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EXPERT VOICES

Beyond Security

A broader view of risk can create new opportunities. Ideas from a top MIT researcher

STRATEGIC TECHNOLOGY

Transparent Communications

Businesses profit by uniting data, voice and video into one network

PERSPECTIVES

John Parkinson

The End of Privacy As We Know It

Allan Alter

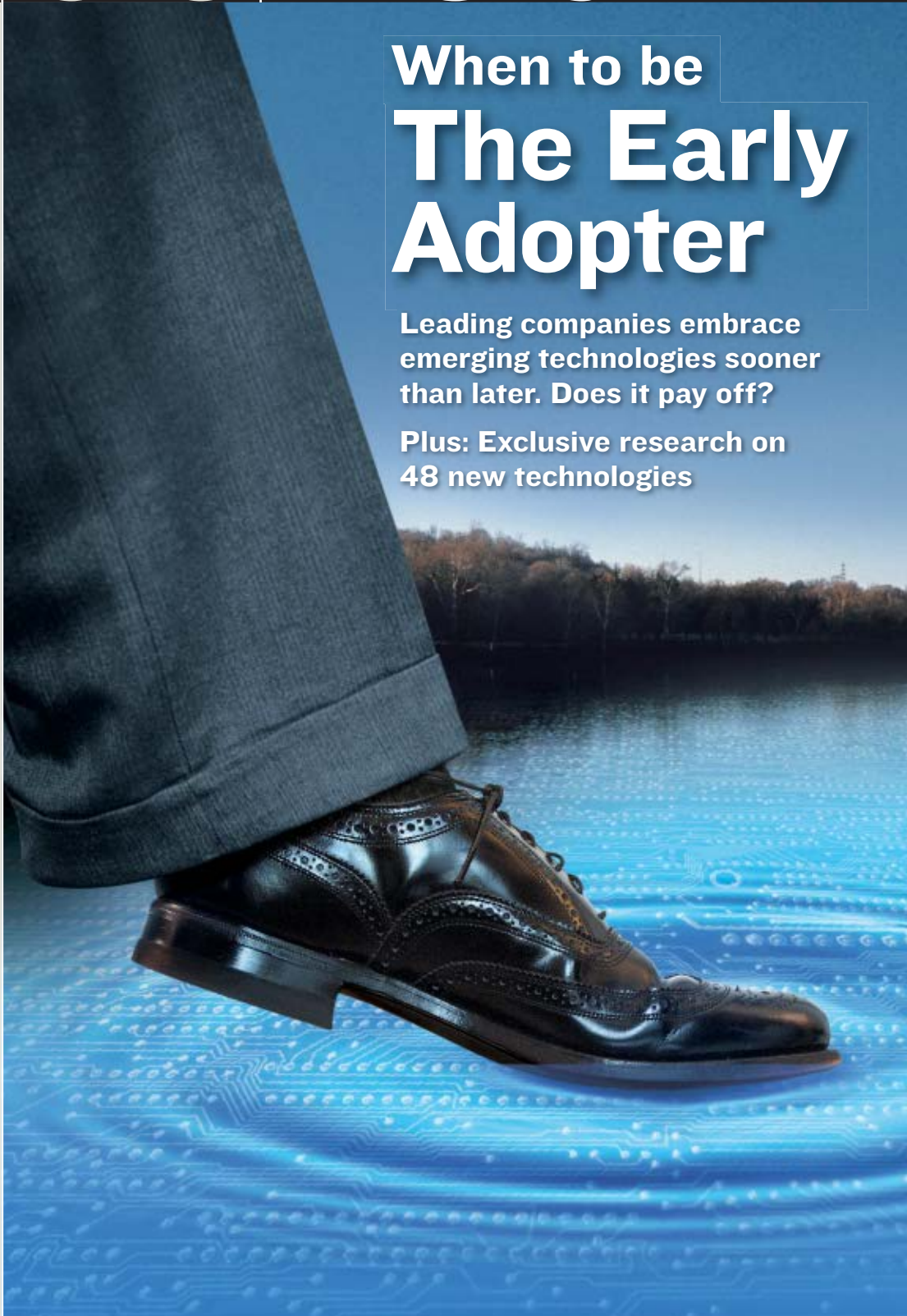
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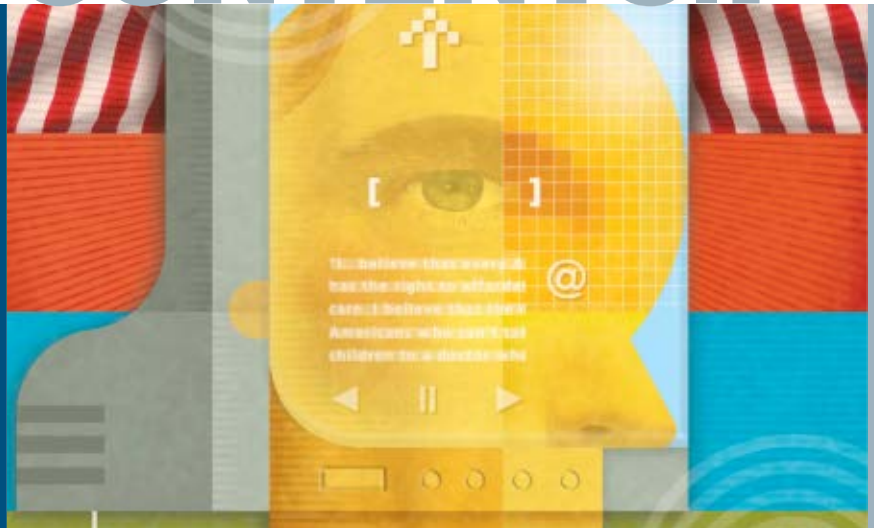
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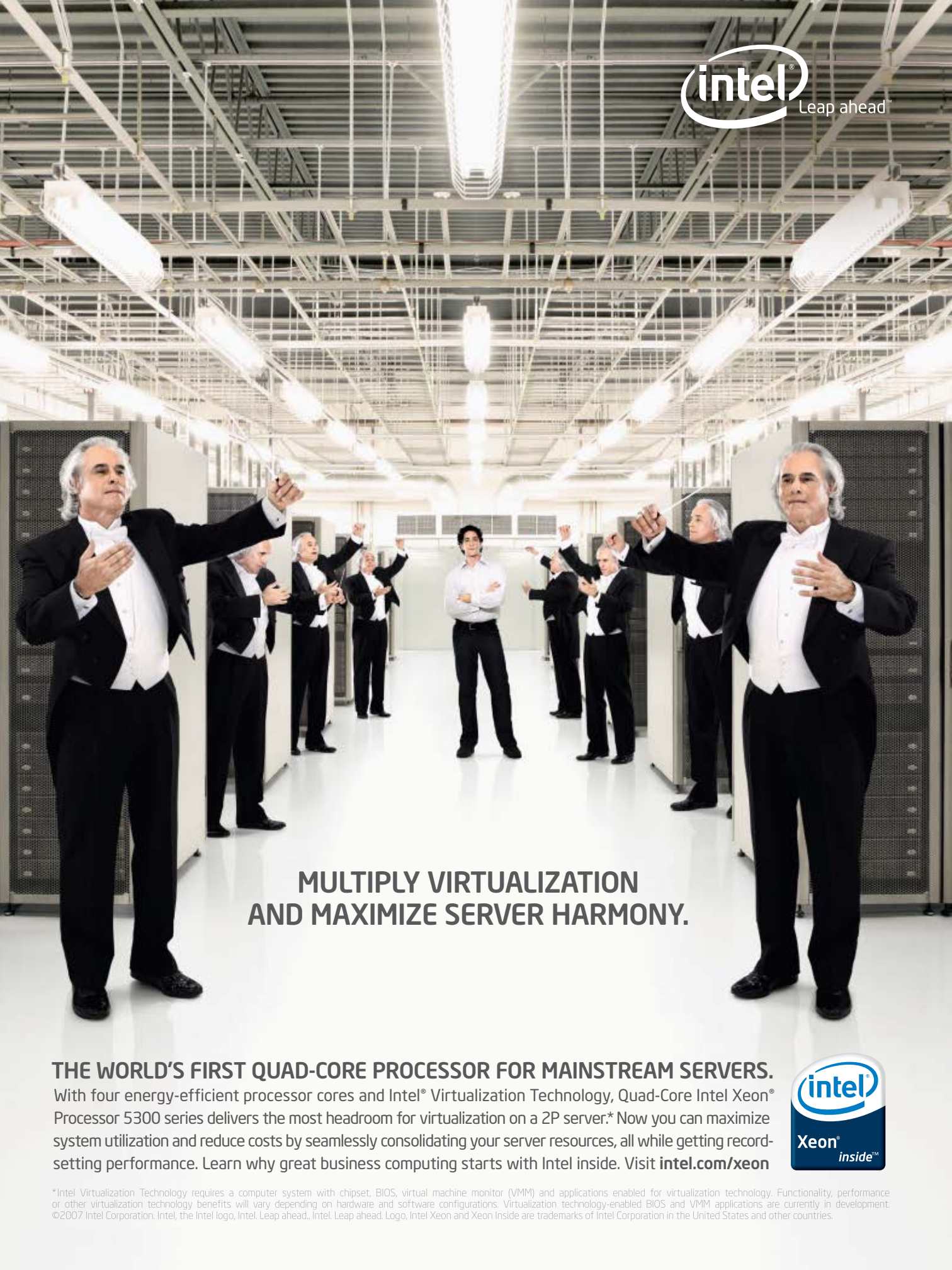
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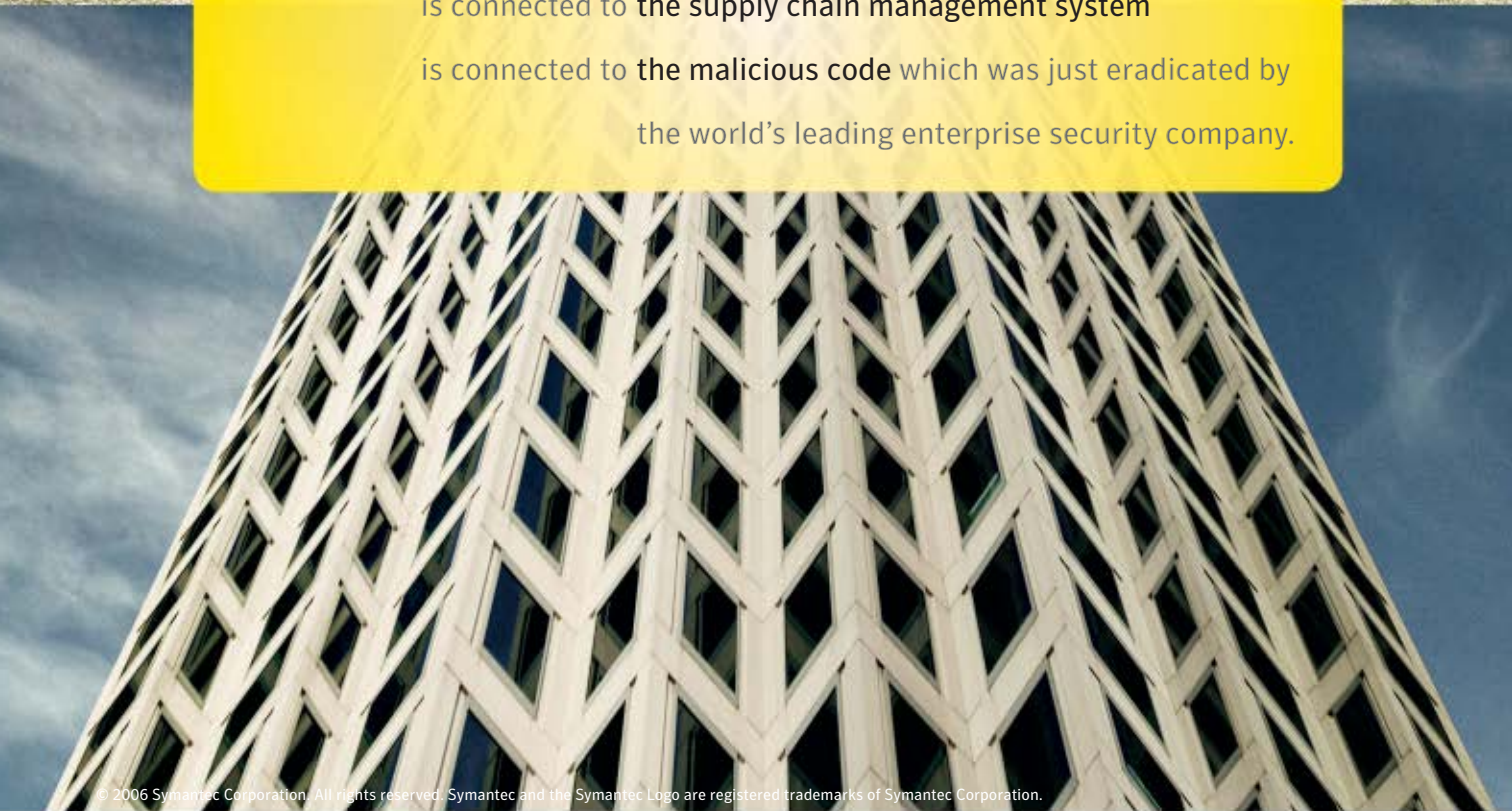
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is connected to the supply chain management system
is connected to the malicious code which was just eradicated by
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CIO INSIGHT AUGUST 2007 NUMBER 84

