundation maps, river water levels, radar information, flood alarm reports and public Twitter feeds to provide hourly updates on flood conditions to about 1,000 professionals and 1.6 million public users.

The team deployed Esri's Arc-GIS mapping and spatial analysis software for integrating forecasting maps; Kisters' water management information system and Web interoperability system for integrating measurements, hydrologic conditions and forecast data; and a content management system for integrating browser-based presentation widgets.

Some 2,000 locations provide water-level data to the system every 15 minutes, and tidal data is updated every minute. Updates are applied to short-term forecasts hourly and to long-term forecasts twice a day.

"The biggest technical challenge was harmonizing Kisters' product for time series data management and the Esri Web technology product for the spatial information ... and then normalizing this information," says Michael Natschke, head of water solutions at Kisters.

The portal went live in February — just as Belgium entered a dry spell. Luckily, the portal also monitors drought conditions.

"The public and professional widgets were all integrated into one seamless state-of-the-art Web services-based portal, making context-aware access to water information easier," says Kris Cauwenberghs, head of the Flemish Environment Agency's flood management unit. ◆

> Some **2,000 locations** provide water-level data to the system **every 15 minutes**, and tidal data is updated **every minute.**

LA Clear

GIS software and geospatial analysis help crime-fighters pinpoint criminal activity.

BY JULIA KING

TRACKING CELLPHONE activity plays a key role in helping law enforcement officials determine where suspects were before and after crimes were committed.

Using a combination of Esri GIS software and geospatial analysis technology, analysts at the Los Angeles Regional Criminal Information Clearinghouse (LA Clear) are now able to visually display cellphone activity and correlate it with other data and events, such as the issuance of search warrants, to create comprehensive evidence packages.

"Before, low-tech law enforcement analysts would manually enter the latitude and longitude of every call made into a map point system, which was fine for a two-dimensional view of what occurred right at the time of the crime," explains senior lead analyst Toni Nunez.

LA Clear wanted the ability to quickly identify patterns of calls and tie them to criminal activity. That would enable a district attorney to, for example, use cellphone data to show that a suspect had been with someone else at a particular location before or after a criminal incident.

"Now, we're able to merge an entire date range of call records with cell site data and load it into a map and see, for example, that two criminals went and cased a jewelry store two days before they did a smash-and-grab," Nunez explains. Using the new sophisticated 3D mapping system, analysts can show movement and activity over time.

Referring to a recent murder case, Los Angeles prosecutor Lana Johnson notes that "being able to visually show [the jury] that the defendant's phone traveled to the crime scene along with a phone belonging to his fellow gang member was ... key to securing a first-degree murder conviction." ◆

> **LA Clear wanted the ability to quickly identify patterns of calls and tie them to criminal activity.**

LA Clear
AT A GLANCE

■ **Business objective:** Streamline the process of gathering evidence in criminal cases.

■ **Project payback:** Faster criminal convictions; the time required to prepare evidence declined from 20 to 30 hours to four to 12 hours.

■ **Advice:** Senior lead analyst Toni Nunez says it takes a year or two to learn how to present cellphone location data visually. Key issues are learning how to tell a story with maps and to demonstrate a point using all available data on hand.

Merck

Open-source and cloud technologies help aggregate vast amounts of data about a key vaccine. **BY JULIA KING**

VARIATIONS in the manufacture of batches of pharmaceuticals can force drug companies to discard products, potentially incurring tens of millions of dollars in losses.

Hoping to understand how to reduce variability in the manufacturing process, Merck used a combination of cloud technologies and open-source Hadoop big data tools to aggregate and analyze 12 years of data associated with the production of one of its key vaccines.

"We were able to aggregate the complete data set of every batch produced and compared them at scale," says Gerard Megaro, director of innovation and analytics at Merck, explaining that a total of 1.5 million terabytes of data, including previously archived data and current data, was queried from one place and subsequently analyzed on a single platform.

