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NOVEMBER 2007 ISSUE 078

# Baseline<sup>®</sup>

WHO?

~~YAHOO!~~



Yahoo CEO  
Jerry Yang

AS TRAFFIC AND PROFITS DROP,  
YAHOO STRUGGLES  
TO REINVENT ITSELF.

OUR CASE DISSECTION STARTS ON PAGE 26.

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# OPTIMIZING AND SECURING WAN APPLICATION DELIVERY



**T** Security concerns over data protection and the decentralization of the corporate workforce are causing companies to rethink the way they provide access to applications and their associated data.

A 2006 eWeek article summarized the situation succinctly, noting that “at the same time enterprises are moving to centralize servers and data centers, they are also dispersing users who access data farther and farther away from those centralized locations.”

The article cited research done by Nemertes Research, which found that 87 percent of employees work away from company headquarters and 55 percent of companies had consolidated their data centers with more expecting to do so.

Several factors are driving the trend to consolidate data centers.

First, there is the desire to save money. Companies are using higher performance servers and storage systems to consolidate equipment in data centers and the number of data centers. A 2007 survey of corporate and IT managers by *CIO Insight* found that 76 percent of the 309 respondents said they expected such consolidation would lead to significant IT cost savings this year.

Second, new security threats and data retention regulations and eDiscovery laws require companies to better protect corporate information. For example, last De-

cember’s changes to the Federal Rules of Civil Procedure mandated that companies involved in litigation produce e-mail, documents, instant messages, and other electronic information and show how electronic records are stored, retrieved, and deleted. This is much easier to do when data is centralized.

Third, disaster recovery (DR), while always important, is getting much closer attention. A 2007 Forrester Research survey of 715 decision-makers found that 56 percent said DR is either a major or critical funding priority this year.

## ENABLING TODAY’S WORKFORCE

To address these issues, companies need a solution that provides remote workers with access to critical applications that are centrally managed where the data is also centralized. Essentially, companies need optimized and secure WAN application delivery.

Such a solution requires a variety of technologies to ensure data is safe and user expectations of performance and response times are met.

For example, a WAN application delivery solution should incorporate security features including anti-virus, anti-malware, spyware control and Web filtering, as well as support for SSL.

Compression technology can reduce the amount of data that needs to be sent over a WAN link, thus making more efficient use of the connections to branch offices, remote workers, and mobile users.

Another aspect to consider is that many applications, such as e-mail, enterprise resource management, customer relationship management, and database management systems, use communications protocols, including MAPI and CIFS, which are designed to run over a

local network. Even Web and other applications that run over TCP/IP are considered “chatty” in that many packets are sent and received between the client PC and the host server.

When applications using these protocols run over a WAN, performance can drop. A 2006 eWeek article noted NetForecast research that found the performance of applications that use these chatty protocols “drops precipitously with even small distance increases from the server.” So, a WAN application optimization solution must use technology that reduces protocol chattiness.

Other technologies that can improve the delivery of applications over a WAN are caching, quality of service (QoS), and traffic-shaping features that allow an organization to give the traffic associated with critical applications higher priority or dedicated specific bandwidth or relatively more bandwidth than non-critical applications.

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The combination of solutions, best practices, and partnerships provides a means for organizations to protect information and delivery applications so their users can conduct business in today’s increasingly decentralized corporate world. ■



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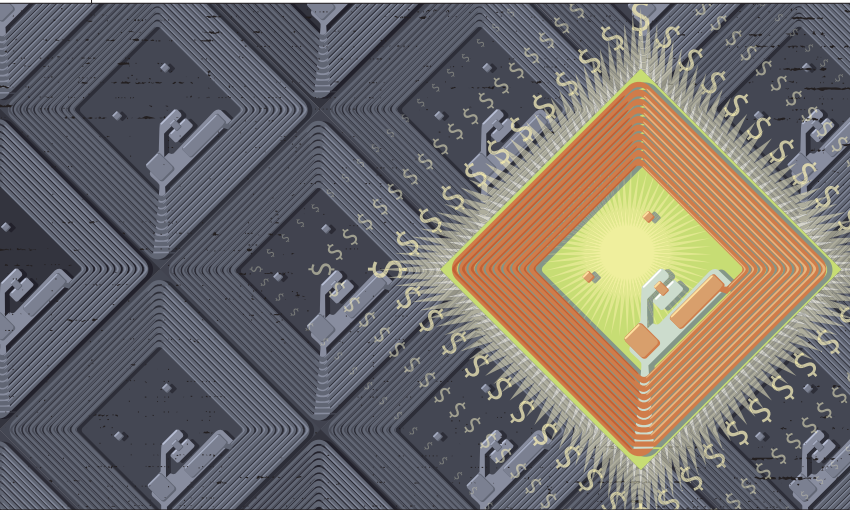
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## MOST POPULAR STORIES

### 1 | WAL-MART AND RFID

In 2003, Wal-Mart became the great hope of a new technology. How the mighty fail. Our October Case Dissection.



### 2 | THE BASELINE 500

This year, our annual ranking of the best technology users shows where they're located.

### 3 | KNOWLEDGE MANAGEMENT: BIG COMPANIES THAT GOT IT RIGHT

A hot topic, which *Baseline* addresses in the most concrete way possible.

### 4 | HOW GOOGLE WORKS

Our July 2006 Case Dissection, though more than a year old, continues to be a source of reader interest.

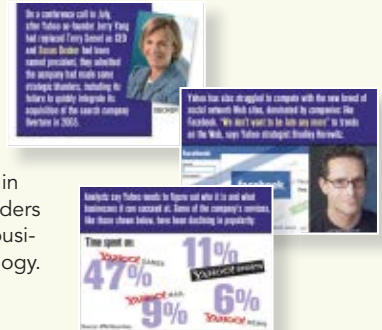
### 5 | TOP 25 IT CONSULTANTS

A new ranking from Vault.com that is generating controversy.

## SLIDESHOW

### IDENTITY CRISIS?

*Baseline's* slideshow of the Case Dissection that starts on page 26 in this issue. It's our story in miniature, tailored for readers who care about Yahoo's business as well as its technology.



## SPECIALS



### INSIDE JOB

The world of technology consultants—what they're good for, and what they're not—is the subject of a new column by contributing editor Laton McCartney. Some of the columns appear in print (*you'll find one on page 17 in this issue*); the full archive can be found online.

## SURPRISE APPLICATION OF RFID

In this issue's Topline section, Mel Duvall reports on how Dow Chemical selected 10 RFID projects on which to focus. Online, he describes how a German retailer is using the technology to help men dress better. (*Type "Kaufhof" in the search box on [baselinemag.com](http://baselinemag.com).*)



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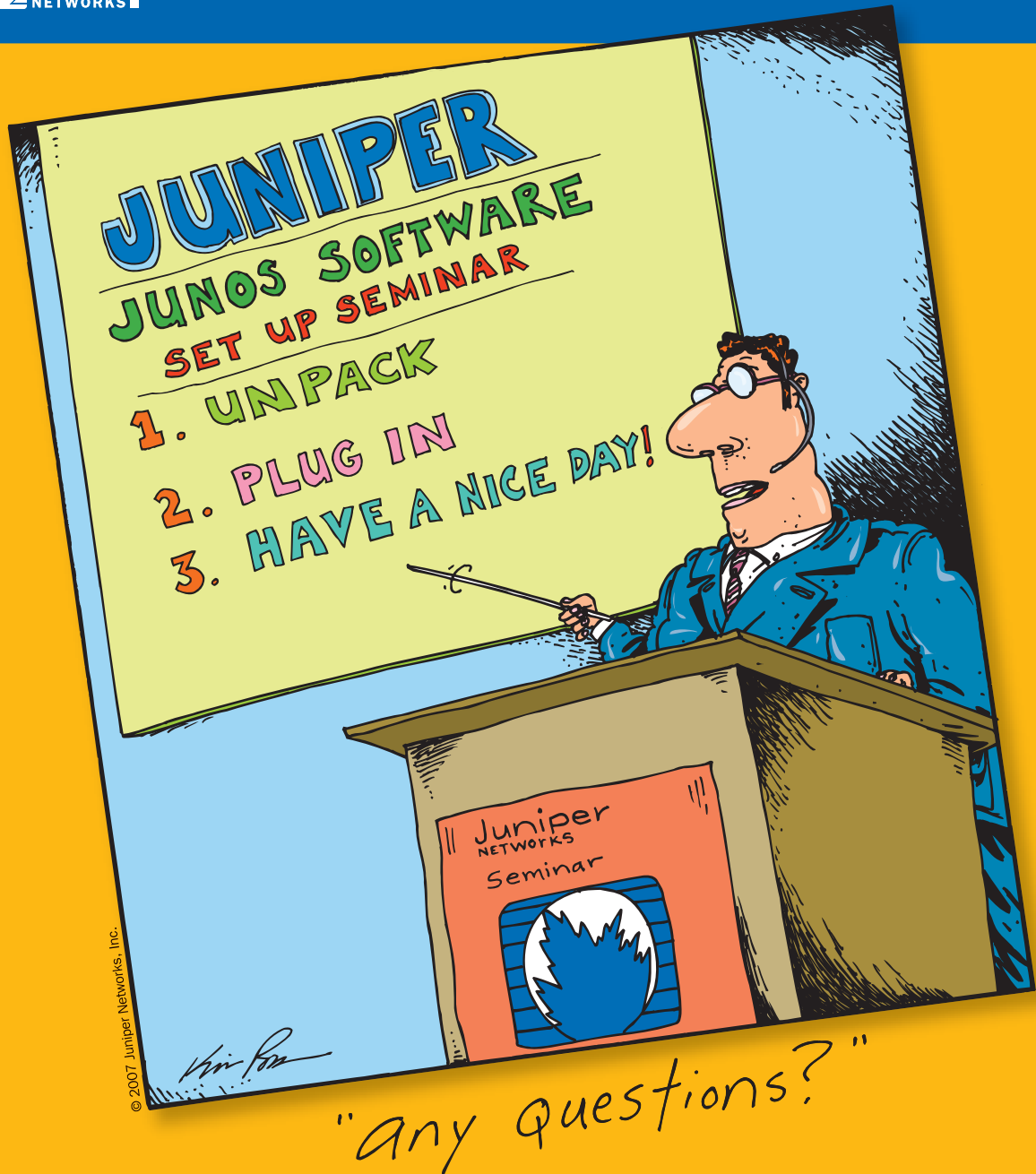
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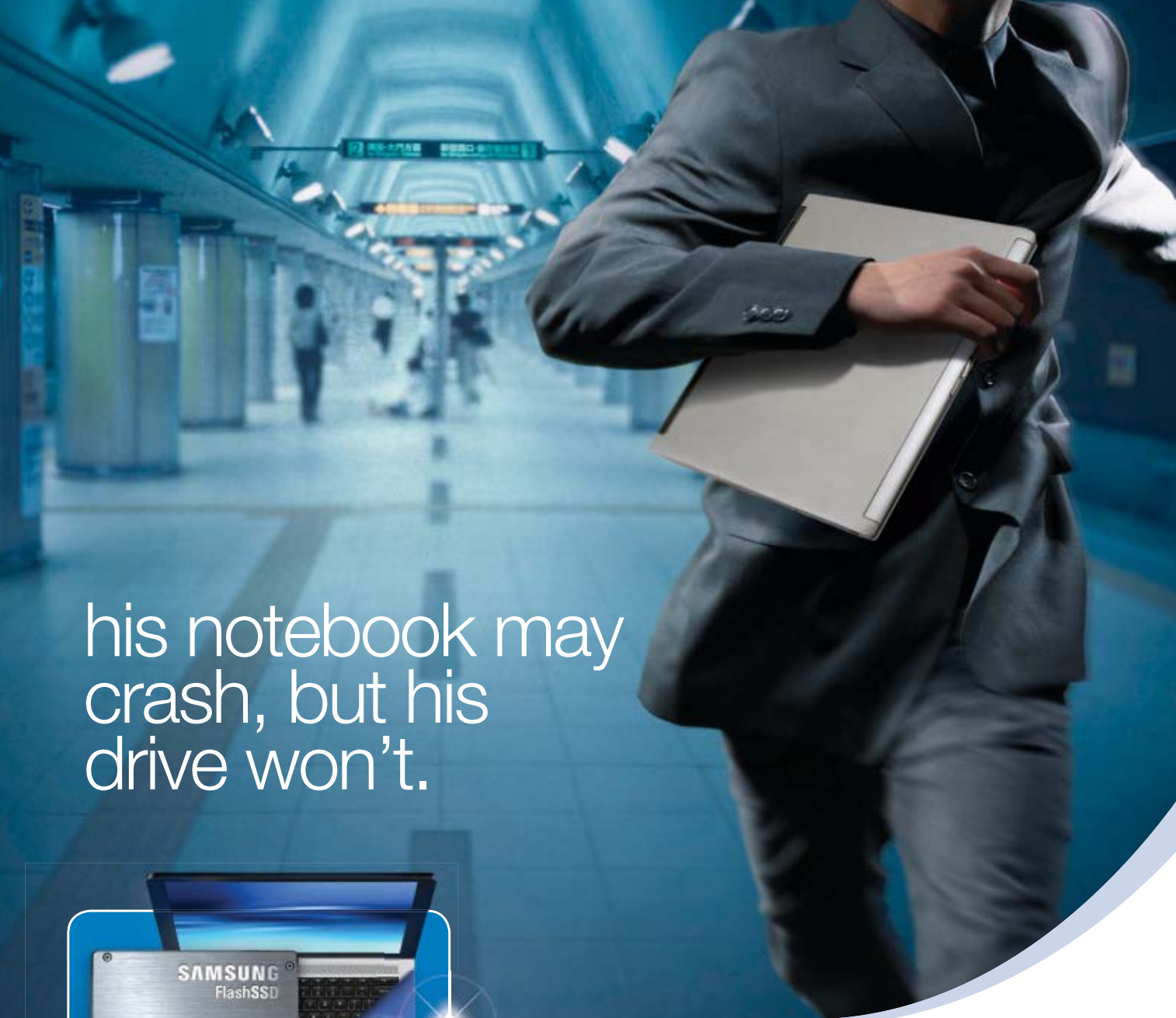
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<sup>1</sup>Mean Time between Failure

<sup>2</sup>HP NX9420, XP Pro, Core Duo Processor 2.0Ghz, 512MB RAM, ICH 7, I945 Chipset

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## HEAD IN THE CLOUD

WHEN WILL BUSINESSES REALIZE THE NETWORK IS THE ONLINE PLATFORM AND DEVELOP APPS ACCORDINGLY?

**ONE THING THAT BECOMES CLEAR WHEN** you consider the exhaustive coverage of Yahoo's business model and related technology infrastructure is that Yahoo—like Google, Microsoft and a host of other Web service providers—has its heart set on being a platform.

In the old days, the platform was first the operating systems on the client machine and later the servers. But the Web has changed that, and companies as big as Microsoft and as small as Salesforce.com are all now trying to recruit developers to create applications that can be delivered via their platforms in the network cloud.

As Dave Carr explains in this issue's cover package (see "Yawho?" p.26), Yahoo is wooing developers to create applications that will run across its network, which it also refers to as a platform. Google, Microsoft, eBay and others have similarly made development kits available that essentially expose an application programming interface (API) to just about anyone who wants to create an application.

The intriguing question this raises for any IT organization at any company with any kind of business-to-consumer model is which, if any, of these organizations will have enough pull to require their companies to see them as full-fledged routes to markets.

Already it's plain to see that the major Web sites are becoming networks through which third parties are distributing content, software and services. As this trend continues, the more inevitable it becomes that businesses of all shapes and sizes will need access to developers familiar with the different Web environments to ensure that their offerings don't get lost amid the thousands of other services that will be offered through the various clouds.

Of course, it's tempting to say, who needs to be in someone else's cloud; all you need is a good Web site backed by solid search engine optimization. But even on the Web there is a cost of sales, and just as in real life, you have to bring your products and services to your potential customers—you can't wait for them to come to you.

In effect, Yahoo, like other sites such as Amazon and eBay, is little more than the 21st century version of the local strip mall. It isn't pretty, but everybody goes there. So if your presence on the Web is down the digital equivalent



**Businesses of all shapes and sizes will need access to developers familiar with the different Web environments to ensure that their offerings don't get lost amid the thousands of other services that will be offered through the various clouds.**

of a side street, you can expect to fall victim to the same location issues that bedevil every brick-and-mortar retailer that's not on the main drag.

It will be interesting to see how long it will take for many conventional businesses to figure this out and respond. When you visit a Macy's store, for instance, you find essentially a building full of designer boutiques organized by brand. An e-commerce Web site is pretty much the same.

So maybe Macy's needs to develop and promote an API for its Web site that would make it easier for more vendors to get into the Macy's-anchored online mall. After all, why should Macy's be limited online to the same products it essentially resells in its stores on behalf of other companies? And while Macy's is at it, it might also provide some compelling content designed to draw people into its online mall in the first place.

Whatever happens ultimately, it's clear we're on the cusp of a major shift in the definition of the term *platform* as it applies to computing. In fact, about the only thing left to decide now is how proactive your organization must be to deal with that shift.

But to one degree or another, the transition to network clouds as platforms is going to change not only how your organization thinks about IT but how your company as a whole takes its goods and services to market. ◀

MICHAEL VIZARD IS EDITORIAL DIRECTOR AT ZIFF DAVIS ENTERPRISE. PLEASE SEND QUESTIONS AND COMMENTS ON THIS ARTICLE TO HIM AT MICHAEL.VIZARD@ZIFFDAVISENTERPRISE.COM.



**"GOOGLE'S ENORMOUS SUCCESS** (and its hosted apps potential) is due in part to the worldwide backlash, especially in Europe, to Microsoft's often perceived money grabs in software licensing, especially in relation to its highly controversial software assurance."

**Christopher Seepe**  
First Base Solutions  
Markham, Ontario, Canada

### Iraq's Reverse Supply Chain

Your September cover article stated how very difficult and long a pullout will be ("Iraq's Reverse Supply Chain: A Long Way Home," [go.baselinemag.com/iraq](http://go.baselinemag.com/iraq)). Does the Department of Defense have no records of what was sent to Iraq? Do our commanders have no idea what personnel or equipment they have? I'm not suggesting it is a simple task. However, by segmenting the total and arranging with some clear thinking, I cannot see how this is a logistics task of two years. It seems as if nearly all unpleasant tasks are deemed overly complex and difficult. Where is the old Yankee can-do attitude? The Normandy buildup did not take two years more than 60 years ago.

**Alex R. Jordan**  
Executive Vice President, Partner  
Dimension Electronics  
York, Penn.

### Unloading Assets

Regarding your article "IT Asset Disposal" ([go.baselinemag.com/itasset](http://go.baselinemag.com/itasset)), my take is that when the government mandates that vendors dispose of technology equipment, it becomes more costly for both the vendor and the businesses it serves. Unlike in Europe, in the U.S. I can dispose of equipment through normal recycling channels efficiently and inexpensively. If the

vendor offers the service, shipping would have to be included. The flipside is that any additional costs the vendor incurs find their way into the cost of products purchased.

**Mark Christina**  
Director, Information Technology  
Apothecary Products  
Burnsville, Minn.

### Getting to Know IT

Your online article "5 Reasons Entrepreneurs Should Understand IT" ([go.baselinemag.com/5reasons](http://go.baselinemag.com/5reasons)) is great. I suggest a followup on why the business needs to align with IT. My experience has shown that a majority of larger departments in the federal government and countless state and local governments think aligning IT with the business is an excuse for leadership not to understand the value of technology.

IT needs to understand the business, but the business units need to understand technology better and how to use it correctly. Too many times the business unit comes to IT and says, "We want to buy this tool. It will make us better at doing our job." IT does the proper technical testing for functionality and implements the tool. Then no one measures whether the tool did its intended job. And if there is a problem, it's the vendor's fault.