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When the CIO Earns \$9 Million

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Compensation packages in the multiple millions are becoming more common, our study of public companies shows.

SLIDE SHOW 52 High-Paid CIOs

The 8 Hottest IT Management Jobs

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The demand for experienced, savvy workers to fill these key positions remains as strong as ever—and the pay isn't bad, either.

Staying Connected on Vacation

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Summer is the perfect season for some downtime. But many IT pros need to keep tabs on what's happening at the office.

SLIDE SHOW 9 Ways to Stay Connected

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Blogs

Parallax View By Eric Chabrow

CIO Insight Executive Editor

go.cioinsight.com/parallaxview

An off-center look at workplace and management trends IT professionals must confront.

EXCERPT "A number of CIOs are exploring a relatively untapped source for fresh IT talent, even if the prospects can't tell a bit from a byte: liberal arts graduates."

Research Central By Allan Alter

CIO Insight Executive Editor

go.cioinsight.com/researchcentral

Analysis of our latest data, previews of upcoming research, and insights into important new studies from consultants, academics, associations and other publications.

EXCERPT "Work is an informal network that resembles a mutual aid society. That's important to remember when a CIO is called upon to create change in or outside of their IT organizations."

Know It All By Edward Cone

CIO Insight Senior Writer

go.cioinsight.com/blogs/knowitall

Live from the intersection of the enterprise and Web 2.0. You don't have time to read everything out there. Now you don't have to.

EXCERPT "Just because we all can post our writing and photos and videos to the Web doesn't mean everyone is suddenly an artist."



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A Look in the Mirror

THE IT PROFESSION DOESN'T LOOK LIKE AMERICA, AND THAT COSTS US dearly.

In "How Diverse Is IT" (go.cioinsight.com/diversity), *CIO Insight* analyzed data from the U.S. Bureau of Labor Statistics showing that African-Americans and Hispanics are underrepresented in IT compared with their presence in other professions. Blacks embody 6.5 percent of employed IT managers and staff professionals but 11 percent of all types of managers and staff professionals. Hispanics represent 5 percent of IT staff professionals and managers but nearly 14 percent overall.

There's an imbalance in the number of women working in IT, too. Fewer than 30 percent of all employed IT professionals are women (see "Behind the Decline in Women in IT," June 2007).

What's disturbing about these numbers isn't just that one group is more or less represented than another in IT, but how the IT workforce got to these numbers. Over the past 6 1/2 years, while the IT ranks swelled by 1 million to 3.6 million, the number of women in IT fell by nearly 8 percent and the number of African-Americans in IT plunged by more than 25 percent.

Why such a sharp drop among African-Americans, in particular? Clues can be found in a 2006 survey of black IT managers conducted for the Information Technology Senior Management Forum, a group of professional African-American IT managers, showing that fewer than half the respondents trusted their non-black peers; 43 percent said they had to adjust their personal style to fit in as IT professionals. Fewer than half saw the possibility of advancement in their companies. Not surprisingly, 56 percent said they had considered quitting their jobs in the previous 12 months.

It's not that the mostly white corporate leaders overtly treat minorities differently, one black leader said; they're just unaware of how their company cultures adversely affect some employees.

Perception can be as important as reality, and the concerns expressed in that survey should give CIOs pause, even if they don't think they're being insensitive.

The hard fact is that a significant number of IT pros have left the profession at a time many CIOs complain about the difficulty finding qualified people to fill crucial jobs. Deepening the IT labor pool isn't just a diversity issue: It's an education, public relations and cultural issue, too. Part of solving IT's labor problem is not letting diversity be a barrier.

No doubt a diverse workplace presents leaders with many challenges. But it's incumbent on CIOs to do everything possible to make their organizations an inviting place to work for all. —*Eric Chabrow*

Six Sigma Vs. Innovation

Re: “Worshipping Six Sigma” (July 2007), John Parkinson clearly explains how the best intentions of any process can go awry in the hands of fanaticism. His article states why Six Sigma is needed, but also how rigidity in the implementation of the process can be stifling to an organization.

Unfortunately, Parkinson’s statement “And it doesn’t help to point out that repeating the process unchanged and expecting a different outcome is a good proxy definition for insanity” is all too true of so many IT processes and decisions. It is true of the different processes (COBIT, ITIL, MOF, etc.), and of the decision-making skills of individuals from line-level support to those above C-level management.

Reading Parkinson’s column made me wonder how many potential innovators were being stifled by situations similar to the behaviors described in Irving Janis’ Groupthink theory.

Eileen Mundok
Richmond, Va.

The VC CIO

Re: “New Bosses, New Rules” (July 2007), I joined as CIO after my company was bought by a private equity firm in 2006. I report to the CEO and have a seat at the corporate table. IT has been able to work very closely with the business units to start and deliver high-value projects in a significantly accelerated manner when compared to my experience at large, publicly held companies. Not only has

funding been readily available when a project made sense from financial and efficiency standpoints, we have also been able to find savings with a renewed purpose within IT operations as we renegotiated voice and data contracts and revised our equipment replacement strategies.

Ananda Rakhit
VP and CIO, NES Rentals
Chicago

Recruitment

Re: “What Goes Around Comes Around” (June 2007), recruiting is a problem, but so is managing a global outsourced IT function. If the corporation (large or not) outsourced IT functions because it was having trouble managing the local equivalent, many find the challenge of multicultural, multinational, multilingual, long distance and time zone differences insurmountable. This may explain why the expected outcomes far exceed the actual returns. And it is compounded when the corporation begins to perceive that IT is a fundamental part of a competitive organization and decides

to bring a portion of it back inside.

Building a competitive, efficient IT organization is a long-term undertaking and every bit as difficult as building any other corporate functional unit. When you complicate that by clouding the career prospects of the technical professionals by outsourcing, it is not hard to understand why many of the best and brightest choose a different investment path for their higher education.

Jim Johnson
Critical System Solutions
Houston

‘Vacationless’ Vacation

Re: “Staying Connected on Vacation” (www.cioinsight.com), FYI, Dictionary.com defines *vacation* as “a period of suspension of work ... usually used for rest, recreation or travel.”