The five-person project team then performed more than 15 billion calculations and examined more than 5.5 million batch-to-batch comparisons. In all, the team analyzed more than 1 billion records, applying advanced analytics to determine which production factors had the greatest impact on product yield.

"I gave [the project] three months and a couple of hundred thousand dollars, and [Megaro] came back with a heat map that pointed us toward a number of variables that would impact the manufacturing process and make us more ef-

Merck
AT A GLANCE

■ **Business objective:** Discover the causes of yield variations in the vaccine production process.

■ **Project payback:** Pinpointed sources of manufacturing variations after three months, an outcome that could yield millions of dollars in savings by making it possible to significantly reduce manufacturing discards.

■ **Advice:** "The most important thing is to understand your business context," says Gerard Megaro, director of innovation and analytics. Also, don't be afraid to use open-source technology. "We really wanted to spend money on the talent to understand the problem, not the hardware and software to host the problem," he explains.

ficient," says George Llado, vice president of IT for supply chain and manufacturing at Merck. "We now have a much faster way to get at [data] we couldn't get at before and to build a sustainable model that we can continue to apply [to the manufacture of other products]." ◆

Persistent Systems' big data team: Kedar Bindu, Divya Motivala, Ankit Koshti, Avinash More, Kaushik Raghupathi, Mitesh Shah, Kapil Godhwani, Amruta Pawar, Manish Mahajan, Siddhesh Bhobe and Mayur Jain.

Persistent Systems

With social media chatter analyzed and leveraged, a Bollywood movie becomes a blockbuster.

BY MARY K. PRATT

AS HEAD OF digital marketing for the 2013 Indian movie *Chennai Express*, Shailja Gupta needed to work social media channels to optimize interest in the film.

She teamed with Persistent Systems in Pune, India, to analyze social media content. "Just looking at numbers doesn't really help. How you use those

Persistent Systems

AT A GLANCE

■ **Business objective:** Leverage big data analytics to support a social media marketing campaign for the Bollywood movie *Chennai Express*.

■ **Project payback:** At the time of its release, *Chennai Express* had the highest-grossing opening weekend in India and overseas of any Bollywood movie, and it exceeded 2 billion rupees in ticket sales faster than any major Bollywood movie.

■ **Advice:** Use analytics to effectively look under the hood to get insights that you can incorporate into your strategy, says Siddhesh Bhobe, business head at Persistent Systems.

> **"It wasn't so much about pure statistics and mind-boggling numbers. For us, it was more about getting to specifics, looking under the layers of the numbers.**
>
> **SIDDHESH BHOBE,** BUSINESS HEAD, PERSISTENT SYSTEMS

numbers for your own strategy is what matters," she says.

Siddhesh Bhobe, business head at Persistent Systems, says social media buzz tends to be high just before a movie's release and stays high for four to five days. The goal with this project was to sustain interest longer. One challenge in doing that, he says, was debunking the idea that Facebook "likes" measure fan and consumer engagement. To maximize fan engagement, Bhobe says executives need to understand the data hidden in social media activity.

"It wasn't so much about pure statistics and mind-boggling numbers," Bhobe explains. "For us, it was more about getting to specifics, looking under the layers of the numbers: What themes of the movie do they like? What's the sentiment of the movie that gets them excited and then keeps them excited?"

Using its proprietary technology, Persistent Systems analyzed social media chatter, which at times included 750,000 tweets about the movie per day, to identify trending words and sentiments. Gupta then used those insights to devise marketing strategies that capitalized on the trends, thereby sustaining interest in the movie over a longer period of time. ◆

Point Defiance Zoo & Aquarium

Thanks to a cloud-based analytics system, staffing levels better match visitor attendance.

BY ROBERT L. MITCHELL

POINT DEFIANCE ZOO & AQUARIUM turned to cloud-based analytics when it needed a way to better predict how many visitors would be coming on any given day. With 65% of its expenses dedicated to payroll and attendance swings that ranged from

Point Defiance Zoo & Aquarium's big data team: Donna Powell and Derek Chapin.