This is like going to Sears, buying a shiny new wrench, walking out to a car, laying it on the hood and expecting it to magically heal the knock in your engine. Ain't gonna happen!

**David J. Keith**  
Director, Government Relations  
and Research  
International Association of  
IT Asset Managers  
Suffield, Ohio

### Google's Hosting Potential

After reading "Analysis: Why Google May Succeed Where Others Have Failed" ([go.baselinemag.com/whygoogle](http://go.baselinemag.com/whygoogle)), I think there's a lot of room for Google's hosted apps within an enterprise setting for non-mission-critical business needs.

We have moved about 60 of our 220 employees to Google Calendar in the last 30 days. The productivity for booking meetings and the requisite meeting rooms has been enormously successful. Our plan is to have our two companies share the same meeting application by calendar year end.

There are the usual concerns about security of sensitive corporate data, but Google's reputation allays those fears more easily than just about any other entity (save Microsoft?), including open source.

Google's enormous success (and its hosted apps potential) is due in part to the worldwide backlash, especially in Europe, to Microsoft's often perceived money grabs in software licensing, especially in relation

to its highly controversial software assurance (SA). The SA "business model" has been quietly picked up by other software companies to create a kind of artificial software industrywide status quo. No one has satisfied me on the business value proposition of SA that effectively punishes companies with prejudice for not maintaining version currency.

**Christopher Seepe**  
General Manager,  
Web Services Division  
First Base Solutions  
Markham, Ontario, Canada

### Out-of-Sight CEO

Regarding the question "Can CIOs who don't report to CEOs do their jobs effectively?" ([go.baselinemag.com/reporting](http://go.baselinemag.com/reporting)), the answer is an emphatic yes and no. These CIOs can effectively maintain the current environment and work aggressively to stave off future issues and disasters. However, since they lack the ability to speak directly with the primary visionary for the organization, they do not have an ear to propose or discuss business transformation through the technology. The only true outlet for business transformation through technology lies in having direct access to the CEO. Most businesses that create barriers to their CEOs lack competitive advantage. The open CEO is one who has his ear to the organization and his finger on the pulse of the market.

**Thomas Buehler**  
Client Relationship Manager  
DLS Internet Services  
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## BPO: OUT OF THE BACK OFFICE

CLIENTS ARE DEMANDING SINGLE-VENDOR SERVICES OVER SAVINGS, BUT GLOBAL COVERAGE IS CRITICAL.

BY LATON MCCARTNEY

**BUSINESS PROCESS OUTSOURCING (BPO)** doesn't mean what it used to.

For consultancies, outsourcing used to be a relatively straightforward proposition. The consultant would be paid to take over one of the client's back-office IT functions so the client could focus on its core competencies and make more money.

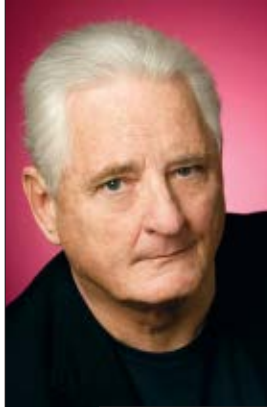
That was the idea, anyway. Things didn't always turn out as planned. Outsourcing contracts are often difficult to manage, and many clients hadn't the time or talent to do the job properly. A March 2007 report from TPI, the global outsourcing advisory firm, noted client-maintained outsourcing contracts typically delivered 28 percent less value than originally anticipated. Not that the providers were necessarily to blame. More than half the buyers interviewed faulted themselves for expecting too much.

The result was a lot of restructuring, at least until a year or so ago. Clients today frequently want more from their suppliers than cost savings; they want benefits such as operational transformation and innovation. And they're often willing to pay the price even when a supplier charges more than some of its competitors. "I've had clients with a big contract with Accenture tell me they're happy to pay a premium," says Forrester analyst Bill Martorelli. "They're not looking for savings as much as service today."

Instead of farming out selective processes—financing, accounting, HR and the like—to different vendors, clients are frequently looking to deal with a single supplier that in turn subcontracts services it can't provide. "That reduces the number of vendors," says Martorelli. "You have clients select one vendor to serve as prime and other vendors to function as semi-prime." This is sometimes called multisourcing and may include applications outsourcing as well as business process outsourcing.

In some cases, however, a single vendor can provide all the services the client requires. In consultancy parlance, this is called a "bundled engagement" and can cover everything including application, infrastructure and BPO services—finance and accounting, procurement, customer contact, HR, training and so on. You can count on one hand the number of vendors that can provide truly bundled capabilities, and that includes Accenture.

The multiple source/bundled approach represents a trend toward fewer, if larger, contracts. In a Q2 2007 report on the



**A "bundled engagement" can cover everything including application, infrastructure and business process outsourcing services—finance and accounting, procurement, customer contact, human resources, training and so on.**

global outsourcing market, TPI noted a dramatic decline in contract restructurings and new outsourcing agreements for the first half of the year.

This lack of restructuring in the marketplace is an indicator that incumbent providers have been proactive in renewing their agreements in ways that are seamless and uneventful for both parties, TPI says. In other words, the client is satisfied with its existing deal.

The so-called "new scope" contracts, in which no prior relationship between supplier and client existed, had increased in value to \$245 million, up 20 percent for these same contracts in 2006. New scope increases are essential indicators of market growth rather than decline, according to TPI.

The other relatively new demand, at least on the part of global and multinational corporations, is full coverage, meaning the vendor must be big enough to be everywhere the client is. "The vendor has to be truly global in these instances," says Martorelli.

So, which consultancies can do well in this changing and currently soft market, especially in the U.S.? Although they're coming on strong, most Indian companies don't have the reach yet to deal with global clients. "They can't do as much work in as many places as some of their competitors," Martorelli says.

That leaves major players like IBM, Accenture and CSC on solid ground. Accenture, in fact, recently landed a seven-year, \$185 million contract to provide Microsoft with finance, accounting and procurement services, ultimately in 92 countries and 36 languages.

This approach, in which multiple business functions are outsourced to a single provider, is analogous to what systems integration is to IT implementation, but vendors like Accenture call it services integration. And it's likely to become increasingly common. ♦

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"WE WERE LATE TO THE GAME IN SEARCH, WE WERE LATE IN SOCIAL NETWORKING, AND WE DON'T WANT TO BE LATE ANY MORE."

—BRADLEY HOROWITZ, YAHOO, P.26

## MAKING RADIO TAGS PAY

DOW CHEMICAL COMES UP WITH A SHORTLIST OF RFID PROJECTS, FROM 450 POSSIBILITIES ACROSS ITS BUSINESSES. BY MEL DUVAL

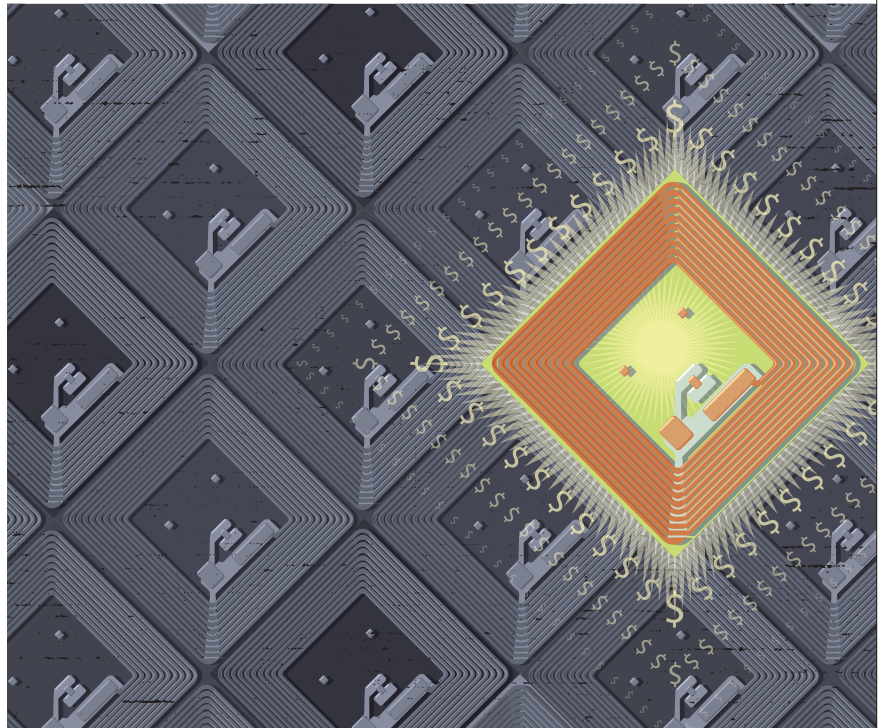
**WHILE MANY COMPANIES ARE** still determining whether they want to make the leap into applying radio frequency identification (RFID) technology to their business practices, Dow Chemical is wrestling with the enviable challenge of having to whittle down RFID opportunities.

A call two years ago for RFID project proposals among the company's wide-ranging businesses generated more than 450 responses. Dow is already producing concrete results from many of those proposals, including using RFID technology to track hazardous goods shipments; monitor temperature, pressure and the general condition of individual containers, and even detect termite infestations (see "An Application That's Buggy by Design," next page).

In fact, Midland, Mich.-based Dow has developed one of the most advanced programs for not only identifying how RFID can best be applied to its businesses but for capturing and sharing best practices.

Back in 2004, when Wal-Mart was detailing its far-reaching plans to use RFID throughout its supply chain (see [go.baselinemag.com/walmart](http://go.baselinemag.com/walmart)), Dow CIO Dave Kepler quizzed his team about whether the company should be looking more seriously into RFID. Dave Asiala, Dow's IT director, recalls that the general feeling then was that RFID wasn't ready for prime time.

Kepler was more optimistic. In July 2005 he put out a call across Dow's far-ranging operations—the company has annual sales of \$50 billion in chemicals, plastics, agriculture and other areas—for proposals on how RFID might be applied. His hunch, that RFID could



answer a number of business challenges, generated close to 450 proposals.

The next step was to evaluate those proposals, based on the company's Six Sigma methodology, to find 10 projects to approve. "There were many more that had merit," Kepler says, "but we always have more ideas than money to spend."

In conjunction with the evaluation process, Dow established a center of expertise dedicated to RFID. It would be the responsibility of that center to not only identify the best projects of the initial 450 proposed, but to evaluate emerging RFID technologies and capture best practices. "Basically, when a business unit has a need that might be

solved by RFID, we're available to them as consultants," says Craig Casto, Dow's RFID Global leader.

To narrow the initial 450 projects down to a more manageable number, the evaluation team applied a broad vetting process. It looked first at the project's likelihood for success based on the readiness of the RFID technology being applied and the challenges involved, and then at the total value of the project, both tangible and intangible. By plotting the projects on a matrix, Dow was able to create a shortlist of 50 projects.

Next, Dow decided to reach out to its IT partners and the RFID vendor community to conduct a more practical



analysis of the remaining 50 projects. It essentially created a technology advisory board comprised of representatives from such companies as SAP, Cisco, Intel, Savi and Accenture to evaluate the proposals with an eye to which projects could provide the most benefit and which were strategically aligned with corporate goals. Asiala says the advisory board was crucial in identifying projects where standards were not ready or the technology was not mature enough to move forward.

An example was the use of RFID to help locate and identify parts used at construction sites, where they are typically stored in a “lay-down” yard, essentially a large area where they can be retrieved as needed. It was thought RFID could be used to track the parts and speed their retrieval. While the idea has merit and a potentially valuable payback, Asiala says, the technology wasn’t ready yet. The project would

have involved setting up a network of RFID readers or sensors over a large area. “We felt the technology needed to mature a little, but those technologies are starting to come out onto the market,” he says.

#### PROJECT GREENLIGHT

After a roughly six-month evaluation process, the go-ahead went to 10 RFID projects in the following areas:

- ▶ Gas cylinder tracking
- ▶ Tanker truck tracking
- ▶ Rail car tracking and product monitoring
- ▶ Intermodal (truck-railway-ship) container and content tracking
- ▶ Warehouse and inventory management (to locate and redirect containers in transit, to speed order changes and the like)
- ▶ Product consignment inventory management (leveraging information collected from railcar tracking)

- ▶ Pipeline worker monitoring (an alarm is triggered if the RFID device on a worker’s belt goes horizontal, indicating a fall or injury)
- ▶ Tracking inventory in the company’s AgroSciences unit
- ▶ Hazardous material tracking
- ▶ Maintenance parts tracking

In some respects, RFID provides Dow with an ideal solution to several of its more vexing challenges. Federal regulations require Dow to closely track and monitor shipments, particularly those involving hazardous materials. More advanced RFID tags, containing sensors to monitor such things as temperature, pressure and vibrations (indicating that a gas cylinder or chemical drum may have been ruptured), provide Dow with ways to automate and improve its monitoring capabilities.

Dow worked with Savi Technology, for example, to implement its

## AN APPLICATION THAT’S BUGGY BY DESIGN

**THERE HAVE BEEN SOME PRETTY FAR-OUT PROPOSALS** put forward for the use of radio frequency identification (RFID) technology. But using RFID to track and exterminate termites?

No, Dow Chemical isn’t putting tiny RFID chips on the backs of termites and zapping them with radio frequencies. But its use of the technology does demonstrate that companies may find uses for RFID never previously conceived.

One of the company’s primary products for detecting termites is its Sentricon System. The Sentricon devices (manufactured by the company’s AgroSciences business unit) are about 12 inches tall and designed to be installed in the ground around a building. The devices have openings termites can enter; inside are pieces of wood.

To determine if termites are in the area, pest control company reps must pull up each device, unscrew the top, pull out and inspect the wood. If the wood has tell-tale signs of termite damage, the pest control company springs into action.

Andrew Wurtz, RFID project lead for the Sentricon System, says that while simple, the devices have a major drawback. To inspect the devices, the pest control technician has to bend down, unscrew and visually inspect each device. On some large commercial buildings, the devices might be installed every 15 feet, so the task can be extremely time consuming.

As early as 2002, Dow began experimenting with how RFID tags and readers might be used to eliminate the back-straining part of the process.

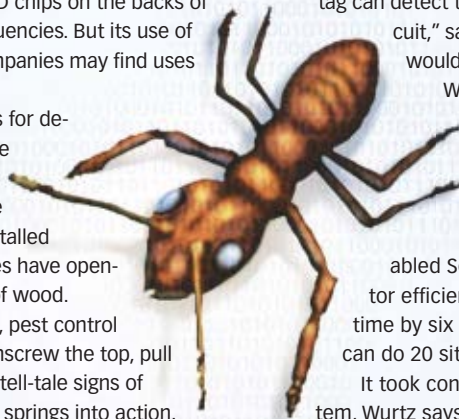
The company figured out a way to attach an RFID tag to a piece of paper that sits between two blocks of wood in the Sentricon device. When a termite eats the wood and piece of paper, the RFID tag can detect the damage. “It registers like a break in the circuit,” says Wurtz. “Our research showed that termites would eat the paper first—it’s like candy to them.”

With the RFID-enabled Sentricons, a pest control expert walks around a building, and using a device that looks similar to a metal detector, simply passes near each Sentricon to determine if termites are present.

The savings can be substantial. The RFID-enabled Sentricons have been able to increase operator efficiency by 67 percent and reduce site inspection time by six minutes. That means the average operator can do 20 site visits per day instead of 12.

It took considerable trial and error to perfect the system, Wurtz says. For one thing, the company had to experiment with a number of different tags from RFID vendors before it found one that is waterproof enough to be installed in the ground and costs less than \$5. Dow also had to experiment with a various RFID readers to find one that’s suitably tough, because early readers were being damaged as users tossed them into the back of trucks or inadvertently banged them against rocks.

“The great thing about this,” Wurtz says, “is that it highlights that RFID has uses well beyond what many people regard as its traditional application.” —Mel Duvall



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SmartChain product to improve hazardous goods tracking. Savi, which offers SmartChain on an application service provider (ASP) basis, uses active RFID tags to monitor rail cars. As the rail car passes readers installed along tracks, SmartChain matches information transmitted by the RFID tag against expected routes and destinations and can also monitor conditions on the rail car such as temperature and pressure.

The system can identify whether a rail car has been opened and issues alerts when appropriate. If a hazardous chemical rail car has been opened on a secure Dow site, no alerts would be issued. But if the car is opened at a non-protected or non-scheduled site, an alert would be issued.

“The value that technology provides us is really critical,” Asiala explains. In fact, where RFID systems have been deployed, Dow has achieved a 50 percent improvement in its ability to identify and resolve in-transit prob-

lems. Other notable benefits include a 90 percent improvement in the company’s ability to offer delivery time windows, a 20 percent reduction in excess stock inventory, and the elimination of a historical 10 percent to 15 percent human error rate associated with the manual work processes to capture and enter data.

Insights from the RFID projects undertaken to date have been gained on many levels.

For one, Dow has used the projects to help it establish a catalog of Most Effective Technologies (METs), which can be leveraged by the business units. RFID technologies, whether tags, readers or software, are evaluated under three MET levels, RFID Global lead Casto explains.

- ▶ Level 3 technologies are designed for use at a particular geography or location—an application to track tools used at a single Dow plant, for example.
- ▶ Level 2 technologies are intended for

use at one business, but can be used at multiple locations—an application for labeling Dow Styrofoam insulation boards, for instance, which would be unique to Dow Building Solutions.

▶ Level 1 technologies have wide applicability for many business units at most locations—Dow’s container tracking application, which tracks all container types and is implemented globally, is an example.

Another key lesson learned, says Asiala, is that RFID isn’t necessarily the right or most cost-effective answer to a problem. Sometimes a simple bar code will continue to be the best approach. In other instances, Dow has discovered the best practice involves combining RFID with multiple technologies, such as bar codes and GPS systems.

“We’re willing to be innovative when the business case is there,” says Asiala, “but there are going to be times when the advantage of using a passive [RFID] tag over a bar code is insignificant.” ◀

## THE PROS AND CONS OF SOA

CONTROL AND TRUST ARE KEY CONCERNS, SAY AVIS, COMCAST AND OTHER EARLY ADOPTERS. BY DOUG BARTHOLOMEW

**PROMISING FASTER DEVELOPMENT** and reusable code, the service-oriented architecture (SOA) model is sparking interest at many *Fortune* 500 companies looking for more efficient ways to offer their customers new services. But the companies taking the SOA approach, while enjoying the technology’s benefits, are struggling with issues of control and trust, according to many who attended a recent BEA Systems user conference.

“The users want to be in control,” says Paul Patrick, chief architect at BEA, a vendor of software used in SOA applications. “They want to be able to create their own applications and put together their view of the world.”

Another goal of SOA is to enable technologists to be faster and more nimble in reacting to business users’ requests for new systems or changes







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to existing systems. "We want an IT infrastructure that can easily react to business changes, rather than having IT be a constraint to the business," says Ashok Kumar, director of services architecture at Avis Budget Group. "We want to be able to build an application once and use it many times. That's the promise of SOA."

Using BEA's Web Logic Application Server, Avis Budget Group has built a framework to share various pieces of functionality across applications. Kumar offers as an example a business unit's recent request for the IT group to build a system capable of transmitting an electronic receipt to a customer's Internet-enabled device immediately upon return of a vehicle.

"Now hurried travelers can drop off vehicles and walk away," Kumar says. "Without SOA it would have taken a fair bit of time and effort to create this application, which gave us a very good competitive advantage. People like being able to see the receipt coming up immediately on their BlackBerry."

Both IT professionals and business managers are drawn to the ability to reduce applications to their basic components so parts can be reused or dropped by various company groups as needed. "SOA is handy when you are trying to slice and dice the functionality into atomic pieces of business functions," says Sumitro Sarkar, vice president of technology strategy at Thomson Financial.