Frank J. DiSanzo
CIO, Staten Island University Hospital
Staten Island, N.Y.

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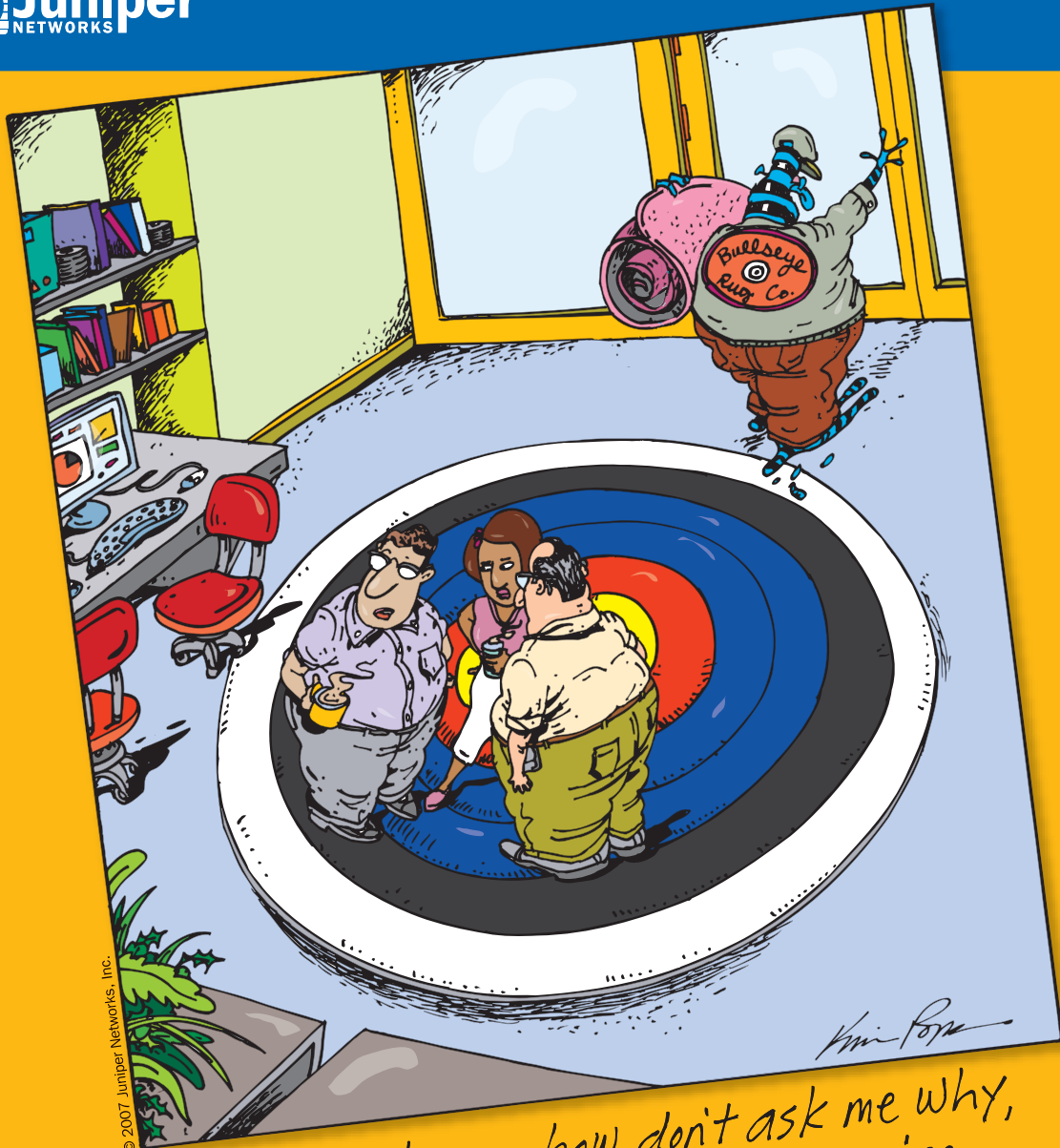
READER’S BLOG (blog.cioinsight.com/readers_view)

Too Much Data... Not

The point I derived from the Peter Fader interview (“Business, More Intelligently,” June 2007) is that less sophistication is in fact sometimes good enough for a guesstimate or to make quick decisions when time is not available. ... No company needs to get bogged down in the proverbial state of “analysis paralysis.”

You make the call: “good enough” or “more data?” I’d prefer to err on the side of more data; after all, when presenting a simple answer or solution, you’ll almost always be presented with the follow-up, “What if ... ?”

Brent P. Malak
Business Intelligence Data Analyst
Spheris Operations LLC
Franklin, Tenn.



*"Don't ask me how, don't ask me why,
but I've got a funny feeling we're
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integrates with Active Directory®, Microsoft® Office, Microsoft Exchange Server, and your PBX. Maximize your current PBX investment and make it part of your new software-based VoIP solution from Microsoft. You're much closer to VoIP than you realize. Learn more at microsoft.com/voip

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FOREWORD

[q&a: david weinberger]

Aristotle Meets iTunes

DAVID WEINBERGER IS AN INTERNET AGE PHILOSOPHER. His latest book, *Everything Is Miscellaneous: The Power of the New Digital Disorder* (Times Books, May 2007), examines ways the Web is reforming our basic ideas about organizing and accessing information, concepts that have helped shape Western thought since the time of the ancient Greeks. Weinberger's previous books include an early examination of Web culture, *Small Pieces Loosely Joined*, and (with co-authors Christopher Locke, Rick Levine and Doc Searls) the influential *Cluetrain Manifesto*. A Ph.D. in philosophy who has worked in academia, the tech industry and as a gagwriter for Woody Allen, Weinberger spoke with *CIO Insight* Senior Writer Edward Cone about the practical implications of this philosophical twist.

CIO INSIGHT: How does the organization of digital information differ from the organization of other information?

DAVID WEINBERGER: There can be only one way of organizing a physical store; that's the way atoms work. Digitally, not only can there be as many ways as we can imagine of organizing, but the organization doesn't have to actually move any of the objects, which means the owners of the stuff no longer have to own the organization of that stuff. You don't have to move the objects; customers can just point to them, like they do with playlists. You can organize by musician, events in your life the music narrates, year produced. The shift is not just in multiple ways of organizing, but that anyone can do it.

Why is that a good thing from a business point of view?

WEINBERGER: Letting users organize information makes the information more usable and more valuable. Traditionally you figure out a way of clustering products online or in a catalog, based upon the season or price or how they are used, and that helps customers find what they need, and to see other things they might want in



the cluster. That mirrors the way we organize things in the physical world. We can still do that, but also enable our users to decide what matters to them, and to pull together clusters around that. That makes a site far more usable, much more directly relevant to their interests and their needs and their way of thinking.

An example: Amazon has a standard set of categories for organizing books, very similar to the Dewey Decimal system, a treelike structure of information. Yet it's all the way at the bottom of the page and hardly anybody uses it. Instead, Amazon organizes in ways you'd never organize a [bricks-and-mortar] bookstore, but that may be useful to some readers. One of the most important [ways

to organize] is clustering books by the purchase patterns of other readers. They also do a linguistic analysis of each book to find statistically improbable phrases that are distinctive to the book, and let you click on the phrases to find books that use them. Someone's going to buy one of the books that's linked that way. Amazon also lets users create their own lists and publish them on Amazon pages, so on the page for *Little House on the Prairie* books there may be a list of 19th century recipe books—that's an usual cut through the material, created by a customer around a topic he or she found interesting. You can also tag or categorize books as you want.

And that can increase sales?

WEINBERGER: There is tremendous practical business value in enabling users to bring to the surface their ways of organizing your stuff. Maybe some small group of people who would have never found your stuff, who wouldn't have known it belongs in this or that category unless somebody else had done it, will find it. It's a Long Tail thing: Businesses are good at figuring out the most valuable categories for the majorities of their users, but there's money left on the table because some number of potential customers—possibly a very large number—would come to your site and buy your product if they knew that this thing you've categorized one way is to them an example of something else. You want to enable customers to sort and organize things in the way they think about them, and to allow them to do it for one another. It's a social activity, not just individuals acting alone.

Are these hard changes for businesses to make?

WEINBERGER: The technology is really simple. The hard part is the bigger shift this entails. We are very used to the notion that the owner of an organization owns the organization of that stuff. If you own a store and customers rearrange the stock, you throw the customers out, even if they rearrange it in a way that makes complete sense to them and may make sense to their friends.

[cio insight asks]

CIOs Want Their Web 2.0

We asked CIOs who participated in this month's Emerging Technologies Survey to tell us which Web 2.0 applications they use personally. It turns out they're avid consumers of many of these technologies. Around half watch videos online and use wikis, blogs and RSS; about a third use social networking sites like LinkedIn; and 12 percent even use virtual worlds like Second Life.

Which of the following Web applications do you use personally?

N=150

Video over the Web	54%
Wikis	49
Blogs	48
RSS (Really Simple Syndication)	47
Podcasts	39
Social networking (e.g., tagging, social bookmarks, community sites such as del.icio.us, LinkedIn, Technorati)	33
Expertise location and sharing	21
Mashups	13
Virtual worlds (e.g., Second Life)	12
Instant mobile updates (e.g., Twitter)	11
None of the above	11

SOURCE: CIO INSIGHT, AUGUST 2007

[web 2.0]

The Next Small Thing

BREVITY IS THE SOUL OF WIT, AND A DEFINING CHARACTERISTIC OF THE Twitter micromessaging system. It might work well for business communications, too.

Launched in 2006, Obvious Corp.'s Twitter lets users send short messages, free, via SMS (short message service, aka text messaging), IM, e-mail or the Twitter Web site. Entries are restricted to 140 characters maximum, or roughly the size of the opening paragraph of this article, and can be read by anyone subscribed to the sender's account.