1,200 to 5,000 people per day, finding a way to ensure that staffing levels corresponded to attendance levels represented a huge opportunity for savings. "We live and breathe by attendance at the gate," says Donna Powell, business and administrative services manager at the Tacoma, Wash., facility.

Unfortunately, historical attendance and revenue data was locked inside the point-of-sale system, and reporting capabilities were weak. "We needed to have better access to our data and apply that to the business," she says. But there was another problem as well: The two-person IT organization lacked the resources to take on the project.

Explaining that "we knew we couldn't bring an extra burden to them," Powell says she championed a strategy that involved bringing in Cognos and integrator BrightStar Partners to create a SaaS-based system that pulls data from the zoo's 12 million POS records and combines it with weather data to help predict attendance.

IT facilitated that initial connection to the POS data and then stepped back. Powell and visitor services supervisor Derek Chapin then worked with the vendor to create the system. "The big challenge was figuring out how to organize the data and making sure it was accurate," Chapin says.

Initial issues with connectivity to the cloud-based system required a network bandwidth upgrade. The new system, now running smoothly, includes both a data warehouse and an interactive dashboard with a drag-and-drop user interface that lets staff analyze trends around revenue, attendance, and food and retail sales. ◆

Point Defiance Zoo & Aquarium
AT A GLANCE

■ **Business objective:** To better predict visitor attendance so daily staffing numbers could be adjusted in advance.

■ **Project payback:** The system has delivered significant labor cost savings by better matching staffing with anticipated attendance, and the zoo has since expanded its use of the system for membership, marketing and education purposes. Online ticket sales are expected to increase by 25% for 2014.

■ **Advice:** "Don't be afraid to take on a project because you don't have the technical background or don't have dedicated IT staff; it's doable," says Donna Powell, business and administrative services manager.

"We needed to have **better access to our data** and apply that to the business.

DONNA POWELL, BUSINESS AND ADMINISTRATIVE SERVICES MANAGER, POINT DEFIANCE ZOO & AQUARIUM

Shine Technologies' big data team: Pablo Caif, Luke Alexander, Graham Polley and Kon Soulianidis.

Shine Technologies

A deep analytics tool gathers insights on viewing habits for display advertising. **BY STACY COLLETT**

SHINE TECHNOLOGIES helped one of Australia's largest online advertising publishers find better ways to target its audiences and break down their behaviors in detail after ad campaigns. A Melbourne-based IT services provider, Shine developed a deep analysis tool that enabled the publisher to gauge the success of ad campaigns and determine how and when audiences interacted.

Using their own firm's ad-serving Google DoubleClick for Publishers (DFP) decision engine, Shine's IT team configured DFP to write its ad logs to Google Cloud Storage and point Google's BigQuery to those files for loading and analysis. Next, they used the Big-Query API to build a graphical

reporting front end.

"It's cheap to run … and we didn't need to worry about set-up, maintenance or scalability," explains Graham Polley, a senior software engineer at Shine.

Outsourcing solved one of the biggest challenges — managing the massive volume of 75 million records that come through Shine's ad server logs every day, an onslaught that added up to 2 billion records per month for a total of 1.5TB of data. Team members also had to safeguard the records and ensure that people's privacy was protected, so they verified that the data was encoded or encrypted and didn't include personally identifiable information.

Shine Technologies
AT A GLANCE

■ **Business objective:** To understand audience engagement with advertising campaigns through the analysis of ad impression logs.

■ **Project payback:** The client realized a return on its investment within 12 months.

■ **Advice:** "Outsource your problems but not your solution," says Graham Polley, senior software engineer at Shine. "Harnessing the power of global cloud providers enables a fast, iterative approach that will scale with your growth. It also allows you to focus on product features and not technology."

"This capability gives our organization unprecedented real-time insights [that] are driving tangible improvements in user engagement, driving up ad yields and creating incremental revenue streams," says a product manager and platform user at the online ad publisher. ◆

> **Using their own firm's ad-serving Google DoubleClick for Publishers (DFP) decision engine,** Shine's IT team configured DFP to write its ad logs to Google Cloud Storage and point Google's BigQuery to those files for loading and analysis.