"We have grown through acquisitions, and the main challenge when you are acquiring a company is to integrate those products with your existing products, and there is always some overlap," Sarkar says. In other words, SOA can help break down the applications supporting various products into pieces that can be saved or discarded as duplicative.

Clearly, though, SOA poses some hurdles for IT groups. First, IT must establish a balance between letting business groups use SOA to add new functionality more quickly on their own and losing control over the company's applications and IT processes.

"It will not be easy for IT to relinquish control, but this is something the IT organization will have to embrace,"



## TIPS FOR SOA SUCCESS

- ▶ Don't wait until everything's perfect to start an SOA project. "The number of people who want it to be perfect is the No. 1 challenge you face with an SOA project," says Dan Tolley, engineering director in information systems and global services at Lockheed Martin.
- ▶ Build a prototype first. Show some success before trying to transform the entire business with a new IT architecture.
- ▶ Don't be afraid to make mistakes. "Failure is an option and a way to learn," Tolley advises.
- ▶ Use others' work. Lockheed Martin leveraged the definitions of service types and domains already available in a document called the Federal Enterprise Architecture Framework (available at [cio.gov/Documents/fedarch1.pdf](http://cio.gov/Documents/fedarch1.pdf)) for its SOA project.
- ▶ Know who wrote or owns the data. "Understanding your data owner is the one fundamental that will make this whole process easier and faster," Tolley says.

cautions Richard J. Merlino, a business process specialist in line maintenance services at jet engine manufacturer Pratt & Whitney. Merlino suggests that CIOs take a strong approach to IT governance rather than curbing the use of SOA at their companies.

The idea, Merlino says, is to allow business users a certain level of freedom to develop or change applications while ensuring that once such changes or

applications are ready for production, they adhere to IT's standards. "Let people have the freedom in the development environment, but as they move up to production, that's where a strong framework for governance comes into play," he adds.

An engineer rather than an IT professional, Merlino believes the adherence of an organization to the use of SOA-based services can only add a level of built-in control for IT management. "(SOA) services can help," he says, "because they ensure that applications will be built according to a specific IT methodology."

One company that has a change-control process in place is Comcast. "Today if you want to make a change, modify or reuse an existing service, that change request gets evaluated by a group of peers," says Thomas Adler, senior manager of application architecture and IT governance for the cable giant. The company has used SOA to create two applications: a Digital Voice Center that lets consumers customize their voice service and settings, and an application that consolidates billing from multiple vendors.

### TRUSTWORTHY?

Yet another obstacle to greater SOA acceptance and use is trust. For many CIOs and IT managers, the notion of blindly adopting software created by other business groups and technology users is hard to swallow. "The reuse of code requires trust," says Sheppard Narkier, vice president and head of portfolio management in the corporate and investment banking technology group at Wachovia.

"You need a marketplace mentality where knowledge is the trusted currency, and that is going to require a paradigm shift," Narkier adds. "You're going to be using software that, as a manager, you didn't build and you didn't buy."

While many companies are trying out the technology with an SOA project or two, some have yet to show a positive outcome for their efforts. "We're past the pilot stage," says Terren Peterson, senior director of enterprise platforms at Capital One's operations unit, "but it's still too early to show results." ◀

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CASE DISSECTION

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# Y! WHO?

**BY DAVID F. CARR**

**WHAT IS IT THAT'S TRANSFORMING THE** trademark exclamation point in the Yahoo! logo into a question mark? In a word, Google.

Sure, Yahoo survived the dot-com bust and evaporation of easy money in Internet advertising. But that's history. Now the company is forced to compete with the powerhouse that invented a search engine advertising money machine right under its nose and is dwarfing it financially. Yahoo's profits dropped almost six percent to \$454 million during the first nine months of 2007, while Google's profits rose 46 percent to \$3 billion.

Worse, Yahoo has lost its longtime position as ▶

the Internet's most trafficked Web site. Although Yahoo's family of Web sites still attracts slightly more unique visitors than Google's in the U.S., according to ComScore Media Metrix, it trails internationally with 478.7 million unique visitors compared with 561 million for Google as of August.

Microsoft also ranks high on the list, though it's not yet a major threat in Internet advertising. And younger Internet users are increasingly choosing social networking sites like Facebook or MySpace as alternative portals.

### NOT ALL GLOOM AND DOOM

There are bright spots, assuming Yahoo can cash in on them sooner rather than later.

**Y!** **IN SEARCH:** Yahoo retains the No. 2 position in the search market, albeit largely as a byproduct of its audience for news, mail and other Web site features. An upgrade to its search marketing system that started rolling out late last year is paying off: Yahoo says search revenue for its Web sites rose 30 percent from Q3 levels a year ago, contributing to an overall 12 percent increase in revenue. Also, an October search engine upgrade is getting good early reviews from analysts for its inclusion of Yahoo Search Assist, which suggests keywords to users hesitating over what to enter in

the search box. Yahoo has also integrated image and media search results. Yahoo Answers, a social search site where users can submit and answer each other's questions, is also proving to be one of Yahoo's fastest-growing properties.

**Y!** **BEYOND SEARCH:** Most Google properties going head to head with Yahoo properties (think Google Finance vs. Yahoo Finance and the like) haven't made much of a dent. Even Gmail had less than a third the audience of Yahoo Mail as of August, with 82 million unique visitors worldwide vs. 255 million, according to ComScore. However, Gmail's audience grew 64 percent year over year while Yahoo Mail's audience dropped one percent.

**Y!** **OFF-SITE ADS:** Yahoo's summer purchases of online ad exchange Right Media for almost \$700 million and behavioral marketing network Blue Lithium for \$300 million expand the company's ability to place ads on other publishers' Web sites. This is another strong market for Google, but a more fragmented one in which Yahoo has a better chance of making inroads.

**Y!** **ON-SITE ADS:** With its new SmartAds product, Yahoo aims to create a new category of display advertising based on

## FRONT-LOADING WEB PERFORMANCE

### IN SEVEN YEARS AT YAHOO, STEVE

Souders had focused most of his efforts on back-end engineering tasks—squeezing more performance out of a database and optimizing memory usage in C++ programs running on a server, for instance. So

three years ago, when he was named chief performance yahoo and charged with improving the user experience for visitors to Yahoo Web sites, he expected it would mean doing more of the same.

But it has not worked out that way. In the course of investigating the elements of user experience, Souders found that the biggest impact came from the communications between the Web site and the user's browser. His findings form the core of the lessons he imparts in a new book, *High Performance Web Sites* (O'Reilly, September 2007).

Souders changed his mind after measuring each step in the process of

downloading a home page, with the data charted over time. From the start of a new visitor's request for a page, he found, only five percent of the time is spent downloading the HTML (the HyperText Markup Language) document containing the text of the page. The other 95 percent of the time is spent downloading and parsing images, stylesheets and JavaScript.

And at a site like Yahoo, back-end engineering is primarily about how quickly the site can assemble HTML documents—personalizing pages, retrieving information from databases, merging news feeds and feeding the results into a Web page template.

This brought Souders to the sobering conclusion that he'd spent most of his career at Yahoo worrying about five percent of the performance problem. "It turns out that 80 percent to 90 percent of end user response time is spent on the front end," he says. "So the greatest potential for improvement is on the front end."

With this understanding, he and a small team of engineers set to work figuring out how to improve the speed at which Yahoo delivers pages.

There's nothing new in recognizing the importance of response time to Web development—it's long been known that users forced to wait more than a few seconds are likely to become frustrated and depart for some other, faster site. The conventional advice includes limiting the number and file size of images on a page to make it load more quickly.

But Souders' performance team found some more subtle strategies, which they have codified into 14 rules (see box, next page). Most of the rules revolve around making sure the browser doesn't have to work too hard to load and display Web pages, particularly by making maximum use of the browser cache. That's where your browser gets rid of bits and pieces of Web pages you've viewed.

For example, if a visitor has been spending time at yahoo.com, the cache on his or her machine will contain a copy of the Yahoo logo. If the visitor leaves the Web site and comes back, the browser can display the cached copy of the logo very quickly, avoiding the need to retrieve a new copy from the Web server.

The No. 1 rule on Yahoo's list is to minimize HTTP requests. Every time a browser needs to request another



Steve Souders



behavioral targeting techniques that mimic the specificity of search advertising. For example, SmartAds can match a Los Angeles user researching a trip to Las Vegas with an airline offering cheap flights between the two cities. Better yet, the relevant ads may appear throughout the site, not just on the search results page, letting Yahoo and its customers capitalize on the breadth of its content.

**Y!** **ADDITIONS AND UPGRADES:** Yahoo continues to invest in new specialty sites, such as its new Yahoo Mash social networking site, and revitalization of existing sites (Yahoo Mail, with its more interactive Web 2.0-style user interface, and Yahoo Real Estate, which is gaining market share by mashing up data and applications from other Yahoo and partner sites). The company is also embracing open source technology, and inviting developers to work on its platform. (For more, see “Accentuate the Positive,” page 31.)

“They’ve lost the battle of the search box,” says Whit Andrews, a search technology analyst at Gartner. “Their effort now is to find a new battle.”

Yahoo’s greatest potential, Andrews says, is in tying together its wide assortment of Web properties, particularly those with a social component.

Yahoo 360, a site aimed at connecting people a la Facebook and MySpace, never gained a large following, and now the company is trying again with Mash. But Yahoo Groups, Yahoo Instant Messenger, bookmark-sharing site Del.icio.us, photo-sharing site Flickr and other properties are solid building blocks, he says. And he sees Yahoo combining those assets more intelligently—by letting Yahoo Instant Messenger users see what songs their friends are listening to on Yahoo Music, for example.

“They still have assets any other company in the world would die to have,” says Jeremy Ring, a former Yahoo sales executive who’s now a Florida state senator and venture investor. “Yahoo may be a broken brand on Wall Street but it’s not a broken brand in the rest of the world.”

Even on Wall Street, where its stock has hovered in the mid-\$20s much of the year (Google’s recently topped \$600), Yahoo has friends. Bear Stearns analyst Robert S. Peck named Yahoo a “top pick” in September, saying the pendulum in investor sentiment between greed and fear has swung too far toward fear.

Yahoo is taking steps to get beyond its “sunk costs” in past mistakes and invest in new initiatives with greater potential, he said.

Peck also rejected the argument advanced by several ▶

image or another JavaScript file to be included in the page, it must send a message to the server using the Web’s Hypertext Transfer Protocol (HTTP) and wait for a response. Every request takes time and runs some risk that the connection will be interrupted and the download will have to start over.

So it would be simpler in some ways if every Web page were delivered as one big file rather than dozens of smaller files. On the other hand, if you can identify the files included in a Web page that only change infrequently and get the browser to cache them, you can cut down on the total amount of data transmitted.

For that reason, Yahoo advises you break out Cascading Style Sheets (CSS) and JavaScript code into separate files rather than embedding them into the HTML of a Web page. This way, if the same CSS or JavaScript is going to be used by multiple pages within a Web site, the browser can download it once and cache it.

However, Yahoo breaks this rule on its own home page and the opening pages of many sections of its sites because pulling in all the needed HTML, CSS and JavaScript code with one HTTP transaction still tends to make a better first impression.

### Controlling Cache

Another trick is to configure your Web server to transmit image, CSS and JavaScript files with an expiration header set far into the future. This tells the browser to retain the cached files indefinitely instead of just for a few hours or days. You’re effectively telling the browser these files will never change and it doesn’t have to keep checking for fresh versions.

Eventually, you’ll probably change your logo, CSS font stylings and JavaScript. But because the browser identifies these components by Web address, you can force it to load a new version by simply changing the filename or directory.

By applying a few of these simple rules, Souders’ team was able to make a big impact on a key section of the Yahoo site—its search results page. “Within a year, we were able to improve response time by 40 to 50 percent,” Souders says.

(To grade your Web site against Yahoo’s rules, download YSlow, a Yahoo-developed open source add-on to Firebug, another Firefox browser extension. Together, YSlow and Firebug provide a variety of tools for profiling and debugging Web sites and applications.) —D.F.C. ◀

## YAHOO’S 14 RULES FOR EXCEPTIONAL PERFORMANCE

- 1 Make Fewer HTTP Requests
- 2 Use a Content Delivery Network
- 3 Add an Expires Header
- 4 Gzip (Compress) Components
- 5 Put Stylesheets at the Top
- 6 Put Scripts at the Bottom
- 7 Avoid CSS Expressions
- 8 Make JavaScript and CSS External
- 9 Reduce DNS Lookups
- 10 Minify JavaScript
- 11 Avoid Redirects
- 12 Remove Duplicate Scripts
- 13 Configure ETags
- 14 Make Ajax Cacheable

(Details at [developer.yahoo.com/performance/](http://developer.yahoo.com/performance/))



## YAHOO BASE CASE

**HEADQUARTERS:** 701 First Avenue, Sunnyvale, CA 94089

**PHONE:** (408) 349-3300

**BUSINESS:** Internet media and technology company

**CTO:** Jerry Yang stepped into this role after the departure of CTO Zed Nazem in May, before Yang was bumped up to CEO. Co-founder and Chief Yahoo David Filo plays a strong behind-the-scenes role in Yahoo's technology choices but doesn't appear to covet the CTO title.

**FINANCIALS IN 2006:** \$6.4 billion in revenue, with net income of \$751 million

**CHALLENGES:** Yahoo must find ways to sustain its audience, maintain its base of loyal, registered users, and figure out better ways to make money off those users through search marketing and other forms of advertising.

### BASELINE GOALS:

- ▶ As of October, Yahoo said it was aiming for between \$5 billion in sales for 2007 (excluding "traffic acquisition," the cost of working with affiliates to drive traffic to Yahoo), compared with \$4.6 billion for 2006.
- ▶ In the same report, Yahoo said it was targeting operating income of \$658 million to \$678 million for 2007, compared with \$941 million in 2006, as it invests in improving its business.
- ▶ Yahoo points to the growth in advertising revenue on its "owned and operated" Web sites as a trend it aims to continue. In that segment, search advertising revenue rose 30% and display advertising rose 20% from a year ago in the third quarter, according to the company. However, Yahoo must also reverse a downward trend in advertising income from affiliate Web sites.

other Wall Street analysts that Yahoo could make more money by outsourcing search advertising to Google rather than continuing to compete in that market. While that might pay off short term, he said, Yahoo will be better positioned to offer advertisers a complete package if search remains part of the mix.

### NEW STARTING POINTS

Under pressure from disgruntled investors, Yahoo this summer replaced CEO Terry Semel with Yahoo cofounder Jerry Yang and promoted Susan Decker to president (see "Player Roster," page 33, and "Can Yang Turn Things Around?" page 42). Damage control and promises to improve were the first order of business for those now in the hot seat.

In July, during the first earnings call under their leadership, Yang and Decker spent much of the time reassuring investors that they understand the extent of the company's

challenges and wouldn't repeat mistakes. Decker specifically acknowledged as a strategic error the failure to quickly integrate Overture, the company Yahoo acquired in 2003 to bolster its keyword advertising business.

And indeed, Bradley Horowitz, vice president of product strategy, known for promoting key acquisitions such as Flickr, says Yahoo is already making significant changes, particularly by opening its platform and encouraging Web developers to "hack Yahoo." He also acknowledges the reality in criticisms that the company has been bureaucratic, unfocused and slow to adjust to changes in the Internet business.

"We've owned up to a lot of these complaints at a high level and recognized that a lot of change is necessary," Horowitz says. "We were late to the game in search, we were late in social networking, and we don't want to be late any more. We have a huge opportunity and a lot of unique assets."

"It's easy to forget in the kind of hailstorm of criticism that's been levied against this company," he adds, "that we still have a fantastic business that's healthy and vibrant and growing."

To his point, Yahoo took a slight lead over Google in the August American Customer Satisfaction Index e-business report produced by the University of Michigan. Perhaps more significant, Yahoo's score climbed while Google's fell at about the same rate: Yahoo was up four percent to 79 points out of 100 while Google was down (for the second consecutive year) 3.7 percent to 78 points.

"They're within the margin of error, which is two points, but the more important thing is that Yahoo has closed the gap," says Larry Freed, CEO of Forsee Results, which sponsors the study. Customer satisfaction is a leading indicator of business success, Freed says, so the study shows that Yahoo could be poised for a turnaround.

Most of Yahoo's customers are advertisers aiming to reach Internet users, not the users themselves, of course, so such a turnaround would have less direct impact on Yahoo than it would have on most other companies. Still, satisfied users are more likely to return to the site, providing the audience advertisers want.

Some risks Yahoo has taken in redesigning its home page and other parts of its site are paying off now that consumers have had a chance to adjust, Freed adds. Meanwhile, the simplicity of Google's search-centric home page may be losing some of its charm for users who don't find what they're looking for on the first page of search results. Because of marketers' search optimization techniques and spam, Freed says, "search is no better than it was a few years ago and may even be worse."

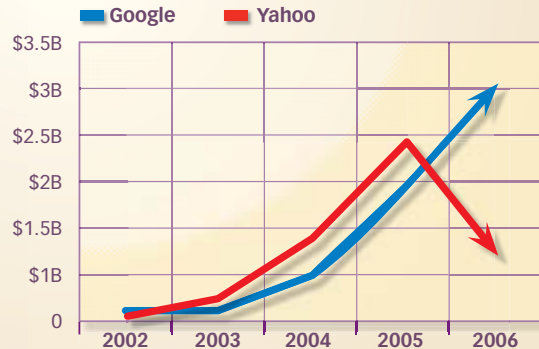
Reporting back to analysts in October, Yang said Yahoo would tweak its strategy by focusing on the strength of its "starting points" such as Yahoo Mail, My Yahoo and the Yahoo home page, which many people make their first stop on the Web. Dodging the question of whether Yahoo needs to buy a social networking site such as Facebook, Yang pointed to the variety of Yahoo sites that already have a "social aspect."

"What we must do better is integrate these assets and execute with a clear focus," he said. Meanwhile, Yahoo will



## Hurt on Profitability

Google's profits have continued a steep climb while Yahoo's dropped in 2006 and have yet to recover.



Source: ComScore

seek to be the “must buy” for Web advertisers and open its platform to developers it has “unintentionally” excluded.

### ON THE DRAWING BOARD

Yahoo chief data officer Dr. Usama Fayyad believes Google's advantage in keyword search will last only until Internet users find something better. “I refuse to believe that the way we will interact with the world's knowledge is to type 2.8 keywords into a search box and look at the top 10 results out of 600,000, on average,” he said in a speech to the Association for Computing Machinery's Knowledge and Data Discovery special interest group, which presented him with its Innovation Award in August.

In that talk and in an interview with *Baseline*, Fayyad outlined how the Yahoo Research organization he oversees is tackling the scientific and economic challenges he hopes will lead to the next search breakthrough. Yahoo has invested in improving its own search technology to the point where, in blind tests, consumers judge Yahoo's search results to be just as good as Google's, Fayyad says. Still, being just as good isn't enough when it comes to building search market share, he concedes.

“There is a brand advantage, where Google is definitely benefiting from being earlier to market, at least with the technology of today,” he says. “I would agree that if we don't offer something that's substantially better, there is little reason to switch.”

While searching for a substantially better way to search, Yahoo Research is also looking for ways to capitalize on the company's related expertise. “Search is an example of an interactive application,” Fayyad says, and it's intriguing to marketers because it gives a glimpse into what users are interested in at a given moment. But it's not the only such application.

When users at Yahoo Travel search for a flight between two cities, for example, they provide a host of clues about their preferences. So, in principle, a properly targeted ad presented at the end of a travel search could command a premium. “The market hasn't figured this out yet,” he says, so Yahoo has to work on making the advantages more obvious. ▶

## ACCENTUATE THE POSITIVE

**ONE BIG CHALLENGE FOR** Yahoo: convincing members, as well as current and potential employees, that it has something fresh and exciting to offer.