The microblogging service's tagline—"What are you doing?"—describes a lot of its early uses. A quick scan of Twitter.com finds

Twitterers offering comments from “Back at work. Blah!” to “Just realized The All-American Rejects don’t have a bass player.” Informative, to be sure, but can Twitter do more than keep friends in the loop?

Co-Founder Biz Stone says Twitter was not intended for businesses, but possible uses have emerged. “Twitter works well for distributed teams and in-conference environments,” he says. “We’re keeping an eye on user behavior so we can learn more and grow the service where it makes sense.” Twitter could complement existing tools, if not replace them. “There are plenty of tools for getting work done that are more sophisticated than Twitter,” Stone acknowledges. “For collaborative documenting, a wiki is certainly a smart choice and for an actual, synchronous conversation, I’d recommend IM or a phone call.”

“Twitter works well for distributed teams and in-conference environments. We’re keeping an eye on user behavior so we can learn more.”

—Biz Stone, Co-Founder, Twitter

But almost any organization could find value in a platform-independent group messaging service, for routine communications and emergencies. In fact, Twitter’s cross-platform groupcasting aspect may be more valuable than the brevity of its messages. (Another new product, Pownc, combines Twitter’s groupcasting functionality with more robust content-sharing abilities.)

During an event like JetBlue’s Valentine’s Day disaster, for example, passengers and staff using a multitude of devices could benefit from quick messages informing them of shift changes, flight delays and cancellations. Financial services and

health-care firms could use Twitter-like services to instantly notify customers of a hacker attack or data loss where sensitive information could have been revealed, and so on.

Dave Winer, a developer who helped pioneer RSS (Real Simple Syndication), blogging software, podcasting and other Web 2.0 technologies, sees even broader potential in Twitter. He points out a parallel between some of the early criticisms of the service and the early knocks on blogs; in April he wrote at his site, Scripting News (www.scripting.com), “When I develop something new these days, I automatically think of using Twitter as a back-end to connect users. ...

“If other developers aren’t doing this, I imagine they will be soon.”

In late July, Winer wrote that Twitter is, at its core, about “users and relationships between users, their ideas, and an ecosystem. It’s probably the basis for some pretty hot apps.

“Will it be possible to monetize them?” he adds. “Without a doubt.” —Brian P. Watson

[customer service]

Netflix: The Movie

NETFLIX TREATED THE PUBLIC TO ITS OWN mystery movie after its Web site crashed July 23 by refusing to discuss the problems with the press. The timing added dramatic tension: The outage hit just hours after the online movie mail-order service, amid price wars with Blockbuster, announced a quarterly decline in new customers, and lowered expectations for revenue and profit. Stock shares dropped to two-year lows the next day.

Meanwhile, Netflix’s IT staff scurried to identify and fix the problem, missing self-imposed deadlines along the way. Netflix, whose site accounted for 12 percent of U.S. traffic to entertainment sites the previous week, according to Hitwise, left its 6.74 million customers without access to their accounts for 18 hours.

More than a week later, Netflix spokesman Steve Swasey blamed the outage on “a database problem” and said “safeguards” were being put in place to prevent a reoccurrence; he didn’t provide details, but said the outage hadn’t affected customer service.

“Customer reaction has been infinitely less than media reaction,” Swasey says. “We didn’t do grand pronouncements in a press release; there was no need to. We were very receptive to calls from investors or customers.” The company expects no customer defections as a result of the outage or its handling of the situation, he says.

Some movie-style magic might be needed to make that wish come true.

The first rule for any company in a crisis—especially a service provider battling heavy competition—is to communicate, according to IT consultant Jack Gold. “The worst thing you can do in a commodity market is not offer good customer service,” Gold says. “And having a problem and not telling people about it is bad customer service.”

In other words, don’t leave customers in the dark. Popcorn or not. —Brian P. Watson

[book excerpt]

Smart Options for Stupid Choices

Why do smart managers make dumb mistakes? Stanford Professor Jeffrey Pfeffer explores that conundrum in What Were They Thinking? Unconventional Wisdom About Management (Harvard Business School Press, July 2007). In this excerpt, Pfeffer discusses why using technology to find better employees is more effective than customer relationship management and call answering systems to improve customer service.

CUSTOMER SERVICE HORROR stories are legion. Airlines are frequent offenders. And retailers—don't ask. It's difficult to find sales help in many stores, and if you do, the odds of the employees being able to actually answer your questions and resolve issues are almost infinitesimal. As an old cartoon once lamented, if we supposedly live in a service economy, how come there is so little service?

When companies do decide to act to build stronger relationships with their customers, they mostly emphasize the wrong approaches, seeking their salvation in technology instead of in their people. What companies appear to be doing in an attempt to increase service and improve customer retention is investing ever larger amounts in customer relationship management and automated customer service software, even though it is far from clear that such actions are going to make things better.

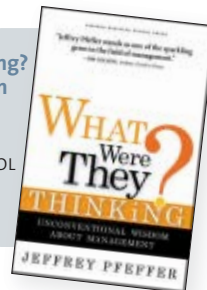
Spending on CRM dominates investment in categories of software. Retailers are particularly enamored of CRM technology, with one survey in 2003 finding that

already 65 percent of retailers had implemented at least one CRM application and some 80 percent of those surveyed say that investments in CRM were a good way to build their business. Ironically, much of the investment in CRM software has been oriented toward reducing the costs of servicing customers, not building new or stronger customer relationships.

But before you can manage a customer relationship, you first

**What Were They Thinking?
Unconventional Wisdom
About Management**

By Jeffrey Pfeffer
HARVARD BUSINESS SCHOOL
PRESS, JULY 2007
214 PAGES, \$25



need to build or create that relationship. And customer relationships are not really built by fancy data-mining and statistical analysis packages that track people's behavior, nor by the now ubiquitous automated phone systems that basically just irritate people. Rather, relationships and their quality are determined by what happens to customers when they actually make contact with the organizations that have so avidly sought their business through advertising and other promotions.

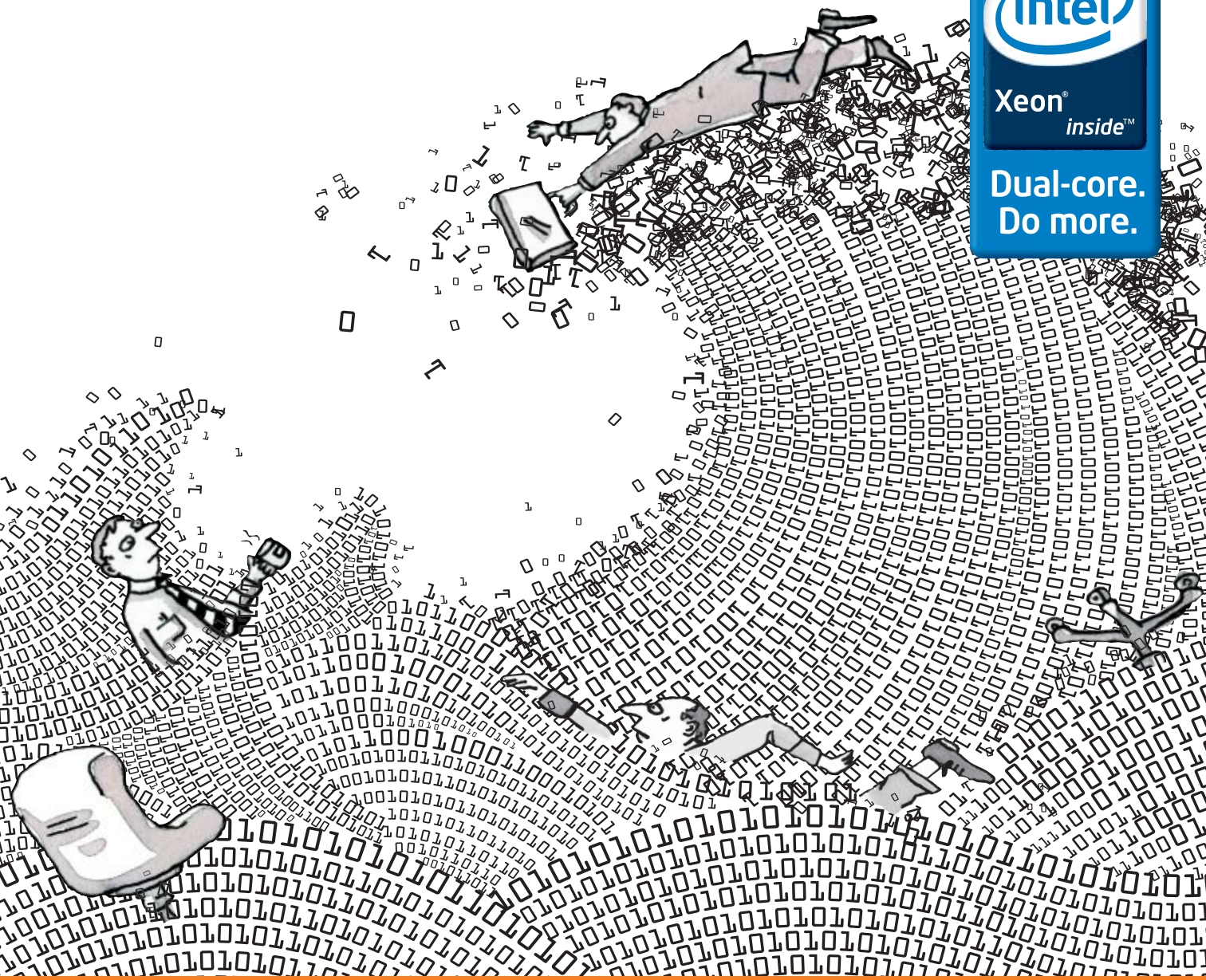
Interactions between companies and their customers are still, even in this Internet age, often conducted by, of all things, real live human beings. That's why successful organizations in industries such as airlines, hospitality, retailing, and financial services are relentless

in their attention to hiring people who will fit into a service-oriented culture; diligent in inculcating—through extensive training—service skills and attitudes; and, most importantly, scrupulous in taking care of their people so they will feel good about and be proud of the company and want to deliver a great customer experience.