SwiftIQ

A software maker **scales up its online sales offerings** using Google products.

BY MARY K. PRATT

SwiftIQ
AT A GLANCE

■ **Business objective:** Mine disparate consumer data, including details about people's online activities, to uncover contextually relevant insights that can be used to create personalized content and/or highly targeted marketing efforts for retail and consumer product companies.

■ **Project payback:** Quicker and more easily accessed insights that make it possible to create more individualized marketing materials.

■ **Advice:** When thinking about big data, don't limit yourself to only what you can do in the local environment, says chief architect and co-founder Alex Harvey.

FOUNDED IN 2011, SwiftIQ needed to expand its computing capacity quickly. But instead of building out its own infrastructure, it turned to Google's Cloud Platform for storage, support for long-running processes and the ability to handle unpredictable scale.

SwiftIQ makes Swift Access, which helps unify data sources and make them accessible on demand, and Swift Predictions, which uses machine learning and predictive algorithms to generate insights into data. SwiftIQ's products, which are aimed at the retail industry, allow users to make customized sales recommendations based on an individual's offline and online shopping preferences. The five-person company uses the Google App Engine for development, as well as the Google Compute Engine, Google Cloud Storage, Google BigQuery and Google Cloud Datastore.

SwiftIQ co-founder and chief architect Alex Harvey says one of the biggest challenges in developing his company's products was collecting and storing data, but he says the Google Cloud Platform provided a cost-effective solution. Using Google's hosted systems, SwiftIQ could focus on building the algorithms and not worry about infrastructure.

Frederick Barber, chief analytics officer at consultancy Meredith Xcelerated Marketing, says SwiftIQ's products enable his team to do something new. "Big content means you have lots of messages or products or content recommendations that you can put in front of the consumer, but you have to decide what you put in front of whom," he explains. "That's hard to do on scale without an enabling technology. That's what SwiftIQ does for us." ◆

Google's hosted systems are a cost-effective infrastructure option, says SwiftIQ co-founder Alex Harvey.

Texas Children's Hospital

A specialized analytics tool identifies the most pressing tasks for a healthcare provider. BY JULIA KING

EVEN AFTER successfully deploying electronic medical records, Texas Children's Hospital struggled to accurately identify ways in which it could improve efficiency, effectiveness and health services delivery. The challenge was combining the gold mine of data in the EMR system with data from financial and administrative systems.

In 2011, TCH took a step toward addressing that challenge

Texas Children's Hospital

AT A GLANCE

■ **Business objective:** To leverage integrated data and analytics in order to identify and prioritize opportunities for improvements in clinical care and administrative services.

■ **Project payback:** $4.5 million in direct benefits in the first year after deployment of an enterprise data warehouse and analytics tools.

■ **Advice:** The secret for success with an enterprise data warehouse in healthcare is a collaboration involving multiple departments, including IT, clinical care, quality assurance, services and finance, as well as executives at the highest levels of leadership, says CIO Myra Davis. IT has to see itself not only as an enabler that provides technical tools, but also as a partner with all other stakeholders.

when it deployed a healthcare-specific enterprise data warehouse that draws data from nine hospital systems, including the EMR repository. It then applied a sophisticated analytic technique called Pareto analysis to identify areas where changes would produce the most significant improvements.

On the clinical front, the hospital was able to reduce the average length of stay for asthma patients by 11 hours. And in the administrative arena, giving health providers and managers direct access to data visualizations and reports yielded a 67% reduction in report generation costs. Overall, Texas Children's

realized $4.5 million in direct benefits in the first year after deployment of the analytics-powered project.

Among other things, "we found that collection of data in the EMR provided an opportunity to review data by disease and see how we could influence care from an outcomes and cost perspective," says CIO Myra Davis. "The clinical leadership created 10 different clinical programs to determine ways to enhance care."

Additionally, the project enables TCH to aggregate data on populations of children with like diseases so it can better understand how its healthcare delivery is affecting all children in the region with that disease, notes Dr. Charles Macias, chief clinical systems integration officer.