A prerequisite, according to vice president of product strategy Bradley Horowitz: addressing the legitimate criticisms of how Yahoo has done business, with its reliance on overly bureaucratic processes that have restricted innovation. “There is merit to those complaints, that this is a big company and it's been hard to get the attention of the people who make the decisions,” he says. “Some of that we have to own up to.”

shoes, appliances—that most closely match the desired color.

A more involved product proposal can win the developer a stint at Brickhouse, an internal product incubator where employees take a few weeks' break from their regular jobs to flesh out prototypes. An early Brickhouse product that's gotten a lot of attention from tech analysts and bloggers is Yahoo Pipes, a visual Web tool for assembling and manipulating Internet data feeds and Web services. Mashups published to the Pipes site include one that sucks in Reuters news stories,



Horowitz has instituted several programs to get a more positive Yahoo vibe going. On “Hack Day” events Yahoo holds periodically at headquarters and other locations around the globe, company programmers brainstorm, prototype and demo new products and features they suggest adding to Yahoo sites. One Hack Day idea that recently made it into use on the Yahoo Shopping site is a “search by color” feature that lets shoppers see all the products in a given category—shirts,

matches its datelines to Yahoo's geographic database, and displays its headlines overlaid on a map via Yahoo Maps.

Rather than invest in too many mammoth projects, Yahoo wants to place lots of small bets on new products and then double-down on those that show promise, Horowitz says. This approach isn't appropriate for big infrastructure overhauls such as Panama but it's ideal for more discrete projects.

Although it wasn't ▶  
Continued on page 32



In the August American Customer Satisfaction Index e-business report produced by the University of Michigan,

**Yahoo was up 4%** to 79 points out of 100 while **Google was down** (for the second consecutive year) **3.7%** to 78 points.

Yahoo's research also suggests it should be able to deliver better results by having a longer memory for user behavior. "Just by looking at data from Yahoo Autos, we can identify 300,000 consumers per month whom we know, with 75 percent confidence, will buy a car within 90 days," Fayyad says. If you're an automaker, every ad you show to one of those people within those 90 days is a chance to sway that person in your favor, he says.

Some numbers he cites regarding the effectiveness of these tactics, Fayyad cautions, are based on tests, not on operational results. Still, he talks about driving up conversion rates by 900 percent when users are shown a behaviorally targeted ad rather than a generic display ad. Further, a study Yahoo conducted with Harris Direct also suggests that display advertising in conjunction with search advertising is more effective than search advertising alone. Yahoo found that members who'd seen a brand ad for financial services

*Continued from page 31*

a Brickhouse product, Horowitz also cites Yahoo Mash because it wasn't "a giant undertaking by Yahoo teams with dozens of people, but the passion product of a small team." Currently operating as an invitation-only beta site, Mash is Yahoo's second attempt to build a friend-to-friend social network to compete with Facebook and MySpace. The first, Yahoo 360, never really took off.

"Now our job is to be good listeners," Horowitz says. If Mash "resonates with the marketplace," Yahoo will charge ahead with it, he says, but the company will retrench "if people are suffering social network fatigue and we didn't hit the bull's-eye, or if this is the wrong service at the wrong time."

#### Open for Business

Yahoo is also trying to stir things up by opening parts of its technology platform, encouraging others to build on them, and holding Open Hack Day events, where outsiders can showcase their own Yahoo-based inventions.

You can embed Yahoo search results or maps in your own applications through Web services application programming interfaces (APIs) documented at the Yahoo Developer Network Web site, for instance, and that access is free unless you exceed a "rate limit" threshold or require a commercial license with service-level guarantees. Yahoo currently supports more than 30 such APIs, including those for Flickr and other sites it owns.

"They're doing a lot of interesting things," says

Paul Bausch, a Web developer and author of *Yahoo! Hacks* and co-author of *Google Hacks* (both from O'Reilly Media).

Bausch developed a keen appreciation for Yahoo's commitment to its Web APIs when Google curtailed support for the search API it had been offering based on SOAP (Simple Object Access Protocol) at the end of 2006. Although it didn't cut off access to existing users, Google stopped issuing application key codes that would let people build new applications on the service. The alternative Google promoted was more of a user interface widget than a Web service. That came as a shock to Bausch, who had built most of his Google Hacks examples around the SOAP API. "I guess they viewed it as sort of an experiment," he says.

Yahoo also wins points for building most of its Web services around REST (Representational State Transfer) as opposed to SOAP, Bausch says. Yahoo does have SOAP-based APIs for Yahoo Mail and its search marketing service. But by making those the exception to the rule, Yahoo appeals to Web developers who consider REST a simpler way of invoking remote services. The very features that make SOAP more sophisticated (and the favorite in enterprise environments) also make it complicated—every invocation of a remote service must be formatted in Extensible Markup Language (XML), with the actual message for the remote computer wrapped in an XML-based envelope, and the reply



**"I REFUSE TO BELIEVE THAT THE WAY WE WILL INTERACT WITH THE WORLD'S KNOWLEDGE IS TO TYPE 2.8 KEYWORDS INTO A SEARCH BOX AND LOOK AT THE TOP 10 RESULTS OUT OF 600,000, ON AVERAGE."** —Usama Fayyad

must be formatted similarly.

With REST, the invocation can be as simple as using the Web's GET command, much like a user retrieving `www.somesite.com?query=myquery` and getting back an answer in relatively simple XML. Some Yahoo services also support alternative encoding schemes, such as the JavaScript Object Notation (JSON), which saves JavaScript programmers the trouble of parsing results returned in XML.

So while Google continues to generate

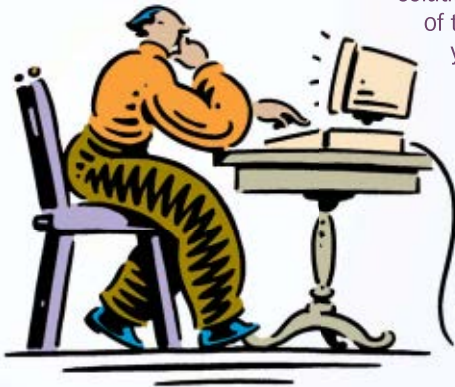
a peek under the hood because the YUI is what we use on the home page of Yahoo.com," says Chad Dickerson, head of the Yahoo Developer Network.

The YUI represents years of work on delivery of everything from consistently formatted Web pages to more elaborate techniques such as animation. Inconsistencies among browsers in implementation of JavaScript, Cascading Style Sheets, and even different versions of the same browser, have always been a challenge for Web developers, and the YUI is only one of many solutions. But the existence of the YUI means if

you see a nifty user interface effect on a Yahoo Web site, you may be able to plug it into your own site easily. The interactive calendar widget on Southwest Airlines' site, for example, comes from the YUI.

Nik Kalyani, cofounder of open source software startup DotNetNuke, says he has worked with both the YUI and Yahoo's search APIs and has been generally impressed. He appreciates the depth of the documentation behind the YUI and that its license allows for unrestricted commercial use. In particular, he appreciates the base components designed to level the playing field between browsers for uniform formatting and script processing. As for Yahoo's Web services, he particularly appreciates the API for contextual analysis. "It is really useful to extract tags from blocks of text and the results are, it

Continued on page 34



excitement around the API to its mapping services, Yahoo provides the best Web services for many other functions, Bausch says. These include Yahoo's term extraction service, which identifies the most relevant keywords in any block of text, and its geocoding service, which returns map coordinates for addresses.

In addition to these back-end services, Yahoo shares what it has learned about front-end Web development in its Yahoo User Interface toolkit, a set of components developers can download and embed in their own Web applications. "For developers, it's kind of an easy way to get

firm Harris Direct were 60 percent more likely to search related to the ad's market category, 140 percent more likely to click through to its Web site from the search results, and 250 percent more likely to click on a "sponsored link" search ad for the company. The bottom line was a 91 percent better return on investment based on the business generated for the online brokerage.

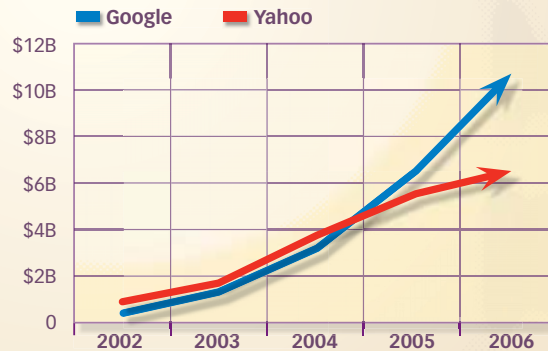
"With search today, you get one shot and it's over," Fayyad says. "Well, if you're in a place like Yahoo, it's not over."

SmartAds, the behaviorally targeted display ad format Yahoo announced in July, exemplifies this approach. By creating what it calls a "creative assembly platform," Yahoo lets advertisers design ads around interchangeable content modules—graphics, text blocks and real-time data feeds—so they can be delivered in thousands of variations. Initially, this capability is being targeted at the travel, auto and retail markets. In travel, for instance, it means the ability to display current deals for flights between two cities not just during flight search and not just on Yahoo Travel but for days afterward, anywhere on yahoo.com.

"It's actually very interesting," says Martin Laetsch, ▶

## Falling Behind in Revenue

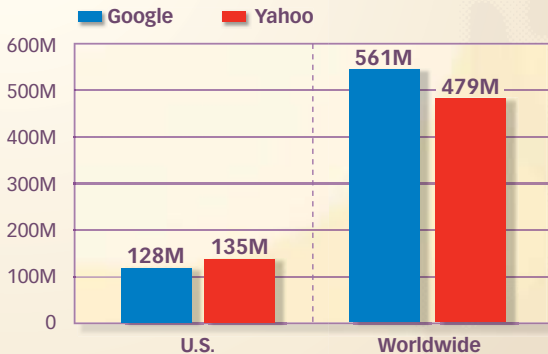
Google was bringing in nearly as much revenue as Yahoo as far back as 2002, and has since shot past.



Source: ComScore

## No Longer Largest

Yahoo still has an edge in the U.S., but Google gets more unique visitors globally.



Source: ComScore, August 2007



Continued from page 33 seems magically, accurate," Kalyani says.

"We have this Internet infrastructure we've spent a decade developing, and by opening it up we're making sure the world knows it's here and available for the world to build on," Horowitz says. The free services and software are particularly attractive for startups trying to conserve capital, and sooner or later Yahoo will wind up buying some of those companies partly because of the technological ties it has forged with them, he says.

Benefits are also accruing to product teams such as the one behind Yahoo Real Estate, which has been seeing positive results from a recent series of Web site upgrades. "We're at the beginning of a mashup

site has risen from 15th to second (behind Realtor.com) in ComScore's traffic rankings, with much of that improvement coming from new features that incorporate multiple internal and external Web services. A popular add-on in a home-valuation tool that presents estimates from three partner sites and pulls in relevant commentary from Yahoo Answers.

Yahoo has a regular "refresh" schedule for its Web sites, but the Real Estate site, created in 1998, had been essentially unchanged since 2004, according to Yang. Since overhauling that site last year, Yahoo has committed to release further improvements every three to six months.

Yahoo uses essentially the same Web services approach to internal application integration that it applies to its public APIs, but internal developers also have access to other, private APIs and to enhanced versions of the public APIs, according to Steve Schultz, director of products for the Real Estate group. Similarly, the YUI serves both internal

and external audiences, giving developers a base set of user interface components, with well-documented guidelines for effective use.

"Just having that core library of knowledge and then skinning it down to best practices and templates really saves you on time to market," Yang says.

—D.F.C. ◀

The Color Picker, part of the YUI library, was developed for use at Yahoo and is now available to outside developers.

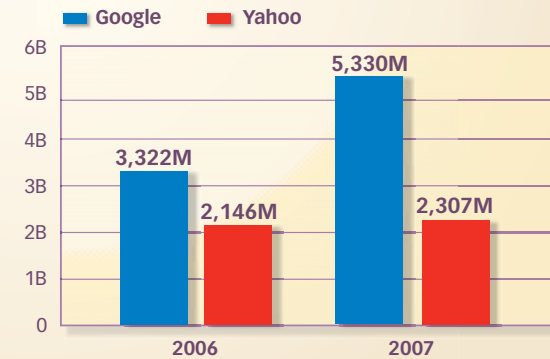
product strategy where we're leveraging a lot of internal capabilities, as well as Web services that have become available in the real estate sector that help us work with all our newfound partners," general manager Michael Yang (no relation to CEO Jerry Yang).

Over the past year, the



## Core Search on Owned Domains

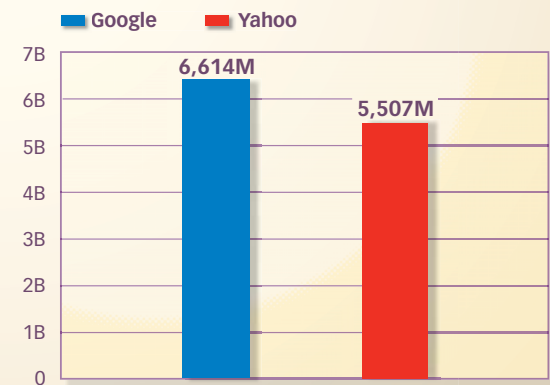
Google has been building its dominance in search queries since July 2006.



Source: ComScore

## Total Search Networks

Google's lead in search queries includes dominance on partner, local and specialty sites.



Source: ComScore

senior director of search strategy at SEMDirector, a marketing automation firm that helps advertisers design campaigns and place ads. Creating these customizable display ads may be too complicated for some advertisers, particularly the smaller ones who like the simplicity of the text-based ads typically used for search marketing, he says. "But the more sophisticated advertisers will have an appetite for it if the ROI is there—and the people in the pilot programs say it's there."

Another important step Yahoo took recently—one Laetsch believes was long overdue—was to integrate the search and display ad sales teams. "It's been very difficult to purchase with them if you wanted to do an integrated media plan for both display and search," Laetsch says.

Yahoo must move quickly if it wants to capitalize on the synergy between display and search advertising, Laetsch adds, given Google's pending purchase of display advertising giant DoubleClick. (The \$3.1 billion deal was announced in April, but as this issue went to press it ▶





\_INFRASTRUCTURE LOG

\_DAY 69: All we need is one specific piece of info. Gil almost had it, but his hand cramped. How are we supposed to find trusted business information when these massive volumes of conflicting info keep pouring in?

\_Gil just grabbed a stuffed panda.

\_DAY 71: The answer: IBM solutions for leveraging information. Now we can cleanse info and standardize source data fields for consistency and accuracy. I can create a single, accurate and unified record of info across our source systems. Everyone can make better decisions.

\_Just in time—I think we ran out of quarters.



**Information Management**

Download the Innovation and Competitive Advantage white paper:  
[IBM.COM/TAKEBACKCONTROL/ACCURATE](http://IBM.COM/TAKEBACKCONTROL/ACCURATE)

# PLAYER

## ROSTER



**JERRY YANG**  
CEO and Chief Yahoo

Yang cofounded Yahoo, which he created with David Filo in 1994 while both were electrical engineering PhD candidates at Stanford University. He has been a guiding force behind the company's growth since it incorporated in 1995, but only became CEO this summer.



**TERRY S. SEMEL**  
Chairman

Semel became chairman and CEO in 2001, replacing original CEO Tim Koogle. He ceded

the CEO role to Yang this summer under heavy criticism over Yahoo's missteps, particularly in search marketing. But Semel is also the leader who helped right the ship when Yahoo was suffering in the wake of the dot-com bust. Previously, he spent 24 years at Warner Bros., where he rose to chairman and co-CEO.



**DAVID FILO**  
Cofounder and Chief Yahoo

Yahoo's cofounder remains intensely interested in the company's technical

choices, often involving himself in hardware and networking decisions. But he shuns the limelight and seems not to covet any title more specific than Chief Yahoo.



**SUSAN DECKER**  
President

Decker has been the driving force behind Yahoo's recent reorganizations, which were intended partly

to unify Yahoo's display and search advertising sales forces. Hired as CFO in 2000, she took charge of Yahoo's advertiser and publisher divisions in December 2006 and was bumped up to president in June. Previously, she was global director of equity research at Donaldson, Lufkin & Jenrette, where she worked for 14 years.

**ASH PATEL**  
Executive Vice President, Platforms and Infrastructure Division

Since starting at Yahoo in 1996, Patel has played a key role in architecting

and enhancing MyYahoo, Yahoo Finance, Yahoo Messenger, Yahoo Chat and many other products. He is responsible for Yahoo's global technology investments and platform initiatives, overseeing divisions including Product Platform Engineering, Platform Strategy & Architecture and Advanced Development.

**USAMA FAYYAD**  
Chief Data Officer and Executive Vice President, Research & Strategic Data Solutions

Fayyad guides Yahoo's overall data strategy, including privacy policy, prioritizing data investments and managing the company's analytics and data processing infrastructure. A PhD with degrees in both computer engineering and electrical engineering as well as computer science and mathematics, Fayyad previously put his data mining expertise to work for Microsoft Research, NASA's Jet Propulsion Laboratory and two startups of his own. He joined Yahoo in late 2004 and in 2005 championed the creation of the Yahoo Research organization charged with developing "the new sciences of the Internet."

**BRADLEY HOROWITZ**  
Vice President, Yahoo Product Strategy Group

Horowitz has become a prominent promoter of innovation within Yahoo, which he joined in 2004. As an entrepreneur coming out of the MIT Media Lab, he founded Virage, maker of a multimedia search engine, and served as an executive of Autonomy after it purchased Virage. He has championed key Yahoo acquisitions such as Flickr and promoted programs to encourage innovation, including Brickhouse, the company's internal new-product incubator, and the opening of the Yahoo platform to outside developers.

was still being held up by U.S., European Union and Australian regulators.)

Yahoo also needs to hold onto its audience, which by ComScore's count dipped to 479 million unique visitors in August, compared with 482 million a year earlier.

What's more, time spent on some Yahoo sites is sliding. In September, JPM Securities analyst William S. Morrison warned that, according to ComScore's "minutes invested per user" metric, Yahoo Games had suffered a 47 percent drop, Yahoo Sports had lost 11 percent, Yahoo Mail nine percent and Yahoo News six percent. There were some big gains, too—time spent on Yahoo Answers rose 322 percent, Flickr was up 198 percent and Yahoo Messenger increased 36 percent—but while these are all important parts of Yahoo's social networking strategy, they're not as important to Yahoo's ad revenues as the areas on a downslide.

And, ultimately, even if Yahoo can get its audience numbers up, what matters most to its income statement is how well the company can convert that traffic into ad dollars.

If the answer continues to revolve around keyword search, that's bad news for Yahoo, which got just more than 23 percent of the total U.S. search traffic measured by ComScore's survey in August, compared with 56.5 percent for Google. "What we've been seeing is a slow but steady share increase for Google at the expense of everybody else in the industry including Yahoo," says ComScore analyst James Lamberti.

Google has established itself as the premier brand for keyword search, while people go to Yahoo for other reasons and sometimes use its search engine while they're at it, Lamberti says. Yahoo is seen as "an older brand, easy to use" but not necessarily appealing to younger consumers.

Yahoo still has a chance to redefine what it means to be an Internet media company, but first it has to learn to get out of its own way, according to John Zapolski, who quit as a director in Yahoo's user experience group in 2004 to found the Management Innovation Group consultancy. "In general, I think Yahoo's still caught between different business models and conceptions of what it should be as a business," says Zapolski. "And it's unclear to people inside the company what Yahoo should be." Yahoo has "not all that consciously" put itself in a position to become "a hybrid between a social media company and an old-world media play," but it also must follow a "shrink-to-grow" strategy that would mean cutting headcount and eliminating duplication.