So maybe instead of splurging on automated phone systems and software to analyze people's buying patterns, or even on fancier robotic telephone answering technology, if companies want to invest in technology to actually improve customer service and retention they might be better served to first invest money in software that helps them hire better people who are more likely to stay.

Unicru (now part of Kronos) and Kenexa, for instance, are both organizations that sell systems that not only automate the hiring process, thereby saving money through enhanced efficiency, but also offer predictive models to select employees who are less likely to steal, less likely to quit and more likely to provide great customer service experiences. Widely adopted in the grocery industry by companies like Whole Foods Market and by retailers such as Nordstrom and the home improvement chain Lowe's, the evidence is convincing that these selection systems reduce turnover and turnover costs and help select better employees.

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“How can you securely exchange sensitive information with partners?”

“Do security protocols handicap your remote workers?”

“How do you keep encryption simple for non-IT employees?”

“How do you protect data at rest?”

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September 26, 2007

KEYNOTE:

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- Joe Bernick, Chief Information Security Officer, LaSalle Bank
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RESEARCH CENTRAL
by allan alter

Delete This Article

Storing data unnecessarily is counterproductive and potentially disastrous. How will you break the hoarding habit?

Corporate gluttons have more data than they can digest; it's putting them at risk for several potentially fatal diseases.

YOU KNOW THAT VILE SLOGAN, "KILL THEM ALL; LET God sort them out?" In IT, we have a similar attitude: "Collect it all; let marketing sort it out." We can't keep increasing the amount of customer data we collect by 51 percent a year, as our October Customer Strategies Survey found we've been doing. That approach to data has got to go, and we need a take-charge attitude to *make* it go.

For years, companies struggled to feed their hunger for information about customers, competitors, markets and finances. Over time, IT has come up with more ways to provide more information, and companies have hoarded as much of that information as they could. Today, though, these corporate gluttons have more data than they can digest; it's weighing them down and putting them at risk for several potentially fatal diseases.

Harming customers, clients and ultimately their organizations by leaking personal information is the obvious one. Social Security numbers, credit card numbers, personal identifiers and contact information frequently bite the hand that holds them. Another is the very high cost of gathering, entering, cleaning, processing, manipulating, synchronizing, storing, securing and ensuring the availability of all that data. Virtualization helps, but it's not sufficient. If we only use 43 percent of customer data to understand customers, as our Customer Strategies Survey shows, why collect so much? As Sun Microsystems Chief Privacy Officer Michelle Dennedy recently and sensibly told me, "Why collect information that can only cause us pain?"

Piling on information doesn't make us smarter. Wharton marketing professor Peter

Fader explained the folly of collecting unnecessary consumer information, in our June interview: *"Additional data can actually harm you because you're going to start capturing random, quirky, idiosyncratic things that aren't related to the true underlying propensities... Data on demographics, psychographics, socioeconomics and even consumer attitudes can not only waste servers and storage space but can actually make the models [used to forecast customer behavior] perform worse."*

We must stop storing sensitive information. We must stop collecting information that confuses instead of clarifies. We must break our addiction. And while information governance and information lifecycle management are part of the solution, they're not enough. CEOs: Set up an executive-level task force to identify and eliminate information that fails the need-to-have/need-to-store test. Question, prod and push your management team. Embrace tough international data privacy standards. Set an example by simplifying your own information needs. Executives: Do a risk/return analysis of the information for which your organization is responsible. If no one will take responsibility for the data, delete it. CIOs: Design an IT and information architecture to minimize storage and data duplication, especially on loss-prone laptops. Get serious about security awareness training.

Disagree? Fine, but come up with a better solution. Then delete this article; you won't need it any more. +

ALLAN ALTER is executive editor of CIO Insight. Please send questions and comments about this article to editors@cioinsight-ziffdavis.com.



[EMERGING TECHNOLOGIES]

Don't Wait (Too Long)

Early adopters report payoffs from new technology. But don't buy in without a strategy. **By Brian P. Watson**

AS MARRIOTT INTERNATIONAL'S STEVE Wolf watched a recent documentary on the setbacks in development of the world's first jet fighter, he saw some striking parallels to modern-day corporate innovation and competition.

The Messerschmitt ME 262, the German jet aircraft that might have given the Nazis aerial superiority in World War II, stalled in development as government officials withheld funding, betting—incorrectly—that their existing air fleet would win the skies. That decision, says Wolf, the hotel operator's chief enterprise architect, resembles the difficulties today's businesses face in deciding how quickly to invest in emerging technologies.

Becoming an early adopter of new technologies requires companies to take significant risks—grappling with unproven tools and vendors that may not survive, for instance—in the hopes of getting an edge on the competition. But stalling those investments based on fear, uncertainty or confidence in existing technologies, or worse, doing nothing at all, can destroy a company's ability to compete. "Some organizations will be successful and some won't," Wolf says, "but they wouldn't be successful if they just watched it go by."

Adopting emerging technologies appears to pay off, and on the face of it, sooner rather than later. More than 90 percent of respondents to *CIO Insight's* latest Emerging Technologies Survey who claimed to be early adopters said their companies saw significant payoff from adopting emerging technologies. Meanwhile, about three in four mainstream adopters (businesses

that lag behind early adopters) replied in kind, while less than half of late adopters realized benefits from emerging technologies. (See survey results, page 27.)

By those results, it's easy to assume that diving in early yields the biggest splash. But success as an early adopter requires a process of evaluating risks and potential rewards, testing, planning and ultimately deploying the technologies. And even then, it demands a leap into the unknown.

Still, despite different strategies for emerging technology adoption, IT executives and academics say one thing is clear: Reliance on new technologies is risky, and companies should implement them primarily to create competitive advantage or solve critical business needs.

ROI Isn't Everything

"It's really hard to see which emerging technologies are going to turn out to be big hitters," says Robert D. Austin, associate professor of business administration at Harvard Business School and chair of the school's executive program for CIOs. "At the most fundamental level, it must be an outgrowth of the company's business strategy: Are you trying to get ahead? Or be a fast follower?"

Either way, return on investment becomes a crucial factor. The problem with new or unproven technologies, however, is that it's difficult to calculate the financial benefits, since there are few documented case studies, Austin says.

But that's actually something of a blessing. By relying too heavily on ROI metrics and projections, companies tend to opt for proven or "incremental" technologies instead of zeroing in on potential breakthrough tools that

could deliver greater long-term returns. “You have to get over the sort of mindless application of metrics biased toward efficiency and cost reduction,” Austin says.

John Petrey, CIO of TD Banknorth, describes his financial services company as a fast follower. One exception came in 2003, when the company learned that its middleware vendor would no longer support the software integrating its online banking and back-end systems.

At that point, Petrey saw an opportunity: Web services could provide an alternative to existing options. What’s more, he figured, they probably wouldn’t be

gunning for us, so we have to have enough technology to deflect those shots against us.”

Adopting Early and Often

Roughly one in five companies are early adopters, according to our survey. But before becoming early adopters, companies must overcome obstacles such as perceived risk—the reluctance to buy based on the uncertainty of the product’s performance capabilities. “Perceived risk, if not the killer, is often an impediment to adoption time,” says George Day, professor of marketing and director of the emerging technologies man-

“Perceived risk, if not the killer, is often an impediment to adoption time.”

—George Day, Wharton School

obsolete before they were deployed. Rather than discuss the technology in terms of bits and bytes, Petrey pitched the business side by explaining how Web services, operationally, could pay dividends long term.

Quantifying ROI posed a challenge. Instead, Petrey and his team analyzed the potential operational gains, as well as how to mitigate any implementation and execution risks. “The business first had to convince itself this wasn’t just an IT organization that saw some cool technology it wanted to go after,” he says.

Marriott tends to be conservative about adopting emerging technologies. “The only time we’d rapidly adopt [an emerging] technology is if it’s low risk and wouldn’t disrupt our business,” Wolf says.

When a new technology piques Wolf’s interest, he and his team do an internal evaluation to classify the technology as “core” (fundamental to operations), “mandatory” (not crucial, but consistent with architectural standards), “optional” (could be used if a clear business case is presented) or “emerging” (under evaluation). Usually, he says, the new technology remains in the “emerging” bucket; occasionally it’s moved to “optional.” In rare cases, though, the technology is elevated to “mandatory” status.

To prevent missing the boat on technologies, Wolf recommends creating an internal “innovation center,” staffed with expert developers and programmers who can test and evaluate technologies as they emerge. He’s looking to develop this capability at Marriott.

“We’re the largest hospitality company in the world, so we have everything to lose,” he says. “Everybody’s

agement research program at the Wharton School. “Any time you introduce uncertainty, people are going to hesitate.”

That uncertainty begets more uncertainty. If companies aren’t adopting the technology, it has no chance of becoming truly “disruptive” to the marketplace, Day says. And with little sales revenue, vendors and developers can’t invest in improvements; it’s a Catch-22.

For some, though, the rewards of early adoption outweigh the risks. Ruby Tuesday CTO Nick Ibrahim consistently seeks new technologies to automate operations and improve efficiency for the 900-restaurant chain. Two years ago, the company bought a software display system that guides cooks through step-by-step food preparation—when to put a burger patty on the grill, when to flip it and when to plate it, for example. A DOS-based version of the program had been in use there for some time, but when the vendor built a Windows-based version with better functionality and graphics, Ruby Tuesday was among the first to take the plunge.