"Now," Macias says, "decisions for effective management can be done across a healthcare system with relative ease in identifying the outcomes of our efforts." ◆

Thomson Reuters

A financial analysis tool lets users dig deeper with a new natural language search. BY MARY K. PRATT

HOPING TO GIVE its clients a comprehensive view of the information they need to make decisions in the financial markets, Thomson Reuters five years ago rolled out a home-grown financial analysis tool called Eikon.

Eikon successfully pulled together and displayed in a comprehensive way data that had once been siloed, but the company saw opportunities to improve on its capabilities, says Albert Lojko, global head of Eikon at Thomson Reuters, a provider of information to professionals in a range of fields. So as part of its ongoing efforts to update Eikon, the company developed several new key capabilities, including a natural language search function that allows users to pose open-ended questions.

"We translate [the natural language questions] into a structured query in our platform, and we give [clients] a visual representation back so they understand correlations. That allows people to discover answers to questions dramatically faster than they had before," Lojko says. Thomson Reuters also developed an interactive feature that gives users a single global map with overlays of real-time weather, news and business data, such as ship routes. And in February, the company rolled out a tool called Social Media Monitor, which analyzes and scores social media posts to give users insight into trends.

Lojko says the biggest challenge in developing these capabilities was assembling the talent to make it happen. He says he sought experts with deep domain expertise, particularly in search capabilities, from top companies even if they had no experience in financial services. ◆

> **We translate** [the natural language questions] into a **structured query** in our platform, and we give [clients] a **visual representation** back so they understand correlations.
>
> **ALBERT LOJKO,** GLOBAL HEAD OF EIKON, THOMSON REUTERS

Thomas Reuters
AT A GLANCE

■ **Business objective:** To help clients explore financial markets with tools that enable them to access data quickly and make informed decisions.

■ **Project payback:** Eikon's user base tripled in 2013.

■ **Advice:** Find the right talent, says Albert Lojko, global head of the Eikon initiative.

TRUE TALES OF IT LIFE AS TOLD TO SHARKY

If There's a Big Red Button, We'll Find a Way

IT'S A FEW YEARS BACK, and this computer room has an area dedicated to print services. "There wasn't enough room to store all the forms needed for any single shift, so a ramp was installed to let the printer operators use small carts to bring the forms in and out of the controlled computer room area," reports a pilot fish working there. "An emergency power-off switch had been installed at the top of the ramp — no cover or protection, just this big red knob at a height of 6 feet. As luck would have it, an operator was walking up the ramp, tripped on the flooring and pulled the switch. A perfectly normal accident. Management mandated that the switch be moved 12 inches higher — but still no cover — so most people would have to work at pulling the switch. Then they hired a printer operator who was 6 feet

> At one point I tried to run shutdown for the program I was testing. Suddenly, to my horror, I saw it shutting down every licensed program on our internal network: compilers, linkers, configuration management — everything.

7 inches tall. He too went up the ramp, tripped and grabbed the switch. After that, management decreed that a cover be installed to protect the switch."

Domino Theory

Pilot fish is trying out a piece of commercial software, using a demo key with a license manager. "The program came with a shutdown program for the license manager," says fish. "At one point, I tried to run shutdown for the program I was testing. Suddenly, to my horror, I saw it shut- ting down every licensed program on our internal network: compilers, linkers, configuration management — everything. I felt like the guy in a movie who causes a domino effect when he leans on a bookshelf that tips and knocks over a row of bookshelves. I quickly called the help desk to tell them what happened. Next morning, I found my account locked when I tried to log in. The help desk said it was locked because of what happened the day before. I reminded them that I didn't have root access and there was no way I should have been able to do what that program did, so the program clearly had a security flaw. They promptly unlocked my account."