If it can do all that, Yahoo has a chance to raise its value to advertisers through products like SmartAds that take advantage of the company's intelligence about its members. "There's definitely potential," Zapolski says, "but the window is closing more quickly every day now that it's up against Facebook and others who are also building strong user profiles." ◀



[A Brief History of Yahoo]

# ONE STEP FORWARD, TWO STEPS BACK

**BORN IN 1994 AS "JERRY'S GUIDE TO THE** World Wide Web," Yahoo started life as a Web directory created by Jerry Yang and David Filo while both were in the electrical engineering PhD program at Stanford University. Yang came up with the concept and Filo made the technology work. Yahoo incorporated in 1995 and went public in 1996, a year after Netscape, the original dot-com darling.

Originally, Yahoo was a hierarchical directory assembled manually by a team of editors; to search on Yahoo was to search that directory rather than the Web itself. For algorithmic search, whereby software analyzes a Web sampling and determines the content most relevant to a given query, Yahoo partnered with others, starting with AltaVista in 1996. ▶



In 1998, Stanford students Sergey Brin and Larry Page asked Filo to consider buying or leasing their Google search engine for use on Yahoo. Filo said their technology was “solid,” according to Google’s corporate history, but encouraged them to grow the service by starting their own search engine company and show it to him again when it was fully developed and scalable.

In June 2000, Google scored one of its first coups, a deal to provide the search results on the Yahoo site. Just a couple of months later, Google announced the keyword-driven ad program that powered its subsequent growth.

But Yahoo was slow to react, which proved a costly mistake: Advertisers soon realized they could get higher click-through and conversion rates with search advertising than with display ads. And at pennies per click, search marketing was more cost-effective.

Google used other approaches to get ahead, too, including grid computing to drive down the costs of massive processing and storage required to index the Web. Google spends five to eight times less per user on storage than Yahoo, which uses more mainstream enterprise storage from vendors such as Network Appliance, according to storage consultant Robin Harris. Cutting storage and processing costs is critical to Yahoo’s profitability: “If they can get their infrastructure cost into the ballpark with Google, they still have a very strong base to work from,” Harris says.

However, Yahoo chief data officer Usama Fayyad says outsiders don’t give the company enough credit for cost control, saying, for instance, its deal with Network Appliance is so favorable “it doesn’t make sense to use anything else” for many apps.

Yahoo is also promoting the open source Hadoop project, a clone of Google’s distributed computing technologies. (For more on Hadoop, see [go.baselinemag.com/badoop](http://go.baselinemag.com/badoop).)

## PORTAL VS ANTI-PORTAL

By most accounts, though, Yahoo’s bigger mistake was not recognizing the revenue potential of search.

While Yahoo was busy building a comprehensive Web portal, Internet users who just wanted to search learned to bypass Yahoo’s clutter for Google’s minimalist home page, which started

# YAHOO!

## TIMELINE

1994

Yahoo Web directory created by Jerry Yang and David Filo, two Stanford University PhD candidates, working on it in their spare time.

1996

Yahoo initial public offering. Stock rises 270 percent to \$33 on first day of trading. Yahoo outsources keyword search to AltaVista.

1998

Yahoo acquires Internet direct marketer Yovodyne Entertainment.

2000

Yahoo shares hit an all-time high of \$475 (adjusting for stock splits, about four times the stock’s current level). Yahoo outsources keyword search to Google.

2002

At year-end, Yahoo announces acquisition of Inktomi search engine.

2004

Google goes public, revealing just how lucrative search advertising can be. Yahoo replaces Google search with its own search engine, forms Yahoo Research arm to develop new technologies.

2006

Yahoo says Project Panama, a new search advertising platform, will be delivered in Q3—and incurs Wall Street’s wrath when it delays launch until Q4. Yahoo reorganizes into three major operating groups: Advertiser & Publisher, Audience and Technology.

1995

Yahoo Inc. formed with Tim Koogle as CEO and the cofounders in more informal leadership roles—Yang the company evangelist and Filo the hardcore techie.

1997

Yahoo acquires Webmail provider Four11 and launches Yahoo Mail.

1999

Yahoo acquires GeoCities and Broadcast.com.

2001

The dot-com bubble bursts, sending Yahoo shares to an all-time low of \$8.11. Terry Semel takes over as Yahoo CEO and begins the process of rebuilding the company and forging new relationships with advertisers.

2003

Yahoo acquires Overture, which pioneered the paid search marketing model from which Google now profits.

2005

Yahoo celebrates 10-year anniversary. Acquires Flickr (photo sharing). Upcoming (social event calendar), Del.icio.us (bookmark sharing) and MusicMatch (music sharing).

2007

Terry Semel resigns as CEO and is replaced by cofounder Jerry Yang. Former CFO Sue Decker, who had been running the Advertiser & Publisher group, is named president.

as only a keyword entry blank, search button and logo.

It wasn’t until 2004, as Google prepared to go public, that Yahoo launched its own search engine. The technology came from a string of acquisitions, including Inktomi and Overture, which had acquired AltaVista.

Even after its 2003 purchase of Overture, which had essentially invented the search advertising model Google was then perfecting, Yahoo failed to aggressively exploit or improve its search marketing technology until fourth-quarter 2006. That’s when it finally delivered its long-awaited Project Panama, the system advertisers use to target ads against a set of keywords and organize them into campaigns, bidding for top placement in an auction-based marketplace similar to Google’s AdWords.

## PANAMA PROBLEMS

The same year Filo met with Google’s cofounders, 1998, also saw the rise of GoTo.com, later renamed Overture Services. GoTo.com’s twist on search was that it accepted paid listings, encouraging advertisers to outbid each other to capture the top spot.

As academics, Brin and Page had worried that advertising would corrupt the objectivity of search results. But under pressure to make money, Google’s leaders decided to accept keyword-driven ads provided they were separate and distinct from objective search results. Google also tweaked the advertising model, making the most clicked-on ads float to the top of the listings.

Yahoo countered by buying Overture (eventually renamed Yahoo Search Marketing). But then what happened? The search marketing business continued to grow and bolster Yahoo’s bottom line, but efforts to improve it and better integrate it with the rest of Yahoo were left in limbo, according to former employees.

“The Overture leadership had recognized, even well before the Yahoo purchase, that there was a need to rebuild the platform,” says Ken Rudman, who was senior product manager for the Panama Project’s Web services interfaces.

One reason the overhaul didn’t happen quickly is that Yahoo wanted to make basic changes to Overture’s technology first to be sure it would scale. But with Overture operating as a separate business unit in the Los Angeles suburbs, its ▶



\_INFRASTRUCTURE LOG

\_DAY 62: Everyone's completely overwhelmed by their desktops. People keep flipping between browser windows. The in-boxes are overflowing. So many applications. All the user interfaces are different. How is anyone supposed to collaborate when they're flooded with all this stuff? This is so frustrating. We need to get our heads above water.

\_Gil has grown gills just so he can stay on e-mail longer. Help.



# LEARNING TO LOVE JAVASCRIPT

## RASMUS LERDORF INVENTED ONE

of the primary Web programming languages used at Yahoo, but for a long time he tried to fend off another.

Lerdorf was the original programmer behind PHP, one of the most popular Web scripting languages, the one Yahoo uses on its Web servers to assemble pages and handle user input. But the language Lerdorf was slow to warm up to doesn't run on the server side at all: It's JavaScript.

"Coming from a back-end perspective, I've always hated JavaScript," Lerdorf says. Development is simpler when all the programming code runs on the server, where the database and other back-end resources also live.

But Lerdorf has had to get over his prejudice because "you just can't avoid getting into the front end if you want to build a modern Web application," he says. The challenge: "It means that half your application runs in one environment and half runs in another."

## How PHP Became A Yahoo Staple

Lerdorf, who is also a core development team member for the Apache Web server, joined Yahoo in 2002 as an infrastructure architecture engineer and helped it standardize on PHP in place of a hodgepodge of Web scripting languages. His experience applying PHP to Yahoo's extreme scale of operations and defending it against hackers also influenced the development of features such as filtering untrusted input in the current release, PHP 5.

While many open source developers contribute to PHP, it started in 1994 as Lerdorf's "personal home page" (hence "PHP") toolkit. Like many other Web programming languages, PHP lets snippets of programming code embedded in a Web page run on a server and perform actions such as database lookups.

At this summer's Oscon open source conference, Lerdorf gave a presentation with Thomas Sha, director of the team that created the Yahoo User Interface (YUI) libraries, derived from Yahoo's work establishing standards for its own JavaScript and Cascading Style Sheets (CSS) code and published as open source.

Although the JavaScript and CSS

code associated with a Web page are normally published in plain text that's easy to copy, the YUI comes with the benefit of explicit permission, documentation and usage examples.

## From JavaScript to AJAX

Despite the "Java" in its name, JavaScript is a distinct language introduced at the end of 1995 as a feature of Netscape Navigator and later duplicated in Internet Explorer and other browsers. Where the PHP code embedded in an HTML page runs on the server, JavaScript code is loaded in the user's browser and runs there.

This lets a Web application interact with the user instantaneously—for



**"YOU JUST CAN'T AVOID GETTING INTO THE FRONT END IF YOU WANT TO BUILD A MODERN WEB APPLICATION."** —Rasmus Lerdorf

example, to pop up an alert about missing information before the user submits a form.

The disadvantage early on was different implementations on different browsers—not only of JavaScript but of the programming objects browsers used to represent elements of a Web page such as paragraphs, headings, images and form fields. Programmers trying to achieve more ambitious "dynamic HTML" effects such as animation had to write different routines for, say, Netscape and Internet Explorer.

Many of those issues were resolved by development of standards for JavaScript and the Document Object Model with which JavaScript works to identify elements on a page.

And then along came AJAX, the set of techniques that let a Web page continually fetch updated information from the Web server without loading a new page. Based on techniques pioneered by Microsoft, AJAX lets JavaScript carry on a behind-the-scenes conversation with the server.

The new Yahoo Mail, for example, uses AJAX to load e-mail messages into a viewing area at the bottom of the screen rather than having each mes-

sage displayed as a separate Web page.

"Once you see something like this, you just can't fight it," Lerdorf says.

And yet building a sophisticated application from JavaScript alone "is really not for the faint of heart," Sha says. "You have to take into account a lot of factors you cannot control."

## Standards ... Sort of

The development of standards has helped, but JavaScript programs and even more basic elements of Web development such as CSS formatting commands are still implemented a bit differently on every release of every browser. The YUI code libraries attempt to compensate for these differences while enabling more advanced effects such as animation and drag-and-drop.

In contrast with the AJAX code in

Microsoft's developer tools or the open source world's Ruby on Rails, the YUI is not part of a broad Web development framework. Lerdorf discouraged the YUI team from trying to create a framework because he is generally suspicious of cure-all solutions to software development problems. "Sure, you should have a framework," he says, "but in most cases you should write it yourself."

The YUI's piecemeal approach appeals to engineers who want what they want and no more, Sha says. Developers should be judicious about picking libraries and recognize their limits, he adds: "If you're working with the animation library, go for simple effects. Don't try to create a movie."

Along with new possibilities, AJAX brings hazards that are "just destroying the Web," Lerdorf says. "Once you move half the application to the front end, the back end gets very simple," he says, but it takes away control because that front-end code is released onto the Internet, where hackers can get at it.

Defending against attacks isn't easy, particularly for startups, Lerdorf says. "When the news hits that they're about to be bought by Yahoo or Google, the hackers descend in droves." —D.F.C. ◀





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projects didn't get the same priority as the Sunnyvale-based parent company's, Rudman says.

The original plan was to keep Overture separate so it could continue serving other sites that outsourced their search marketing (which at the time included Microsoft's MSN) as well as Yahoo. "So it was deliberate, but I think it was a mistake," says product strategy vp Bradley Horowitz.

Planning for the Panama Project started in late 2005, building on the ashes of two previous efforts to overhaul the search marketing, and most development was completed during a well publicized push in 2006. "Yet much of what we wound up doing was very similar to what we originally thought we needed to do," Rudman says. The functional requirements changed very little, although Yahoo helped Overture operate on a larger scale, he says.

Christopher Rhude, another project manager who worked on Panama, says when he joined Overture in September 2004, almost a year after the acquisition, "there still wasn't a lot of knowledge of how we were going to move forward, overall, as part of Yahoo. Yahoo thought they had bought a cash register, but it was grossly more complex than a lot of the systems they managed, despite the scale being similar."

Where the goal should have been to integrate Overture's assets into Yahoo, "there was a certain us-vs.-them mentality and dismissive politics on both sides," Rhude says.

To be fair, the Sunnyvale engineers had reason to doubt Overture's ability to execute, Rhude adds. Earlier, stalled efforts to overhaul the search marketing platform had been organized around three-month internal software release cycles. "That led to a break/fix cycle that was very oppressive," he says, because by the time quality assurance saw the code, so many changes had been made, it was hard to track bugs.

With Panama, the search marketing developers shifted to shorter, incremental software, which kept the project moving faster, with less time on "triage," Rhude says.

A former Panama quality assurance team member, who asked that his name be withheld, says the project hewed too far toward a sequential "waterfall" software methodology as opposed to the more agile, incremental development style practiced elsewhere at Yahoo. Worse, scheduling was driven by top management's pronouncements to Wall Street rather than a realistic assessment of the project, he says.

When the schedule slipped by just a few weeks and Yahoo failed to deliver Panama in Q3 2006 as promised, the intense stock market reaction made management redouble the pressure to ram the project through to completion.

In the end, these expats say, they were proud of the quality of the system they created, but they weren't motivated to stick around and make ongoing improvements.

Panama was largely a game of catch-up with Google features, but it also included "a lot of innovation under the hood," Rudman says. "If they've done their work right, over the next year it will become apparent."

The application programming interfaces (APIs) Rudman's team worked on, for example, let advertisers place bulk orders (as opposed to entering ads one at a time into a Web-based user interface). Instead of imitating Google's APIs, the Panama team aimed to make theirs more flexible, he says. "The idea was to organize it in a different way, one that wasn't dictatorial about how to use the system."

"It's really clean and well thought out," says Alan Rimm-Kaufman, president of the Rimm-Kaufman Group, a search marketing firm that runs its own systems that connect with the Yahoo and Google search marketing APIs. During development, Panama engineers were receptive to suggestions that made the product better, he says.

Yet Rimm-Kaufman still thinks Yahoo is about a year behind Google in search marketing sophistication. And when he sees the results Yahoo can deliver to his clients, "neither the quantity nor the quality of the traffic is there," he says. Yahoo shouldn't give up, he says, but he is concerned about whether the company can attract and retain the people needed to continue to improve the system.

Departing employees from across Yahoo say they're frustrated by its bureaucracy and bewildered by its reorganizations, according to an external recruiter who works with the company. Making recruiting and retention tougher, Yahoo can't offer the stock options and other perks Silicon Valley workers have come to expect in return for their long work hours, the recruiter says.

Rudman says it wasn't hard to decide to leave after the Panama system went live: "Most of what I had to deliver was finished in September [2006], and I left in April. I wound up feeling a little distant. A lot of people I respected were fleeing the ship."

Besides not seeing an immediate payoff in the value of their stock options, they felt let down professionally, he says. "I think after something that big, you need to be ready to tell people, 'Don't wander off, don't lose focus, here's the next challenge we have for you.' I did not feel my team was acknowledged, rewarded—like Yahoo cared about us."

Yahoo's Horowitz says the company recognizes attracting and retaining talent as a major challenge and is working harder to act cohesively, better integrate acquisitions and clear away bureaucracy that interferes with innovation.

"Those people who have left wouldn't have seen what I'm seeing," Horowitz says, because it's just happened since Yang took over as CEO. "It's amazing, the transformation that is happening. It's almost if I'm watching Jerry and David refound Yahoo before my eyes."

As for the former employees who lost faith in the company, it's probably better they "make room for others who see the potential," he says. ◀

**"PANAMA INCLUDED A LOT OF INNOVATION UNDER THE HOOD. IF THEY'VE DONE THEIR WORK RIGHT, OVER THE NEXT YEAR IT WILL BECOME APPARENT."**

—Ken Rudman



See "Can Yang Turn Things Around?" on the next page and view our slideshow at [baselinemag.com](http://baselinemag.com). Send comments on this article to [editors@baselinemag.com](mailto:editors@baselinemag.com).



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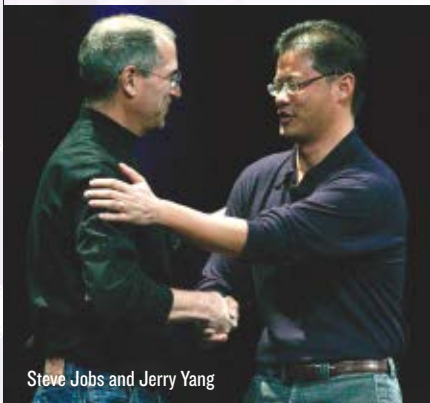


# CAN YANG TURN THINGS AROUND?

**DOES YAHOO CEO JERRY YANG HAVE** what it takes to revive the company's fortunes?

Yang and David Filo created Yahoo while they were grad students at Stanford, but when they formed a company in 2005, they ceded top management duties to others, starting with Yahoo's first CEO Tim Koogle. Yang was always part of the management team, and often served as its public face, but until now he and Filo have shared the cheerfully vague title of Chief Yahoo.

That's one reason many skeptics, including former employees, doubt Yang can serve as Yahoo's equivalent to Apple's Steve Jobs—instead of returning to take the reins of the com-



Steve Jobs and Jerry Yang

pany he started, as Jobs did at Apple, Yang is taking leadership of the company for the first time.

The comparison strikes home for Chris Tung, a former Yahoo interaction designer who now works for Apple. "In terms of innovation, you're always going to take a risk," he says, but at Yahoo things tended to get bogged down in "analysis paralysis"—fiddling with usability tests and metrics gathering to postpone decision making.

"You cannot have innovation by consensus," Tung says. "You need someone who has the clarity of vision, the confidence, sometimes just the utmost brashness to push it through." From a distance, at least, Yang never displayed those qualities, he says. "I never saw him, or anyone else there, have that clarity of vision, that ability to push things through."

Ken Rudman, a former Yahoo

product manager, expresses more faith in Yang, calling him "extremely competent" and suggesting he has learned the ropes by working closely with Yahoo's previous CEOs. "I do think he could be successful," Rudman says. "Is he what Wall Street is looking for? I don't know."

Other former rank-and-file employees who spoke with *Baseline*, on and off the record, have at best lukewarm impressions of Yang's leadership skills, though some hold out more hope for Susan Decker, Yahoo's new president.

One former executive who believes Yang is the right choice is Tim Sanders. Sanders, who became part of Yahoo when the company acquired Broadcast.com, established himself as a closer of big deals as chief solutions officer, and still serves as DJ at the company holiday party. (After the publication of his book *Love Is the Killer App*, Sanders left in 2005 for a career as an inspirational speaker, writer and management consultant.)

Yang "has been groomed for years to do this, since the moment Yahoo began," Sanders says. "He's been part of every important meeting, every acquisition, every product release. He's a punch-you-in-the-arm, tell-you-that-you're-wrong kind of guy, but he also makes you feel good about your contributions. And he has such a passion for the Yahoo brand."

Although Sanders thinks Yahoo has made its share of mistakes, he says its current problems are "less about the things Yahoo did wrong than some breathtaking things Google did right. When the history of Yahoo is written, we're going to look back at this as a period of time, unfortunately longer than one would have hoped, of readjustment and realignment, and having a fierce competitor."

If the challenge is for Yang to channel Steve Jobs, Sanders says one way to do it would be to use the negativity about Yahoo as a motivator

and challenge employees to prove the skeptics wrong. "I would show them all the negative press about Apple from 15 years ago," says Sanders, recalling a time when shrinking marketshare for the Macintosh seemed to spell doom for that company. "But they stuck to their guns, they found the iPod, and the world has changed."