The early adoption paid off: The new technology eliminated Ruby Tuesday’s need for kitchen managers; it also improved customer service, and speeded table turnover, helping cut average dining time from 55 minutes to 45 minutes. It eliminated the need to print and distribute instructional cooking posters, too, saving the company \$1 million a year, Ibrahim says.

The risk of early adoption may have been uncommonly small; the company could have reverted to the DOS version. But the reward, making progress on an important business goal, is not uncommon for companies that adopt emerging technologies with care. +



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Virtualization Summit	Creating the Virtual Enterprise	June 6, 2007* October 10, 2007	Boston, MA New York, NY
Channel Summit	<i>eWEEK Strategic Partner & Channel Insider</i>	September 19, 2007	Chicago, IL
Storage Summit	From Data Growth to Business Growth: Lean and Green Strategies for Maximizing Storage ROI	October 3, 2007 October 17, 2007	New York, NY Los Angeles, CA
Fall Security Summit	The New Imperatives for a Secure Enterprise	November 1, 2007 November 8, 2007 November 13, 2007	Dallas, TX Palo Alto, CA Crystal City, VA

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A young girl with brown hair tied in a ponytail with a white bow is sitting at a piano, looking down at the keys. She is wearing a purple long-sleeved shirt with white lace trim at the cuffs. The background is a blurred window with green foliage outside.

ODDS OF A CHILD
PERFORMING AT CARNEGIE HALL:
1 in 73,000

ODDS OF A CHILD BEING
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[RESEARCH | EMERGING TECHNOLOGIES]

Getting From Promise to Payoff

Web video, virtualization, Ajax and wikis are among this year's hottest technologies. But companies won't cash in on these investments unless they have supportive cultures and processes. **By Allan Alter**

EMERGING TECHNOLOGIES ARE THE stuff IT dreams are made of. Their potential to improve processes, productivity and profits are a big part of what makes IT so fascinating. But CIOs know they can't just install a new system and expect instant, automatic results. That's why, in *CIO Insight's 2007 Emerging Technologies Survey*, we not only track the status of 48 potentially important technologies but we explore the management practices that help IT executives turn the promise of those technologies into payoffs. We also examine the track records of 18 technologies that appeared in previous years' emerging technology surveys and have since reached an adoption rate of 25 percent or higher. (The entire list can be found at www.cioinsight.com/research.)

This year, we found IT executives particularly intrigued by Web video, a wide variety of Internet and Web 2.0 technologies, and virtualization. CIOs hope these technologies will deliver business value, just as widely adopted technologies like Web services and voice over IP (VoIP) have done at most companies. But to maximize benefit, CIOs and their

TECHNOLOGIES TO WATCH

Respondents voted these emerging technologies most likely to provide business value in their respective technical categories:

TECHNOLOGY	TOTAL
Video over the Web	34%
Business process platforms/management suites	24
Service-oriented architecture	23
Smart cards	23
Ajax	16
Enterprise search	16

employers will have to be agile: They'll need resources to investigate and test promising new technologies, processes to quickly adopt promising new technologies and cultures that encourage experimentation. In addition, CIOs must involve business executives in the hunt for new technologies and be open to new ideas, whether those ideas come from IT professionals, other employees or outside the company. Whether or not your company is an early, mainstream or late adopter, such practices help CIOs get the biggest payoff from emerging technologies.

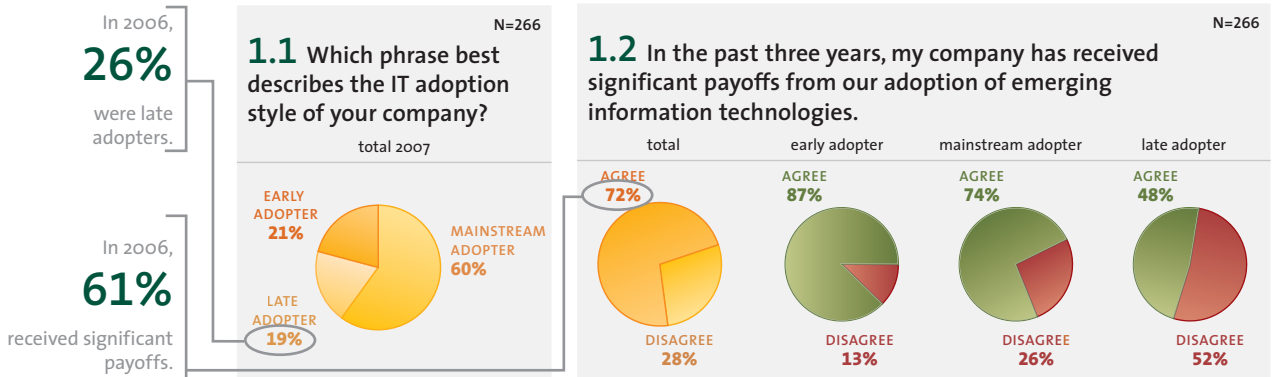
8.5%

Average share of the IT budget devoted to emerging technologies.

finding 1

Process Improvement Remains the Prime Payoff

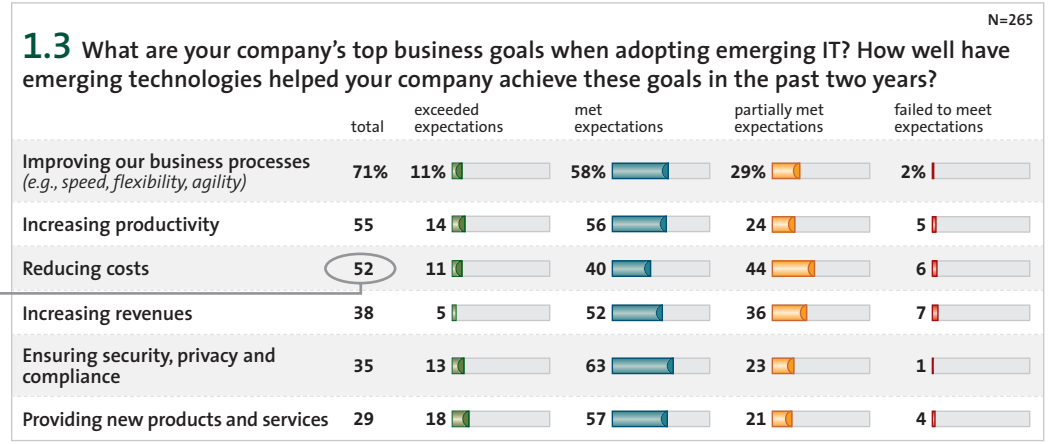
Early and mainstream adopters are more likely than late adopters to get business value from emerging technologies. And with more respondents claiming to be early or mainstream adopters this year than last, the percentage of IT executives achieving significant payoffs has risen. In fact, investments in recently emerged technologies such as Web services and VoIP often exceed expectations. In general, emerging technologies are helping companies improve business processes and productivity; since process improvement requires IT-business cooperation, this suggests the two groups usually work well together. Fewer companies are using emerging technologies for new products and services, but these firms usually see payoffs. Reducing costs or increasing revenues by using emerging technologies is tougher to achieve.



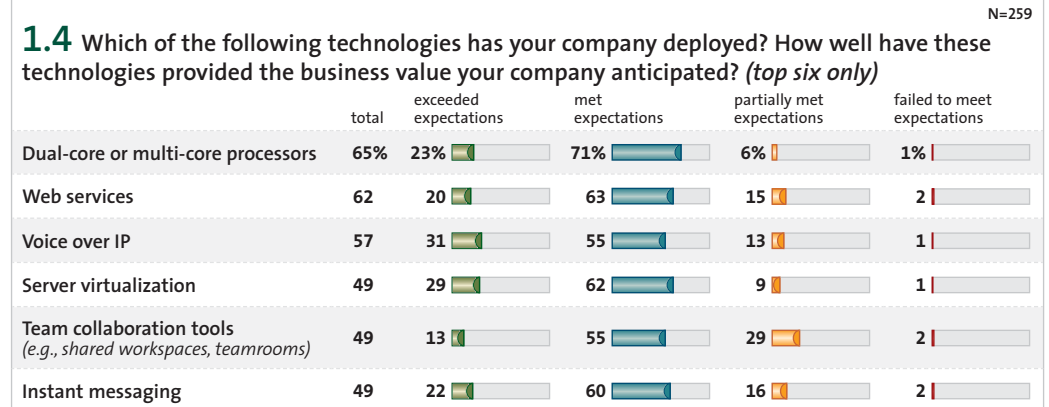
In 2006, **26%** were late adopters.

In 2006, **61%** received significant payoffs.

60% of late adopters sited reducing costs as a top goal when adopting emerging technologies.



Totals may not add up to 100% due to rounding.



Totals may not add up to 100% due to rounding.