It's Just a LITTLE Swearing

IT support pilot fish at a financial institution gets a call from a user: "The letters on my report are printing really small." "After looking at the terminal, network and printer, I could not find any obvious cause," fish says. "I then looked at the report being printed, which was a customer contact log. The small printing started after this comment, typed in by a customer service agent: 'and the customer said #^%$(& (expletive deleted).' The sequence of special characters that the customer service agent used instead of the obscenity just happened to include the printer's control code for condensed printing." ◆

BART PERKINS *is managing partner at Louisville, Ky.-based Leverage Partners, which helps organizations invest well in IT. Contact him at BartPerkins@LeveragePartners.com.*

6 Wrong Reasons *for* Hiring Consultants

THERE ARE GOOD REASONS TO HIRE CONSULTANTS. You can pull them in to add their objectivity, specialized expertise or the extra capacity you need to meet a deadline. But some of the reasons that consultants are hired are just wrong. Here are six:

1 To offload the dirty work. Some executives want to bring in a hired gun when they're uncomfortable with the task at hand. One common version of this is hiring a layoff specialist to terminate people. But good executives—good *leaders*—aren't afraid to get their hands dirty. If a staff reduction were imminent, they wouldn't shirk their duty to explain the situation, and they would lead the layoffs personally. That doesn't mean there aren't good reasons for hiring HR consultants. They can help coach the layoff team and ensure that labor law is followed. But the executive himself needs to do the dirty work.

2 To avoid accountability. Some executives are loath to make decisions. One stalling tactic that these types favor is to commission a study. A consulting project allows them to not only postpone the decision ("I'm sorry, we can't make a decision until the study is complete"), but also shift responsibility for the decision to someone else ("Here's what my expensive study found, and it would be reckless not to follow Famous Consulting's advice").

Studies certainly can assist in making decisions, but while consultants can clarify issues, present trade-offs and recommend ways to improve, they have no authority to implement their recommendations—and no experience within the organization to help them judge the

worthiness of their recommendations. The client remains responsible for the final decision.

3 **To justify a decision.** Sometimes a manager is bent on implementing a decision, even though it isn't the best course of action for the enterprise, because of benefits for him or his department. To justify such a move, he might frame a very narrow question with tight constraints and then shop for a consultant who will tell him what he wants to hear. He can probably find someone who will do that, but that doesn't make the decision right.

4 **To marginalize existing staff.** Some executives, for reasons of their own, see a consulting engagement as an opportunity to do an end

run around existing IT staff. They direct the consultants to limit their contact with IT and to discount staff perspectives during IT strategy, architecture or outsourcing engagements. This can be a self-defeating tactic. Even if the IT organization is dysfunctional, its staffers are sure to have useful skills, experience and perspective. They understand the informal norms and the organizational history. Many of them have worked for multiple organizations and have expertise not directly related to their current job. Failing to engage these people insults them and can undermine the project.

Personal animosity can lie behind such moves. In one organization that I'm familiar with, the CIO and the vice president of business planning didn't get along. The VP engaged a consulting firm to cut costs by outsourcing major

parts of IT, finance and HR. IT was cut out of the process. This became evident when one of the CIO's direct reports was refused an assignment to the outsourcing evaluation team, even though she had previously been a vice president at a major outsourcing company. After that rebuff, IT disengaged. While IT staff were polite and answered the consultants' questions, they offered nothing beyond what was asked. Eventually the effort collapsed, wasting $3 million.

5 **To avoid paying taxes and benefits.** In an effort to skirt employment law and reduce costs, some organizations fill low-level positions with contractors rather than employees. This is dangerous. If the organization exerts significant control over the way these people perform their duties, the IRS and

other government agencies may consider them to be employees who are entitled to benefits. If the organization gets caught, it will end up paying significant penalties, probably in excess of what it sought to save.

6 **To help an out-of-work friend.** Don't hire unemployed friends unless they have the exact expertise and experience you need. Enough said.

When you hire consultants for the wrong reasons, other employees and executives notice, and it doesn't win you any points. Organizations lose respect for individuals who squander corporate resources and don't have the courage to make responsible decisions. Good executives use consultants properly; poor executives use them inappropriately. Choose which side of the fence you want to be on. ◆