In much the same way, Sanders says, "I think the public statements of arrogance from Google could be used as great motivators" to help Yahoo find its own next breakthrough product.

One sign Yang is thinking along the same lines: He invited Jobs to an October meeting of Yahoo—as a motivational speaker. —D.F.C. ◀



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# Security Q&A

## No Such Thing as Security "Best Practices"

**Linda Stutsman is managing director** of the International Information Integrity Institute. I-4, as it's known, was founded in 1986 by SRI International (formerly Stanford Research Institute) to promote the sharing of security-related information and help companies address critical security issues. Operated by IT services company Getronics, I-4 works with its global members to explore security issues and identify cost-effective solutions to security threats.

Before joining I-4 in June, Stutsman was senior vice president of corporate information security at Bank of America, and previously served as chief information security officer at Xerox. She spoke recently with contributing editor Bob Violino about her experience in corporate IT security, her role with the I-4 consortium and why she doesn't believe in best practices.



Linda Stutsman

### Baseline: What do you see as the biggest threat to corporate information and computing centers today?

The biggest threat is the same threat we've always had: It's not unauthorized access to information—it's abuses of authorized access to information. It's not a new threat, but there are new ways of abusing that same access. I've been in this business for a very long time, and 25 years ago we didn't have to worry about employees taking pictures of customer information with their cell phones. We didn't have to worry about employees with USB drives on their key chains. There are new ways of thinking about old threats. It's not just employees. This can be by employees, customers, business partners or outsourcing partners who have authorized access.

### What can be done about abuses of authorized access? What are the best technology and policy solutions?

Some companies are dealing with data leakage by more carefully limiting the scope of authorized users on the policy implementation side, and on the technology and process side by restricting methods of access, via thin client, and by piloting digital rights management for controlling usage—scaling continues to be an issue. There's more extensive access monitoring, where legal or forensics have helped define patterns of access to information, for example. It's a combination of people, process and technology solutions.

### What about information security threats from the outside? What are organizations concerned about most right now?

There's a growing awareness of application-level vulnerabilities

of Internet-facing applications. Companies are investing in technologies and processes to help applications people understand and correct the problems in a timely manner.

### On a broader scale, what are some of the key risk-management issues facing organizations today?

I-4 is involved in risk-management issues across the board. Because of the nature of the wide breadth of industries in I-4, it's the regulatory environment that is one of the biggest issues. The landscape of regulatory requirements is an immense challenge. It's just very tough for businesses to keep up with the changing requirements. You have the federal level—Sarbanes-Oxley is an example—and then multiple state-level privacy laws and regulations. Then add in the industry regulations such as HIPAA [Health Insurance Portability and Accountability Act], and the global regulations such as the European Union Data Directive and Basel [recommendations on banking laws and regulations issued by the Basel Committee on Banking Supervision, an institution created by the central bank governors of the G-10 countries].

### Exactly what kind of security information sharing and problem solving does I-4 handle?

We share case studies about experiences; I'm not going to say best practices because I believe there are no best practices. We share information about real life, practical security solutions. We share war stories. We have select vendors come in and talk about their strategies. We don't talk so much about products, but about thought leadership and strategic visions. We also have [representatives from] universities come in and talk about research, where they think security is going. We talk about things that are happening today rather than



focusing on older threats and technologies. For example, we saw phishing as it was happening because we had a member comment that his company was dealing with it, almost in real time. We discussed solutions to phishing way before the public first saw it.

### How detailed are the discussions about specific security incidents?

Because we're a confidential group we can get down to a detailed level—we're truly sharing useful information. Typically when it's a public group you don't get down to a detailed level of discussion because you don't know who you're sharing with. [In I-4] you're getting data you can take back to your office and adjust to your own needs. You're networking with other colleagues, and when you run across problems you can call someone to help solve the problem.

### Are there other examples, besides phishing, of security threats that I-4 members discussed before they were generally known?

I-4's history has many examples of topics introduced early in their maturity cycle. I've spoken with some of the I-4 founders and they actually talked about data protection in 1988, how to safely connect a company to the Internet, how the Web would change the world, about the disappearing perimeter in 1997, quantum computing and crypto in 2002 and managing offshoring in 2003.

### You mentioned a moment ago that there are no best practices in security. Can you explain what you mean?

I don't believe in best practices. "Best" is contextual. What is a best practice for one organization may not be a best practice for another. In one industry it might be a best practice but for another type of company it might not work or it might be overkill. Members consider what their colleague organizations have done that's new or different compared to what their own approach to related situations has been and apply the thinking within their business risk tolerances. I believe each company has to take the best of each solution and customize it. There may a best practice within an industry but it's tough to go across industries.

### How do you plan to change I-4's focus, and what are your ultimate goals for the organization?

It's really way too early for me to say right now. I'm in discovery mode; I'm talking with members and working with the member advisory committee. I'm listening, I'm asking questions. Any changes we make will be thoughtful, and they will be member-influenced changes. I-4 has not only survived for 21 years, but has thrived for 21 years. There's a lot that's right with I-4, so any change will be very slow, purposeful, strategic

change. But again, it's way too early right now to tell what that change will be.

### Do you think your previous experience at Bank of America and Xerox will help or hurt you manage a corporate security consortium?

It will absolutely help. My experience with information security in general will help. I think the fact that I've been a member of I-4 will also help. I'm aware of what I-4 is all about, and I think the fact that I've been participating in I-4 for almost eight years will have an impact. I've seen it evolve over those eight years and I've seen the information security field evolve over the last 25 years. Also, coming from two different industries, manufacturing and financial services, gives me some good perspective.

### How has the information security field evolved over the years? What have been the biggest changes since you began working in the field?

The most important changes have been, on the technical side, the immense growth of "connect- edness" in all aspects of business processes and work life, and on the management side, the recognition that information security organizations and people work best when serving the business. The security people are helping businesspeople understand the risks and security implications of their plans and activities, and are helping to secure those business processes within the risk environment.

### During your tenure at Bank of America and/or Xerox, did either organization experience a security breach? What

### happened, and how did you or the organization respond?

Every organization at some time experiences some type of security breach. But I can't really comment in detail on that. I wasn't part of the investigative teams at either of those companies. I can say that at Xerox it was more around early response to viruses and being able to contain them and shut things down while we did cleaning and prevented damage to our systems—the emergency response team had to deal with things like the Melissa virus.

### Any advice about security for CIOs and CSOs?

I'd say treat information security as a business problem, not a technology problem. It's a business problem because information is a business enabler. My entire career has been spent [looking at information security] that way. We are in the business of business, not in the business of information security. If information security is implemented correctly, you should be there to help support the business goals. Information security should never be an end unto itself. ◀

“The biggest threat is the same threat we've always had: It's not unauthorized access to information—it's abuses of authorized access to information. It's not a new threat, but there are new ways of abusing access.”



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# Security Case

## University Guards Laptops Against Data Theft

WITH SECURITY BREACHES DAMAGING THE REPUTATIONS OF SEVERAL MAJOR UNIVERSITIES, BAYLOR U. WAS DETERMINED TO PROTECT THE PERSONAL INFORMATION OF ITS STUDENTS AND FACULTY. WHOLE-DISK ENCRYPTION IS DOING THE JOB. BY DOUG BARTHOLOMEW



**The Problem:** After a flurry of data breaches at several large universities, Baylor University needed to ensure that primary identification information for students and faculty stayed safe.

**The Details:** More than 197,000 personal records were exposed in a data security breach at the McCombs School of Business at the University of Texas in April 2006. It was the school's second such incident in three years, and one of a wave of such breaches at academic institutions including UCLA, Northwestern and Ohio University in the past two years alone.

As a result of heightened concern over data breaches, the Lone Star State passed legislation requiring organizations to notify individuals affected by a privacy breach and to take action to resolve the problem. Until recently, many universities used Social Security numbers as primary identifiers for student and faculty information, according to Jon Allen, Baylor's information security officer, who says the Waco university "switched from using Social Security numbers as the primary identifier, but a lot of old data was still stored that way." That, along with the "huge migration" from desktops to laptops among students and faculty, put the school—with a 735-acre campus home to 14,000 students and 1,500 faculty and staff—at risk.

**The Solution:** Baylor chose PGP's Whole Disk Encryption system, which it is rolling out to the university's fleet of laptops. The product takes the responsibility for encrypting data and maintaining secure data keys out of users' hands, Allen says. "The whole-disk option provides real-time encryption from the disk and you don't see significant degradation to the user," he adds.

File encryption systems are more than twice as common as full-disk encryption software installations. But easily twice as many organizations plan to deploy full-disk encryption as file encryption in the next year, according to an August survey by Aberdeen Group. "Year-over-year growth—that is, planned use vs. current use—was 74 percent for full-disk encryption vs. 18 percent for file encryption," says Derek Brink, vice president

and research director for IT security at Aberdeen Group.

Encryption tends to be resource intensive, but advances in computer processing power have made that less of an issue. Baylor's encryption software requires no more than five percent CPU usage on most systems, Allen says. The exception: The encryption software makes installation of Microsoft Office and other large applications noticeably longer.

Allen says he put the encryption system through the mill: "We threw every scenario at it and were pleased with the outcome."

**The Results:** "If there is a loss of a laptop, we're covered," Allen says. Initially, Baylor purchased 500 licenses, primarily for staff laptops containing faculty and student data. PGP charges about \$42,000 for an annual subscription to its Universal Management Server, based on 1,000 seats. Allen expects to have this first batch of laptops' disks fully encrypted by mid-fall. The installation process takes 15 to 20 minutes per machine.

Baylor has a centralized backup system, with an unencrypted version of each laptop's data maintained on the backup server, so a user has a safety net if a laptop disappears. "We do a weekly backup using IBM's Tivoli," Allen says. So far, there have been no complaints from users. "They're able to do their work as before, and most say they don't even notice the software."

The PGP boot-up process on the laptops requires each user to key in a secret "pass phrase"—typically this is a sentence with both uppercase and lowercase letters, punctuation and spaces between words. "You get a higher level of complexity with spaces," Allen says. It's far easier for thieves to decrypt half a dozen letters or numbers related to a user's name or birthday, he adds, especially if they already have the owner's personal information, than to decrypt "To be or not to be." ◀



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## BUSINESS INTELLIGENCE

When **FNF Construction** made the move from outdated project-tracking software to a customized business intelligence system, it hit pay dirt.

BY ELIZABETH BENNETT



# Capturing Concrete Savings

**SEAN SAUNDERS, CIO OF FNF CONSTRUCTION, GETS HIS hands dirty**—literally—at least once a week, visiting project sites where workers are expanding highways, repairing bridges and leveling land. He dons his blue jeans and spends time with the people who use the technology he implements.

Five years ago, when Saunders signed on as CIO at the Tempe, Ariz., construction firm, it took up to six weeks to determine whether FNF was meeting project goals or failing miserably. At the time, revenues were \$160 million and about one-third of projects were on time and within budget. However, CEO Jed Billings couldn't pinpoint what contributed to a project's success.

Today, nearly every project component is measured daily, even hourly, against the forecasted budget, from how much rock is crushed, delivered and used to how much labor is expended and how much water workers drink. Now, 80 percent of projects are on time and within budget and FNF is on track to generate close to \$250 million this year, Saunders says.

By outfitting workers in the field with mobile devices and implementing business intelligence tools that track and analyze project progress, FNF has been able to increase its project load by about 65 percent and boost revenues more than 50 percent since 2002—all with the same technology staff of three. Where project profit margins used to hover between five percent and six percent, today they are twice that.

The worldwide market for data analysis tools, including data warehouse systems, business intelligence tools and analytics applications, grew 11.5 percent in 2005 to \$6.25 billion in license and maintenance revenue, according to a June IDC study. Todd Rowe, a vice president at Business Objects, says license revenue

in the vendor's mid-market division is growing 50 percent faster than in the enterprise area.

Business intelligence applications are integrated with internal databases or data warehouses, from which they extract data and restructure it for easier reporting and analysis. While data captured in spreadsheets can be manipulated for certain kinds of analysis, spreadsheet functionality is limited and large amounts of data can quickly become unwieldy.

By contrast, BI tools take the relational data model several steps further. For example, FNF used to track risk management (injuries, theft, time lost and so on) with Microsoft Excel spreadsheets. There was no way to analyze the data against external factors, such as revenues or weather conditions, Saunders says. With business intelligence software, he can determine how safety measures and compliance affect the bottom line.

"Companies no longer have to model hypothetical scenarios that would affect the business," says Michael Speyer, a Forrester Research analyst who focuses on small and midsize businesses. They can use actual data to monitor aspects of the business, he says. For mid-market companies that implement business intelligence tools after years of managing information on spreadsheets or simple databases, the shift "is like moving from the Middle Ages to the Industrial Age," Speyer says.

FNF handles 50 to 60 construction jobs annually, mostly for government agencies. Projects like the expansion of U.S. Route 60, which traverses Arizona, involve dozens of components, such as moving dirt to elevate or smooth out land, laying asphalt, crushing rock and pouring concrete.

All projects have an approved budget for materials, equip-

ment and labor, and a project manager responsible for tracking and measuring against forecasts. Monitoring what's delivered and incorporated into each project used to be an arduous manual task, says Saunders.

When material arrived at a construction site, for example, managers used to fill out paper forms called quantity sheets stating how much crushed rock, wood or other materials had been delivered to the site and used each day. They hand-delivered the forms to accounts payable, where staffers entered the information into an Excel worksheet that tallied each project's budget. But the aggregate usage figures for each project weren't available to project managers until three to six weeks later—too late to make a course correction if there were delays or cost overruns.

Getting information from a construction site to the back office was primarily paper based and the accounting staff manually entered the data into a proprietary database in time to close the books for the month, Saunders says, but no sooner.

**MONEY FOUND**

Saunders observed the obvious business opportunity in the yawning gap between the realities of a construction project and the outdated technology FNF used to track them. "My goal is to find big sacks of money and hand them back to the company," he says. "If I can automate a task that used to be done manually, that's found money."

Saunders realized that getting timely and accurate information to project managers about equipment and materials usage would save time and money on each project. If he got it right, the company could save hundreds of thousands of dollars annually.

First Saunders migrated project data from 300 Excel spreadsheets and an outdated proprietary database to a custom application running on a Microsoft SQL database. Once the data was cleansed and proven accurate over the course of six weeks by Saunders and his staff, IT Synergy and Strategic Consulting Group helped implement a construction management software application called Viewpoint, from Viewpoint Construction Software.

The off-the-shelf program pulls data from the SQL database and generates reports analyzing all aspects of a construction project, such as how many hours in a month a particular backhoe was used or how efficiently dirt was moved on a project, and calculating the resulting profit margin. Margins vary according to type of work and range from one percent for guardrail installation to 45 percent for dirt moving, so keeping a close eye on the numbers could mean millions of additional dollars in profit.

In Viewpoint, a project manager can even see how many bottles of water workers have consumed; if those numbers don't meet minimum safety requirements, the manager might schedule a



**FNF CONSTRUCTION  
BASE CASE**

**Headquarters:** 115 South 48th Street, Tempe, AZ 85281  
**Phone:** (480) 784 2910  
**Business:** Highway and heavy construction company serving state and municipal agencies and private land developers  
**CEO:** Jed Billings  
**CIO:** Sean Saunders  
**Financials in 2006:** \$230 million in revenue  
**Challenge:** Implement a system to improve the entry, analysis and reporting of data to track project progress more quickly and efficiently  
**Baseline Goals:**

- ▶ Increase percentage of projects that are on time and within budget from 30 percent to 80 percent
- ▶ Reduce time to transmit data from a construction site to software for analysis from three weeks to three hours
- ▶ Improve average project profitability from six percent to 12 percent

meeting with workers to talk about the dangers of dehydration.

Workers can also upload project updates into Viewpoint from the field. A project foreperson with a Motorola Q smartphone running Microsoft Windows mobile operating system can e-mail equipment and materials updates to the project manager. The project manager, in turn, working from a Panasonic Toughbook laptop in an onsite trailer, can review the information before e-mailing it to accounts payable or entering it directly into Viewpoint.

Once the data is uploaded, reports can be run to compare, for example, the amount of asphalt used that day with the budgeted amount. If the project is under its asphalt-laying forecast by several tons, the manager can determine if the level of compaction in a road's shoulder is exactly as it should be or if the depth checks on the site were done incorrectly.

If there's a mistake, Saunders says, it could cost half as much to fix while the trucks and materials are on hand as it would to haul everything back later. A delayed fix could lead to increased client scrutiny and slower production.

Saunders attributes the spike in project efficiency to this sort of rapid analysis and physical assessment, which helps project managers identify problems shortly after they occur. "The idea is to give notice of when a project is sick, not dead," he adds.

To do an instant examination of a project, Saunders built a piece of custom software that essentially takes a project's temperature. It is a dashboard that provides a graphical representation of a project's progress. For example, if a project is beginning to veer off budget in any way, the component that is off-track will automatically be highlighted in yellow. A supervisor can click on that element—guardrails, for instance—to determine what went askew when. Each project has its own variances for healthy (green), sick (yellow) and flat-lining (red). "Every project should end up green," Saunders says. "But if a job ends up yellow or red, we have a large data record that maps the history completely."

Next year, Viewpoint plans to migrate its product, including FNF's implementation, to a Web-based thin client via Microsoft's .NET Framework. The application will then be accessible from mobile devices other than laptops, an advance Saunders says will introduce a level of accountability to those who gather information in the field and will expedite data gathering and analysis.

Until then, Saunders is focused on maintaining the more than 150 percent boost in project efficiency and 100 percent jump in project profitability he has wrung from the business intelligence tools. Oh yes, and sniffing out his next sack of money. ◀

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## LEAN AND GREEN

**Wells Fargo** discovered several power-saving innovations that, with the help of good timing, are saving money and decreasing energy usage in two new data centers.

BY BRIAN P. WATSON

# Cool Cash

**GOING "GREEN" HAS BECOME THE INITIATIVE DU JOUR** for many companies, as environmental campaigns trumpet eco-friendliness and businesses face heightened energy costs.

For Wells Fargo, the San Francisco-based financial services firm with \$540 billion in assets, the effort began four years ago, before the hype, when growth forced the company to expand its data center capacity.

But it wasn't all about the environment: Bob Culver, senior vice president of Wells Fargo's technology information group, says the firm's top priority was to ensure security and availability of the services it provides, which include consumer banking, investments and mortgages.

In the process of building two new data centers, though, Wells Fargo put in place a number of energy-saving features to lower power consumption and reduce costs. It accomplished both—and there hasn't been an outage yet.

"They've performed the role we expected them to perform, so there haven't been any surprises," Culver says.

The firm opened new, high-density facilities in Minneapolis (in August 2005) and Tempe, Ariz. (about six months later). Both facilities house 7,000 to 8,000 servers from Dell, Egenera, Hewlett-Packard, IBM and other vendors.

Standardizing on a particular brand has not yet been an option, Culver says. Over the years, Wells Fargo has developed purchasing agreements with various vendors, particularly Hewlett-Packard and Dell, and also has an enterprise agreement with IBM that includes mainframes and servers.

But consolidating with one vendor won't be considered while all those varied servers are still operational, he says. On top of that, certain business lines required specialty systems, leading to more vendors entering the fray.

## THE BIG CHILL

The planning process began in 2003, when Culver and his team worked with contractors, architects and consultants to design the facilities. Wells Fargo hadn't had excessively high energy costs in its other data centers, but with the new construction, Culver saw an opportunity to explore measures to lower consumption. That's become standard operating procedure for builders, so he and his team decided to run with it.

In the Minneapolis facility, Culver had to decide which kind of economizer to use. (Economizers are mechanical devices that help regulate energy usage.) One option was an air-side economizer, which uses air from outside the facility to cool the environment inside. But there was a downside: That would mess with the humidification needed to keep the air from becoming too dry, Culver says.