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finding 2

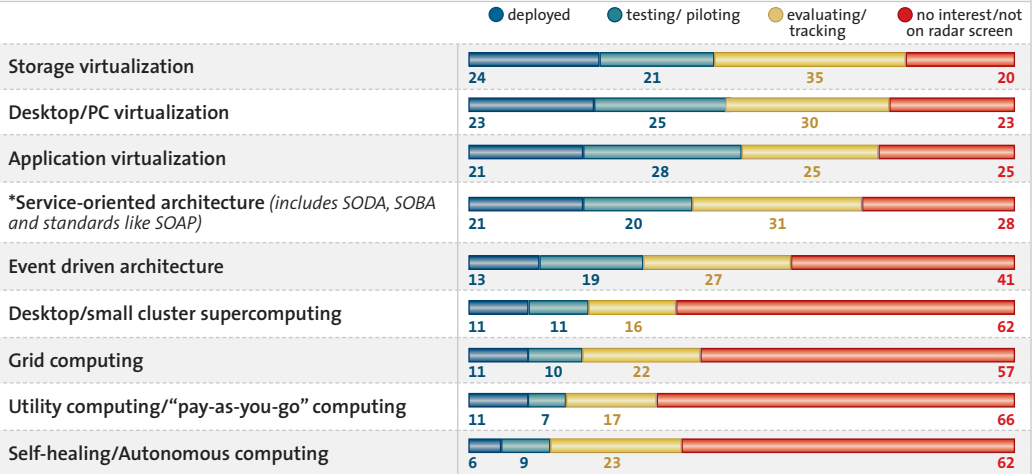
Companies Show Strong Interest in Web Video

There's been an uptick in interest in emerging technologies. Process improvement, greater productivity and cost reduction are the main goals, but the “hot” emerging technologies don't fall neatly into those buckets. Yes, many of the leading items on our list of 48 emerging technologies, including virtualization, service-oriented architecture, ITIL (IT Infrastructure Library) and business process management suites can streamline, integrate or improve processes and IT operations. But there's also interest in Internet and Web 2.0 technologies that could lead to new applications and IT innovations. The most notable example is Web video, the technology considered most likely to provide business value. The high rate of implementation and experimentation indicates if there's a killer application on this list, it's likely to be this one. But video isn't getting all the attention: CIOs are experimenting with more technologies than they were last year, judging by the larger number of respondents who say they're testing or piloting emerging technologies. In particular, there's been a jump in interest in ITIL, desktop Linux and predictive analysis, and a significant increase in the number of companies that have deployed desktop virtualization, desktop search, Ajax (the Web development tool) and wikis. One surprise: Our survey turned up relatively little deployment, testing or piloting of emerging mobile technologies. Perhaps the strong interest in the iPhone will show vendors and CIOs there's a hunger for innovation here.

2.1 Please indicate where your company stands with regard to the following new technologies. (*indicates technology respondents report most likely to provide business value)

COMPUTING TECHNOLOGIES AND STRATEGIES

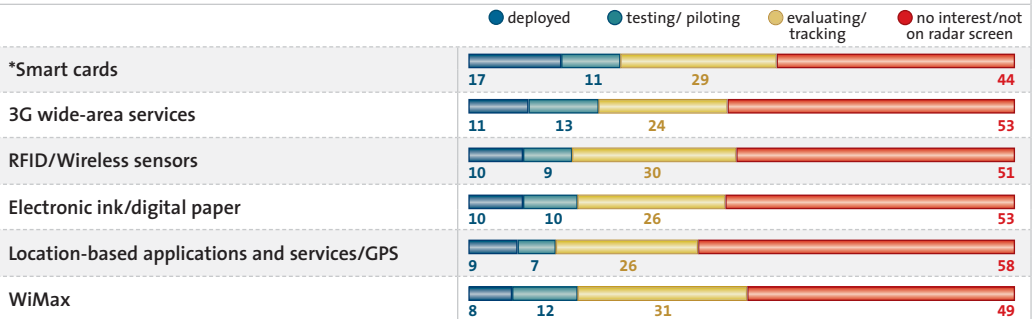
N=263



Totals may not add up to 100% due to rounding.

NETWORKING AND MOBILE TECHNOLOGIES

N=260



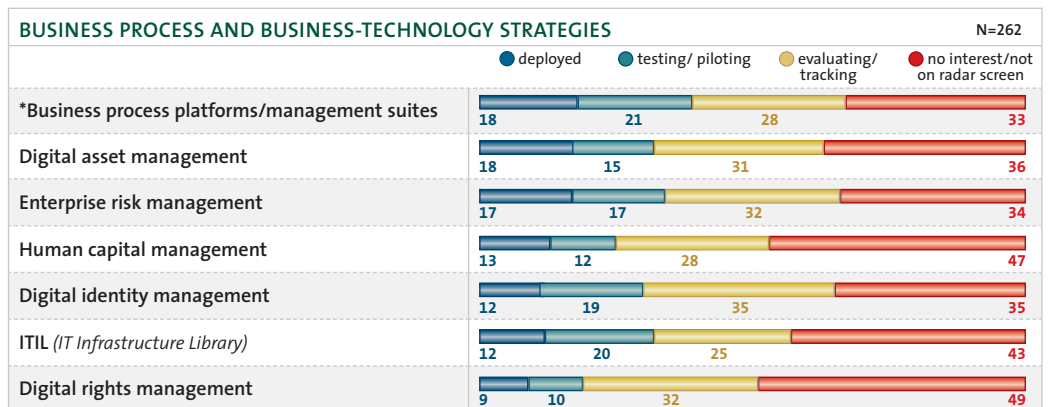
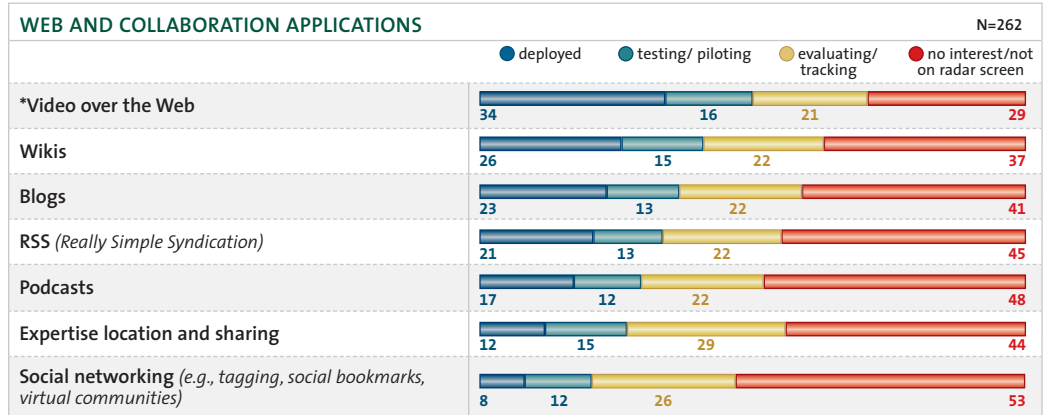
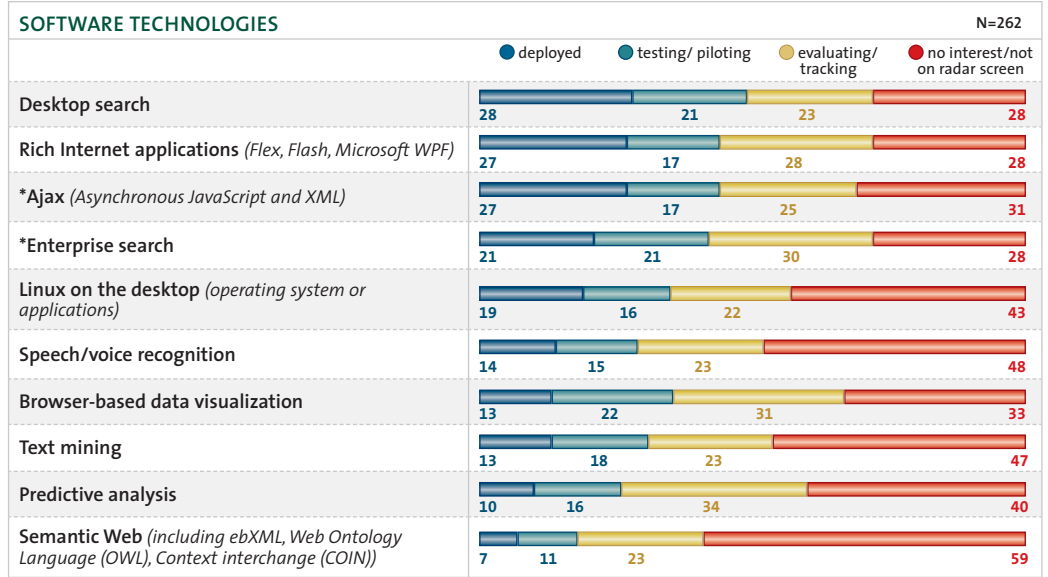
These nine technologies were deployed by 5% of respondents or less: XBRL (extensible business reporting language), social network analysis, instant mobile updates (e.g., Twitter), mesh networks, mobile robots, MEMS (micro-electromechanical systems), mashups, virtual worlds (e.g., Second Life) and microcommerce.

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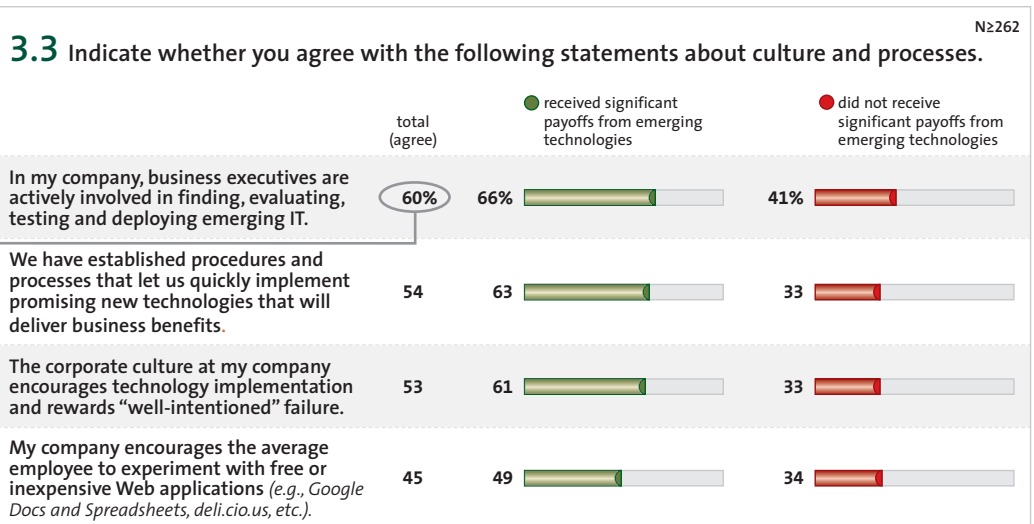
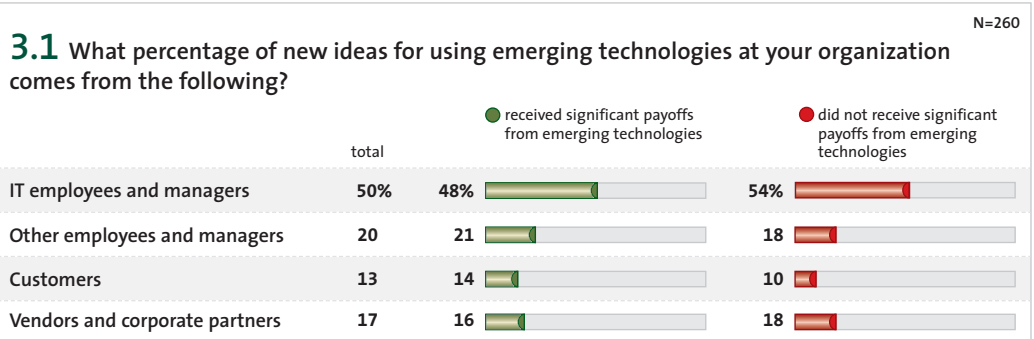
➔ **More online:** Go to www.cioinsight.com/research for additional data from the survey.