Instead, Culver turned to water-side economizers, which use evaporating water from a water tower to counteract heat emitted from servers. This method, known as "free cooling," let the company forgo chillers—machines that cool the water used to dehumidify the facility. That saved the company 300 kilowatts an hour per chiller, or about \$150,000 a year so far, which Culver expects to double in the next two years.



The firm also looked into floor-level cooling for the Minneapolis data center. Many data centers use self-sustaining air conditioning units scattered around the floor and linked to chillers to distribute cool water. But Wells Fargo had eliminated the chillers, and for the density of servers in the facility, Culver and his team decided to go a different direction.

The engineering firm Wells Fargo had contracted for this project had built a central fan system for American Express, which had a lower-density data center. So Wells Fargo had the firm adapt that system to its new facility. The system is computer controlled and lets facility managers monitor how powerfully the fans operate at any given time. "It allows us to put the air where we need it," Culver says. "The system only works as hard as it needs to because it's regulated by the computer system."

And, he adds, it saved the company about 15 percent in power consumption.

In Tempe, though, Culver and his colleagues had to cope with an entirely different climate. Without Minneapolis' constant cooler temperatures, the Tempe facility wasn't a candidate for free cooling. So here the company used the modified floor-cooling system with variable-speed fans and chillers.

The controls in place at the two facilities have yielded impressive performance results: Both data centers have had 100 percent uptime since they went into operation, Culver says.

**POWERING AHEAD**

Now the firm is aiming to construct a LEED-certified data center about 12 miles from Tempe. (LEED, leadership in energy and environmental design, was devised by the non-profit U.S. Green Building Council as a set of benchmarks to measure a structure's environmental friendliness. The council rates buildings based on sustainability, water efficiency and other factors.)

But it won't be easy, Culver concedes. "That's very difficult to achieve with data centers because they do consume so much energy," he says.

Culver plans to rely on dynamic power management features from Hewlett-Packard. The software, which comes with HP's ProLiant servers, lets administrators shut off power in semiconductor chips until it's needed. Culver says Wells Fargo will begin piloting the tool in the coming months.

The company will also have to contend with higher material prices than it encountered while building its data centers in Minneapolis and Tempe. Culver wouldn't reveal the exact price tag for the facilities, but he said Minneapolis cost less than \$100 million, while Tempe came in "well under" that.

Then, copper—an essential component of data center wire and cable—was selling for about \$.70 per pound. Now, Culver is looking at prices around \$3.50 per pound. On top of that, the

Environmental Protection Agency has sunsetted older power generators as it has established new emissions standards. Manufacturers are ramping up production, but purchase costs have increased.

To build the Minneapolis or Tempe facilities today, Culver says, costs would exceed \$100 million. He's aiming to keep expenses for the new Tempe data center less than or around \$100 million.

To accommodate heavy transaction volumes, financial institutions are constantly updating and renovating their data centers. In planning, power consumption and costs have become a higher priority for these firms. But for Culver—as well as many of Wells Fargo's competitors—other concerns come first.

Protecting sensitive customer data is the top priority, Culver says. Next comes availability. "You tackle the purpose at hand, and design something that has security and can be available," he says. "Then you talk about making it most efficient: How can I save energy on mechanical and electrical systems?"

Wells Fargo also plans to expand its virtualization projects. But that will require overcoming cultural obstacles, according to Culver. More than two years ago, the company invested in VMware's ESX Server, a hypervisor-based virtualization software tool that provides automatic failover and live backups. As of second quarter 2007, Wells Fargo had virtualized almost 500 servers.

Still, the virtualization initiatives were slow to take hold. The biggest problems, Culver says: Some lines of business didn't want to share equipment with others. Overcoming that is no easy task, because Wells Fargo has hundreds of business lines organized into 10 or more groups.

Culver says the company also plans to explore more green techniques, though he's concerned about payback. An experiment with a solar array on the roof of the Tempe facility is under way, for instance; Culver is not entirely sure about the potential return, he says, but this is a low-cost investment worth trying. Other eco-friendly features such as motion-detector lighting and variable-speed fans also cost little but can yield significant returns.

Before considering any other new tools or techniques, according to Culver, Wells Fargo will examine the potential return on investment. "If someone says the incremental cost of a project is \$5 million and the return is 23 years, we're not going to do it," he says. "It's still a financially driven motivator for us." ◀



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**Phone:** (866) 878-5865

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**Senior Vice President, Technology Information Group:** Bob Culver

**Financials in 2006:** \$48 billion in revenue; \$8.5 billion in profit

**Challenge:**

- ▶ Plan and build two new high-density data centers without increasing energy expenditures on the company's other facilities.

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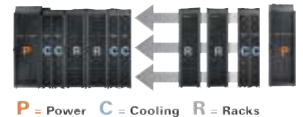
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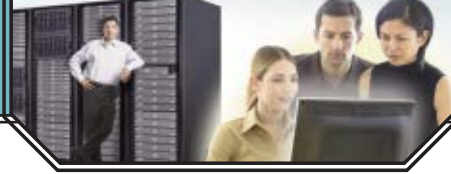


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## New Flexible Computing Solutions:

# Centralized Control of Data Security and Image Management

**B**usinesses today are faced with more complex challenges than ever before. Managing and supporting a more distributed workforce has introduced increased concern around data security, compliance and disaster recovery. Costs seem to continually rise while budgets seem to keep shrinking, driving the need to optimize IT resources in every way possible without compromising end-user or business productivity.

Organizations from large enterprises to small school districts have begun to address these challenges with innovative solutions that include alternative or new forms of computing. Many alternative computing options can help address business challenges by centralizing IT data control and image management, allowing for tight data security, easy image management and easily met regulatory compliance.

Although some alternative computing models, like thin computing, have been around for a while, not all have been completely successful in delivering true benefits. This may be partially due to the fact that the benefit is somewhat imbalanced – focused more on IT control than on end-user experience, or due to the fact that implementing an alternative computing infrastructure can be completely daunting, not to mention difficult.

Organizations must perform a comprehensive assessment of their existing infrastructure, which can be costly and time-consuming. Only then can they determine which components in their infrastructure must be changed or deployed. Deployment often requires piecing together components from multiple vendors. Many organizations are naturally overloaded by managing a wide array of hardware and software components, as well as the complexity of working with multiple vendors and dozens of contracts for service and support.

### Flexible Computing is the Answer

Developed around unique customer needs, Dell's Flexible Computing Solution, On-Demand Desktop Streaming, addresses these customer challenges, without creating new ones for IT. On-Demand Desktop Streaming is an integrated end-to-end solution that can help streamline an organization's computing environment.

Dell helps simplify IT with tailored solutions and a single source for all computing needs, including hardware, software and expert guidance for assessing, designing and deploying the Dell computing infrastructures. With Dell pulling it all together, organizations can experience reliability, given that the client, server, network and software have all been tested together and validated by Dell. And Dell's uniquely balanced approach helps provide IT administrators with the centralized control they desire without compromising business productivity or the end user experience.

Today, Dell's initial Flexible Computing Solution, On-Demand Desktop Streaming, supports consolidated computing for LAN-based users. Eventually, Flexible Computing will evolve to support and accommodate users on any device, anywhere they might be.

Dell makes moving to a new and more centralized computing model less daunting and easier to manage for organizations of all types – from large enterprises to schools, healthcare and government agencies.

### Dell Flexible Computing Solution: A Full Range of Tested and Validated Components

- **Storage:** Dell PowerEdge 2900 NAS
- **Clients:** Diskless Dell OptiPlex 745 or Dell OptiPlex 755\*
- **Servers:** Dell PowerEdge 2950 Server
- **Networking/Switch:** Dell PowerConnect Gigabit Switch
- **Software:** Citrix® Provisioning Server for Desktops
- **Services:** Dell Professional Assessment, Design and Deployment
- **Support:** Single Point of Contact, via single toll-free number, for Complete Solution Support

### Several Components – One Source

Dell's On-Demand Desktop Streaming provides IT centralized control of data and image management for LAN-based users via operating system, application and virtual disk streaming. On-Demand Desktop Streaming utilizes diskless PCs in conjunction with

server-based software. A complete disk image is streamed to the PC, so users perform their typical operations while all data is securely written to the server storage location instead of on their local hard drive.

The solution is comprised of several key IT infrastructure components: Dell's PowerEdge™ 2950 server and diskless OptiPlex™ 745 and OptiPlex™ 755\* desktops, Dell's PowerEdge™ 2900 NAS for additional storage, PowerConnect™ Gigabit switch, Citrix Desktop Server software and Dell Assessment, Design and Deployment Services – all provided through one source.

Broadcom, a global leader in semiconductors for wired and wireless communications, increases network bandwidth and helps to provide secure and reliable connectivity for Dell's Ethernet-based On-Demand Desktop Streaming Solution. As an industry Ethernet leader, Broadcom provides state-of-the-art networking solutions for Dell servers, desktops and notebooks. Broadcom's NetXtreme® and NetXtreme II Gigabit Ethernet solutions help simplify network management and are designed to increase flexibility, optimize server efficiency and improve application performance.

The solution's adaptable and flexible architecture meets the needs of various users and provides an optimal end-user experience, since CPU and graphics processing remain on the client. Image management and software updating can become more streamlined, leading to easier overall image deployment and management.

"If you're trying to standardize your IT infrastructure, Dell can facilitate it across the board in a way that I don't think any other company can match," according to Lee Steinsdoerfer, technology director, Zion-Benton Township High School, which deployed the Flexible Computing Solution. "When you put the whole package together, Dell is very hard to beat." (See *Standardized IT Infrastructure Solution Increases Productivity, Simplifies Image Management*) ♦

**For more information on Dell Flexible Computing Solutions, please visit [www.dell.com/flexcomputing](http://www.dell.com/flexcomputing)**

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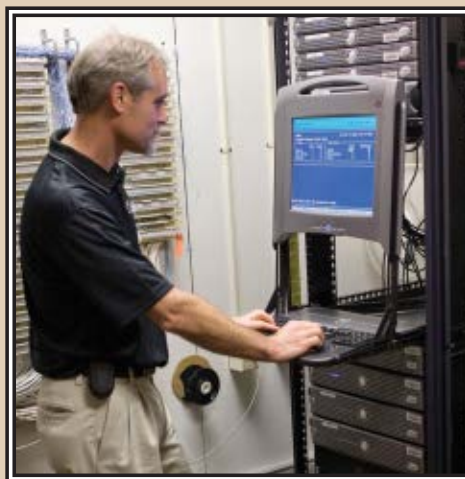
## Standardized IT Infrastructure Solution Increases Productivity, Simplifies Image Management

While not a large enterprise, Zion-Benton Township High School, located on Lake Michigan near Chicago, counts on technology in its business productivity lab, library and administrative office to help educate its 2,600 students.

Facing the same challenges as any business, updating the high school's standard software image had become labor-intensive and time-consuming. The school's heterogeneous IT infrastructure had also become difficult to manage,

limiting its ability to adopt new applications and taking time away from other IT tasks.

"We were using many different suppliers of desktops and servers. Staying current on all those systems took a lot of our time," says Lee Steinsdoerfer, technology director at Zion-Benton. "If we standardized on a smaller number of vendors, our training needs would be reduced and our



IT staff would be more productive. That would reduce overall costs."

To provide a consistent user experience, help increase efficiency and improve manageability, the district decided to standardize on a single vendor and streamline the client PC imaging process. "Standardizing on Dell has enabled us to do that, Steinsdoerfer says. "And from the perspective of ongoing maintenance, we now have a single point of contact where we can get answers fast."

Zion-Benton Township High School deployed Dell's Flexible Computing Solution for On-Demand Desktop Streaming to simplify image management. It also deployed Dell OptiPlex™ desktop computers, with 85 percent utilized as On-Demand Desktop Streaming clients. Dell PowerEdge™ servers host the Citrix Desktop Streaming software. Dell PowerConnect™ switches link the servers to the clients.

At Zion-Benton, the biggest IT productivity boost has come from eliminating the need to manually image desktop PCs. "What used to take five weeks, now takes just one day," Steinsdoerfer reports.

By automatically refreshing the client images for each new school year with Dell's Desktop Streaming Solution, Zion-Benton now saves approximately five weeks of work. IT can respond more quickly to teacher requests for new applications and updates throughout the year, and students and teachers receive a consistent user experience no matter which computer they use. The infrastructure is less time-consuming to manage, freeing IT staff to focus on more strategic tasks.



# Community

## Business Intelligence: Getting Smarter, But Still Learning

MAJOR ACQUISITIONS AND INCREASED DEPLOYMENTS ARE PUSHING BUSINESS INTELLIGENCE TO THE FOREFRONT OF IT STRATEGY. HERE'S A LOOK AT WHAT WORKS—AND WHAT HURDLES REMAIN. BY DARRELL DUNN

**IT MANAGERS ARE GRAPPLING WITH** the continued expansion of applications and, subsequently, the growing amount of data coming out of the applications.

In the past, businesses turned to Excel and other spreadsheet programs to gather and analyze all that information. But those options only went so far.

Enter business intelligence. The software tools under the BI umbrella have quickly become commonplace in enterprises. Advances in capabilities and usability, as well as integration with other key components of the IT infrastructure, have led nearly three-fourths of businesses to make strategic implementations of the tools, according to Gartner.

Worldwide revenue for business intelligence software in 2006 was \$4.3 billion, and the market is expected to grow to about \$5 billion this year, Gartner research shows.

“Business intelligence holds the promise of being able to mobilize your people’s minds with information as they are making their decisions,” says Bill Hostmann, an analyst at Gartner. “Businesses realize the big, long reports and complex sets of disparate information they’ve relied on for years can no longer get the job done.”

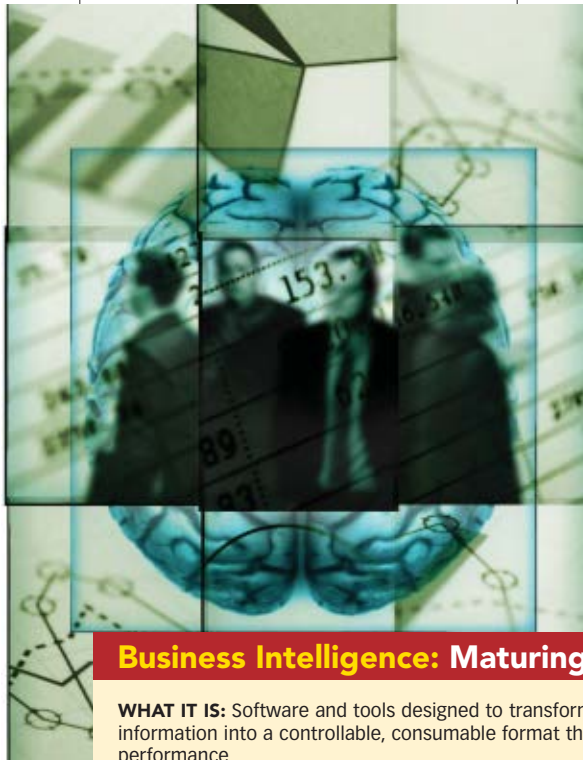
But obstacles must be overcome for business intelligence to reach its full potential. For one, use of the software

often remains challenging for those without specific analytical training. Deployments need close scrutiny and, in many cases, outside assistance for com-

panies to achieve maximum benefit. And widespread use across a broad set of users in any business can require significant tailoring to meet the requirements and skills sets of a diverse workforce.

While 72 percent of IT executives in a recent survey by *CIO Insight*, *Baseline*’s sister publication, say their business intelligence efforts have had a major and measurable impact on their companies’ bottom lines, almost six in 10 also say users don’t know how to analyze or interpret the associated data. (See the *CIOI* survey data and analysis at [cioinsight.com/current\\_issue/](http://cioinsight.com/current_issue/).)

In recent years, IT managers—and BI vendors—have looked to expand use of business intelligence tools, once privy to a select group of analysts and executives (aka “power users”) to a much



### Business Intelligence: Maturing Steadily

**WHAT IT IS:** Software and tools designed to transform a company’s myriad forms of information into a controllable, consumable format that can be used to manage business performance.

**KEY PLAYERS:** Business Objects (just acquired by SAP), Cognos, Microsoft, MicroStrategy, Oracle (which bought Hyperion this year), SAP, SAS Institute

**WHAT’S HAPPENING:** The new millennium has provided good traction for the BI market as tools have matured significantly and options for integration with other IT tools have expanded. As the technology has matured, consolidation has been the natural progression. Two significant acquisitions have been announced this year and additional merger talks are ongoing. Many large enterprises remain in a transitory stage in their BI deployments, however, as they attempt to expand the scope of BI in their organizations and expand its use to larger groups.

**MARKET SIZE:** \$4.7 billion in 2006; projected to grow to \$6.4 billion by 2010 (IDC)



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# BUSINESS INTELLIGENCE

broader set of decision makers.

Still, even in many businesses that have deployed significant business intelligence platforms, hands-on use of the tools often remains a function of the IT department or specific data analysts. Research analysts told *Baseline* they believe as few as 20 percent of workers who could use the tools take advantage of them, and those who do only use the tools in a limited capacity.

But a shift is certainly under way as more users continue to use BI tools. That's because the software's let users capitalize on massive amounts of data by making it easier to understand. As end users find relative information and manipulate it to provide insight, businesses can improve efficiencies, sales and customer service.

## GAINING ACCEPTANCE

The evolution of business intelligence has also caused a shift in how leading IT vendors interface with businesses, as the tools have begun to appeal to business decision makers and operations managers in addition to those managing the IT infrastructure, according to Hostmann.

Strategic adoption of business intelligence can require a significant shift in how both the IT department and its clients deal with critical information. When Steve Canter, CIO of Berlin Packaging, a leading supplier of rigid packaging such as glass and plastic bottles, jars and tubes, sought to expand BI throughout the organization, he found many users reluctant to give up old methods and try the new tools.

For years, the company's information services department had delivered canned Business Objects' Crystal Reports in response to requests for sales data. "We could never get the traction we needed to make those early business intelligence efforts really successful,"

Canter says. "The idea of slicing and dicing their own cuts of data I think overwhelmed some potential users at first."

Canter kept searching for a "killer app that would make business intelligence really fly," and believes he finally found it in the company's annual budgeting process. Each of about a dozen departments within Berlin Packaging is required to prepare an annual budget, a process that used to require dozens of spreadsheets. "It was long, complicated, manual and tedious," he says.

Canter used the budgeting cycle to show department heads how they could apply BI capabilities from Microsoft SQL Server and Office PerformancePoint Server to streamline the process and create more accurate forecasts by using a single platform to access data across the company and configure it to meet specific requests. The result was about a 50 percent reduction in work hours dedicated to budgeting.

"They began to see IT was something they could sink their teeth into and gained appreciation for the depth of analysis available," he says. "Suddenly there was a groundswell of demand and people are licking their chops at what we might do with BI going forward."

Businesses are also deploying busi-

## Ouch!

Research reveals pain points for business intelligence managers.

CIO Insight's October survey on BI revealed a number of obstacles in deploying BI tools. A snapshot of what respondents using BI identify as their biggest pain points:

- ▶ 64% say integration and interoperability with other systems such as CRM and ERP pose a problem.
- ▶ 57% say poor data quality significantly diminishes the value of their BI initiatives.
- ▶ 67% say spreadsheets are still their most widely used BI tool.
- ▶ 58% say most users misunderstand or ignore data produced by BI tools because they don't know how to analyze it.
- ▶ 61% say they don't have a center of excellence.

there was a groundswell of demand and people are licking their chops at what we might do with BI going forward."

## Project Pointers

**Organizations still struggle to make business intelligence an integral part of their IT strategies, but many are learning that careful planning can lead to success.**

### ▶ RETHINK

**Make information a weapon.** Businesses must reconsider how they treat the increasingly large amounts of data they collect, and use those assets to transform the relationship between technology resources and information. They must understand that information is more than just numbers being shuffled around, says Gartner analyst Bill Hostmann. Instead, they should use data to manage efficiency and performance. "This is not a technology or an IT issue," he says.

### ▶ DEPLOY

**Prepare to work.** While out-of-the-box BI implementations can be beneficial, the most significant use of the tools results from hands-on tailoring of the platforms to meet specific usage requirements. A knowledgeable internal staff or the use of third-party services is sometimes necessary to enable full functionality, according to Steve Canter, CIO of Berlin Packaging. "There is still a lot of work that needs to be done with BI tools to ensure the right information gets into the hands of the right users," he says.

### ▶ EXTEND

**Gain acceptance.** The broader the set of users in an organization that can use BI tools, the greater the chance a business will have in gaining maximum benefit. "Traditionally, predictive analysis has been something reserved for Ph.D.-level types," says Matt Schwartz, director of business analysis for Corporate Express. "That's only the tip of the iceberg, and we're working to ensure that our BI effort can reach across the workforce." —D.D.



# YOU CAN'T AFFORD NOT TO INNOVATE

Chances are that your organization, like most, encounters roadblocks that prevent it from being truly innovative. These include bureaucracy, budget constraints, old-school thinking and resistance to change.

To help you overcome these hurdles, Ziff Davis Enterprise provides expert advice in the pages of *Innovations*, an editorial supplement from the editors of *Baseline*, *CIO Insight* and *eWEEK*, as well as at [innovations.ziffdavisenterprise.com](http://innovations.ziffdavisenterprise.com) and our new mobile version of the site, [mobile.innovations.ziffdavisenterprise.com](http://mobile.innovations.ziffdavisenterprise.com). These resources give technology professionals authoritative advice and ideas about how to foster, implement and perpetuate innovation in business.

Articles featured in the latest issue of *Innovations* include "SOA and Web 2.0 Prepare to Merge," "The Evolving Data Center," "Making

Agility an Ability," "The Benefits of Server Virtualization," "Virtualization Changes Everything," and "Mobility: Securing Devices on the Run."

These articles — and a wealth of other information — are available no matter where you are. So check out *Innovations* in the November issue of *CIO Insight*, the December issue of *Baseline* or the Dec. 3rd issue of *eWEEK*. Or visit [innovations.ziffdavisenterprise.com](http://innovations.ziffdavisenterprise.com) or [mobile.innovations.ziffdavisenterprise.com](http://mobile.innovations.ziffdavisenterprise.com).

While you're on the site, you won't want to miss the blogs and podcasts of Paul Gillin, an IT industry veteran who provides insight and advice on emerging technologies. You can even become part of the *Innovations* community by responding to Paul's weekly posts.

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ness intelligence to minimize the “needle in the haystack” approach to new customer initiatives, focusing marketing efforts where they can maximize return. Corporate Express, for instance, a provider of office and computer products and services, wanted to improve its online efforts and create an enhanced “also consider” or “recommended items” feature within its Web site checkout process.

Earlier this year Corporate Express began using the MicroStrategy business intelligence platform to create a “market basket” application based on predictive analytics that could be used by its more than 20,000 e-commerce customers who create about a million orders every month, says Matt Schwartz, director of business analysis.

“We saw we had a lot of real estate on our Web site that could potentially help us broaden sales, but we wanted something driven by well documented algorithms,” he says. “We wanted the market basket tool to be based on actual customer buying patterns and not some arbitrary items we selected.”

When a customer goes online to purchase a stapler, for example, staples and a staple remover are obvious additional purchases; last December the Corporate Express Web site also recommended glue sticks. The MicroStrategy tool helped Corporate Express document that staplers are often included in a “new employee bundle” along with waste baskets, tape dispensers, pencil holders and desk calendars.

Since creating the analytics-driven market basket option for its site, Corporate Express has seen the average order for individuals who make additional purchases increase by about 50 percent, Schwartz says.

That success has convinced the company’s senior leaders that business intelligence can be a differentiator; Corporate Express is now rolling the software out to about 3,000 employees, Schwartz says.

#### OTHER USES

Intensifying regulatory requirements and the critical nature of data had directors at Maine Medical Center (MMC)

in Portland looking for a more accurate, flexible way to create employee “scorecards” for nurses and doctors to track performance and patient satisfaction.

“We were refining our structure of accountability around patient safety and quality, with the expectation that every department would have definable initiatives for improvement on strategic objectives,” says J. Peter Chingos, manager of data analysis for performance improvement at the hospital.

The hospital’s previous efforts had been limited to spreadsheets and a common scorecard for all workers and departments. The scorecards were distributed on biannually by e-mail or posted in a shared directory.

MMC wanted a customizable platform that could be updated at any point. It deployed SAS Institute’s business intelligence tools, including its Strategic Performance Management software, to create scorecards designed

## BI Goes Mainstream

As the business intelligence market matures, M&A heats up.

In just two years the business intelligence market has grown by about \$1 billion—30 percent—in revenue, and the market will total nearly \$5 billion this year, according to IDC. This indicates a clear maturation of the market, and it is grabbing the attention of the world’s IT giants.

As a result, merger and acquisition efforts within the market are red hot.

The frenzy began in earnest in March, when Oracle announced it would buy Hyperion Solutions for about \$3.3 billion. In October, SAP announced a “friendly takeover” of BI market leader Business Objects for nearly \$5 billion.

“We are definitely seeing that more and more of the big application vendors like SAP and Oracle understand they need to compete more aggressively in the BI market,” says Bill Hostmann, an analyst with Gartner. “BI today is still very much an ad-hoc approach to most businesses—an appendage to the information architecture. These acquisitions are intended to take all that information inside a company and

### TOTAL BI PLATFORM SOFTWARE REVENUE FOR ALL SUBSEGMENTS AND REGIONS (MILLIONS)

Vendor	2006	2006 Market Share	2005	2005 Market Share
Business Objects	870.5	18.7%	825.0	20.4%
SAS Institute	665.8	14.3%	600.2	14.8%
Cognos	621.5	13.4%	567.4	14.0%
Microsoft	460.2	9.9%	322.9	8.0%
SAP	383.1	8.2%	238.9	5.9%
Others	2,440.30	35.5%	1,493.70	36.9%
<b>Total Market</b>	<b>4,651.4</b>	<b>100.0%</b>	<b>4,047.9</b>	<b>100.0%</b>

SOURCE: GARTNER (JUNE 2007)

make it available to more people in way that can help businesses figure out what information is really important and what is just a lot of background noise.”

Following the SAP-Business Objects announcement, speculation on the next big move centered on an acquisition of Cognos, which IDC ranked the third largest BI provider in 2005. Potential suitors may include IT giants IBM, Hewlett-Packard and Microsoft, which already is fourth in the BI market with about 10 percent of worldwide revenue.

“This is an industry that is at the cusp of going mainstream,” says Dan Vesset, an analyst with IDC. “Market leaders understand that large enterprises are increasingly turning to these tools to get a better understanding of the complex nature of managing IT operations with an eye on business objectives.” —D.D.



Are your business managers  
**frustrated with new BI toolkits?**

Were you dazzled by the demo  
**but disappointed with deployment?**

How do you capture the cost and  
**time savings of self-service BI?**

## BUSINESS INTELLIGENCE

Get Your BI Tools to  
Deliver the Right Data



NOVEMBER 14, 2007

### KEYNOTE:

#### Transforming Operations and Delivering Business Value with BI

*Bob Pischke, Vice President, Global Information  
Solutions, Avnet*

### HOT BUTTON PANELS:

- Increasing Awareness & Adoption of BI Tools
- Optimizing BI Tools: Is Your Infrastructure Ready?
- Evaluating Self-Service BI

### FEATURED SPEAKERS:

- Terry Ciccodicola, Director, Firmwide Intelligence Reporting Solution Team, Booz Allen Hamilton
- Jonathan Rothman, Director, Data Management, Emergency Medical Associates
- Boris Evelson, Principal Analyst, Business Intelligence, Forrester Research
- Greg Corrigan, Vice President, Business Intelligence, PHH Arval
- Rob Singer, Director, Customer Intelligence & Relationship Marketing, StubHub

and more!

Business Intelligence tools offer insight into customer behavior and market opportunities. They can help businesses make better decisions, cut costs, streamline operations and be agile. But capturing the benefits of BI tools can be challenging. Join Ziff Davis Enterprise for the Business Intelligence Virtual Tradeshow for expert insight on getting the data you need from your BI tool kits.

### TOPICS COVERED INCLUDE:

- Improving proficiency with new BI toolsets
- Overcoming dependence on manual methods
- Achieving early 'wins' to increase adoption
- Reading systems and processes for better performance
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as dashboards that provide information compiled through the monitoring of more than 50 key performance indicators including length of stay, patient falls, patient satisfaction and physician satisfaction.

The tools have helped the hospital improve quality of care, Chingos says. Since implementing them, MMC has found fewer patient falls, and hospital-acquired infection rates have decreased as the SAS platform has enabled the hospital to correlate specific diagnoses and infections, allowing nurses and doctors to take proactive measures.

Over time, information became unreliable for decision makers at Rensselaer Polytechnic Institute, a Troy, N.Y., university and research institution, and important decisions

An Oracle data warehouse was created, pulling in information from various areas of the university including admissions, financial aid, finance, human resources and research. The Hyperion Performance Suite business intelligence package was integrated with the data warehouse, and about 650 users began using the platform.

The Rensselaer IT staff worked with each department to understand what kinds of processes would best meet their requirements and to build usage models around which to tailor the platform. IT offered users a training program and a question-and-answer meeting and e-mails weekly tips to those using the tools.

The admissions office now does year-over-year analyses, comparing

system that would provide executives with access to pertinent information with greater accuracy.

The agency deployed the Cognos 8 business intelligence platform in late 2005 along with the BEA Systems AquaLogic management system. An internal portal was created to provide users with a centralized entry point to access budget information and to proactively highlight reports presented to executives.

"It has enabled us to put the focus beyond the hard-copy reports on what has happened with the company, and show our corporate leaders trends and analysis they can use to map out the future direction of this agency," Richardson says.

But, Richardson acknowledges, BI will likely remain a challenge on multiple technical fronts.

"Right now the field is wide open—really almost too wide open," he says. "The possibilities are limited only by your imagination, and sometimes the hard part is trying to focus on what you really want to get done.

"We are at the beginning of a revolution, and I believe the trend toward business intelligence is still relatively new," he adds. "IT is a critical enabler that a lot of people still don't really understand, but as they see that even small efforts with the tools can yield some genuine results, the use will only grow."

Business intelligence is entering a third wave of deployment that has taken the technology beyond the hurdles of acceptance and some missteps by early adopters to a maturing technology that is gaining widespread support, according to IDC analyst Dan Vasset.

"The real benefits of business intelligence are just starting to develop with businesses that have been playing with this stuff for as long as a couple of decades," Vasset says. "As the intuitiveness of the tools continues to improve, the barriers of complexity are beginning to fall." ◀

**"Right now the field is wide open. The possibilities are limited only by your imagination." —Carl Richardson**

had to be delayed due to conflicting and inaccurate reporting. University administrators and business officials couldn't come to an agreement on basic numbers and statistics—they didn't even know how many graduate students were enrolled, says Ora Fish, associate director of data warehouse services.

"It was pretty much in disarray at the cabinet level as they debated issues and wondered if they even had the right numbers," Fish says. "Having many versions of the truth and [not] being able to trust the numbers was one of our biggest issues. We had all kinds of numbers, but could never seem to get a straight answer."

Building out a data warehouse and business intelligence platform that met Rensselaer's requirements demanded significant expertise, Fish says. Rensselaer worked with DecisionWorks Consulting to identify key information components and establish standard definitions and processes to ensure consistent reporting.

admissions across demographic and geographic areas and checking student retention patterns. The financial aid office can review percentages of students receiving aid and the kinds of assistance they receive. All departments can use the tools to check spending projections, status of budgets and grants and other financial specifics.

#### **OBSTACLES REMAIN**

MassHousing, the Massachusetts state-facilitated public housing authority, faced problems in moving and retrieving information across its six divisions, which handle millions of dollars in financing for affordable housing, according to BI project manager Carl Richardson. If people wanted to see total loan amounts across divisions, for instance, they would have to access multiple databases and then manually correlate the data, Richardson says.

MassHousing directors wanted to centralize data that was siloed in those divisions and create an information

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# Workbook

## CALCULATOR

# Making Infrastructure Decisions

BY JOHN RICHEY AND RON SMITH

When technology managers talk about infrastructure, they're referring to foundational elements such as network switches, servers, backup systems and security devices. There is also the software infrastructure of databases and core applications such as order entry that must stay running 24x7 to support the business. As these infrastructure elements age, you should start planning when they will be updated or replaced. The Infrastructure Platform Risk Calculator below provides broad guidance on how to approach these decisions.

**INSTRUCTIONS:** Go to the column labeled "Your Platform" and enter your selected Platform Name. Answer each Category question by entering the appropriate value (1, 3 or 5) to help you assess the right Risk Scale. Add up your values to get your Risk Total and Risk Level. (You can download this Workbook online at [go.baselinemag.com/nov07](http://go.baselinemag.com/nov07).)

### Tool: Calculating Infrastructure Risk

Platform Name:		Example	Your Platform	
		Oracle Financials		
Category		Risk Scale		
		1 = Low	3 = Moderate	5 = High
1	<b>Age of Platform: How old is it?</b>	3		
	1 - up to 24 months			
	3 - 25 months to 47 months			
	5 - 48+ months			
2	<b>Platform Complexity: How many functions are supported?</b>	5		
	1 - Provides single function and application with single user device			
	3 - Provides multiple functions and applications for single business unit			
	5 - Provides multiple functions and applications for multiple business units			
3	<b>Platform Supportability: Is vendor support available?</b>	3		
	1 - HW/SW currently available/supported or not available but still supported			
	3 - Platform retirement announced and support is currently available			
	5 - No longer supported by vendor and/or your company			
4	<b>Historical Risk of Failure: What is the failure rate?</b>	3		
	1 - Lower than normal			
	3 - Normal			
	5 - Higher than normal			
5	<b>Business Value at Risk: What is the impact of an outage?</b>	5		
	1 - Would disrupt non-critical business functions			
	3 - Would disrupt customer-facing systems			
	5 - Would disrupt (hard down) critical business functions			
Risk Total and Level =		19		
<b>WHAT YOUR SCORE MEANS:</b>				
17-25: Develop a plan to replace or update this component within the next year.				
9-16: Consider replacing within the next year or two.				
5-8: Periodically reevaluate because the score may change, but replacement isn't a priority.				

John Richey and Ron Smith both work for BMC Software in Houston. Richey is the director of infrastructure operations and Smith, PMP, is a senior infrastructure project manager. Ron has published three books and more than a dozen articles on project management and the software development lifecycle. Contact him at [ron\\_smith@bmc.com](mailto:ron_smith@bmc.com).



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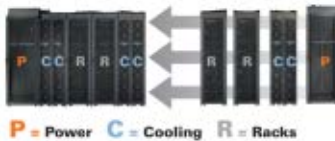
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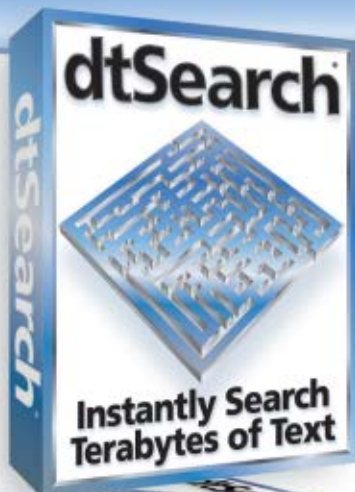
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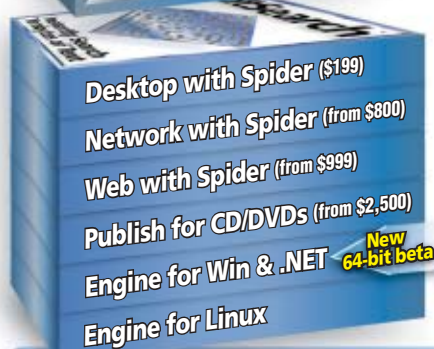
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**ANTI-SOCIAL NETWORKING**

Companies are getting more business value by integrating social networks into their IT strategies—both *Baseline* and its sister publication *CIO Insight* have covered this trend in recent months. But no networking service is without its kinks.

Just ask Christopher Elliott. The travel writer signed up for StumbleUpon, a service for sharing Web sites, according to the Consumerist.com blog. He unchecked a box that offered to invite everyone in his Gmail address book to join, but due to a glitch, every one of his e-mail contacts received the invitation. Elliott said most of his friends laughed it off, but then he worried that the site might share those e-mail addresses with third parties or marketing partners.

Elliott isn't an IT executive, and anyway, glitches happen.

Still, the lesson is clear: Before adding a social network to their IT operations, CIOs had better check the fine print to find out what the service plans to do with the company's user information.

## The New Japanese Masseur

Businesses are using robots in all kinds of capacities today, from assembly-line production to—as Out of Scope documented a few months back—weed removal. Researchers at Waseda University in Tokyo have a new idea: putting droids to work as masseurs. The WAO-1 robot, which researchers hope to sell to hospitals and spas, comes equipped with ceramic balls on its "hands" designed to deliver soothing facial massages for patients with jaw-related maladies. Clinical trials begin this month, according to a *New York Times* report.



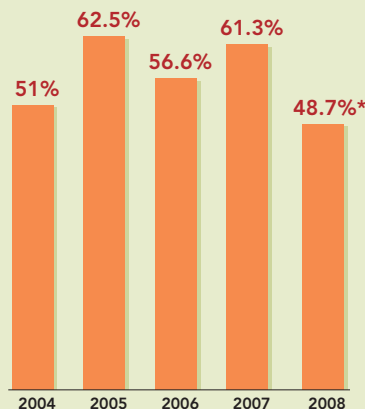
## Good News, Bad News

The stats from the Society for Information Management's 2007 member survey are in, and they're not all pretty. On the upside: IT budget allocations are staying almost identical to 2006, and companies plan to hire more in the coming year. But on the downside: The number of companies planning to boost IT budgets in 2008 is decreasing sharply from this year. And IT spending has gone up one year and down the next since 2004, SIM reports, so the pattern is holding true.

What could explain the impending slip-slide? Continued cost cutting and worries about the economy may be playing in.

Overall, 2008 could be a downer for some CIOs, but for others, it looks like an opportunity to prove their financial mettle.

**COMPANIES INCREASING IT BUDGETS**



\*PROJECTED  
SOURCE: SIM 2007 MEMBER SURVEY

**TALES FROM THE TECH PROJECT FRONT**  
EDITED BY BRIAN P. WATSON

# Out of Scope

**SNAFUS IN THE NEWS**

## Municipal Meltdown

**THE PROBLEM:** In early October, the city of Mesa, Ariz., suffered a hardware glitch that erased municipal documents and hindered access to e-mail. A city spokeswoman said Mesa's storage platform malfunctioned, and the vendor, Hewlett-Packard, corrected the problem at no cost, according to the *East Valley Tribune*. Files saved after Sept. 25 were lost, but that loss was limited, the spokeswoman said. The e-mail problems proved more troublesome: It took several days for city officials to be able to access e-mail via the Web, and the computer that provides public access to top officials' e-mail remained down.

**THE LESSON:** *Because it was unclear what caused the hardware malfunction, it's tough to lay specific blame. Still, whether it's corporations, municipalities or academic institutions, all data is crucial, and losing it can pose a risk to both operations and security. Organizations must work closely with their hardware and software vendors to do regular diagnostics and troubleshooting, ensuring that any problems or potential malfunctions are pinpointed and addressed swiftly.*

We are becoming servants in thought, as in action, of the machine we have created to serve us.

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