How the survey was done: CIO Insight editors designed the 2007 Emerging Technologies survey together with members of the Ziff Davis Enterprise research staff. IT executives gathered from Ziff Davis Enterprise publication lists were invited to participate in the study by e-mail. The questions were posted on a password-protected Web site, and 266 qualified respondents (143 from companies with revenues in calendar 2006 between \$5 million and \$100 million; 79 from companies with revenues between \$100 million and \$999 million, and 44 from companies with revenues of \$1 billion or more) replied from June 7 to June 20, 2007. Of the respondents, 56 percent were the top IT executive of their company, and the rest held other IT executive positions.

finding 3

Culture Makes Emerging Tech Pay Off

It's important to support experimentation, remove fear of failure and create processes to implement promising new technologies quickly. This year's Emerging Technologies Survey confirms good practices identified in our 2006 and 2005 surveys. We also found that while it's important to involve business executives in emerging technologies, it doesn't matter whether new ideas for these technologies originate from inside or outside the IT organization; there is little impact on the ultimate payoff to the company. So, while CIOs should encourage ideas from outside the IT organization, including third parties, ultimately they should continue to turn to their own staffs. In addition, CIOs should consider ways to put new consumer technologies, including games, to business use. All in all, early adopters are more likely to follow these practices consistently, which helps explain why they are more likely to see payoffs from emerging technologies.



Totals may not add up to 100% due to rounding.

finding 4

Cast Your Net Wide to Find New Technologies

In-house testing facilities help companies select emerging technologies. Are CIOs looking hard enough for new technologies? Only three sources are used by more than 50 percent of respondents to help companies identify promising emerging technologies: publications, vendors and associations. Companies that receive payoffs are more likely also to employ consultants and their own staffs to search for new technologies. And most IT organizations have dedicated testing facilities, which are helpful, but should not preclude employees outside IT who wish to experiment with new technologies, too.

Companies that use these sources are **12% to 17%** more likely to receive significant payoffs from emerging technology than companies that do not.

N=266

4.1 Which of the following resources does your company use to identify promising emerging technologies? Overall, how good a job have these resources done at identifying promising emerging technologies?

	total	consistently successful	mostly successful	mostly unsuccessful	consistently unsuccessful	don't know/ not used long enough
Magazines, newsletters and Web sites	78%	12%	67%	16%	0%	5%
Vendors and partners	74	10	71	16	2	2
Industry associations	55	11	70	10	1	8
Non-IT employees interested in emerging technologies	44	13	56	16	4	11
Research firms (e.g., Gartner, Forrester)	43	17	61	10	4	9
A dedicated IT function for finding, evaluating, testing and deploying emerging technologies	39	29	60	6	0	6
Internal blogs, wikis, etc., for reporting and sharing ideas on new technologies	24	10	60	5	0	26

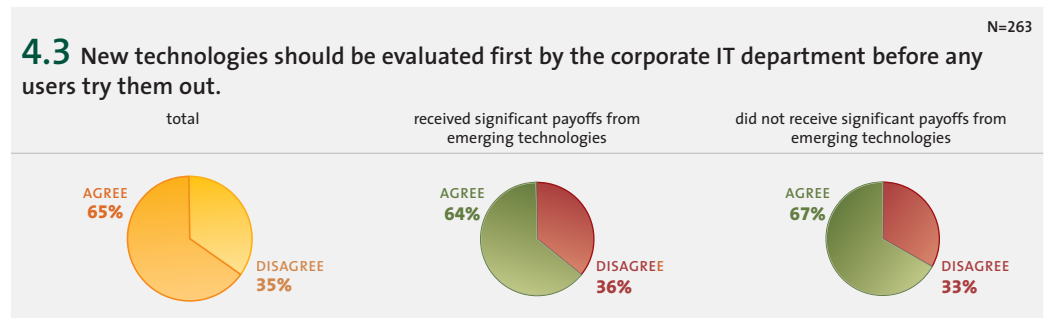
Totals may not add up to 100% due to rounding.

N=266

4.2 Which of the following resources does your company use to test and evaluate promising emerging technologies? Overall, how good a job have these resources done at selecting which emerging technologies to implement and which ones to drop?

	total	consistently successful	mostly successful	mostly unsuccessful	consistently unsuccessful	don't know/ Not used long enough
In-house testing laboratories or test beds	61%	29%	61%	5%	1%	4%
A dedicated IT function for finding, evaluating, testing and deploying emerging technologies	48	22	70	2	2	4

Mainstream and late adopters **(66% and 68%)** are more likely than early adopters **(57%)** to say new technologies should first be evaluated by IT departments.





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New Technologies To Grow On

CIOs at midsize companies are betting on the Internet and virtualization to help their businesses run better. [By Allan Alter](#)

You don't need a big IT budget to investigate or invest in emerging technologies. Nearly one in four mid-market companies are early adopters of new information technologies, according to our 2007 study of emerging technologies; 23 of the 30 technologies listed on the following page are being deployed, tested or explored by at least half of the more than 200 midsize companies we surveyed.

While Internet technologies and virtualization dominate the top 10, there's also strong interest in search, service-oriented architec-

ture, identity management and business process platforms and suites. While small and midsize companies are more likely to be early adopters than larger companies, we didn't find evidence that they are more likely to see payoffs than larger early adopters. Like larger firms, mid-tier firms need a culture that supports innovation and processes that support effective technology implementation. Midsize companies should be especially careful about investing in emerging technologies they hope will reduce costs; nearly half say these investments haven't fully met their expectations.

finding 1

The Web Tops Emerging Tech List for SMBs

Six of the top 10 emerging technologies are Web applications or Web application-enabling software (Ajax, Flash). That's a clear signal that the Internet remains the most important opportunity for SMBs. Still, some Web 2.0 technologies (mashups, virtual worlds, social networking) have been adopted by 6% or less of companies, too few to make the top 30 list. The top 10 technologies also include PC, storage, and application virtualization.

1.1 Please indicate where your company stands with regard to the following technologies. (top 30 technologies only; *indicates technology most likely to provide business value) N=202

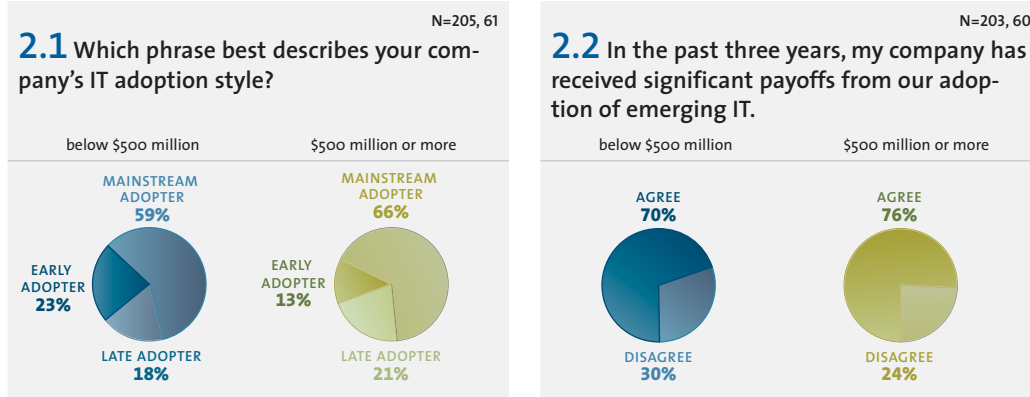
RANK	TECHNOLOGY	CATEGORY	DEPLOYED	TESTING/PILOTING	EVALUATING/TRACKING	NO INTEREST/NOT ON RADAR SCREEN
1	*Video over the Web	web	31%	16%	22%	31%
2	Desktop search	sw	28	22	23	26
3	Desktop/PC virtualization	comp	25	23	29	24
4	Rich Internet applications (Flex, Flash, Microsoft WPF)	sw	25	17	29	30
5	*Ajax (Asynchronous JavaScript and XML)	sw	24	16	26	34
6	Wikis	web	24	14	23	40
7	Blogs	web	21	12	22	46
8	Storage virtualization	comp	20	19	38	23
9	RSS (Really Simple Syndication)	web	20	12	22	47
10	*Application virtualization	comp	19	27	27	27
11	Service-oriented architecture (includes SODA, SOBA and standards like SOAP)	comp	19	19	30	33
12	Enterprise search	sw	18	19	32	31
13	Linux on the desktop (operating system or applications)	sw	16	16	22	47
14	Digital asset management	bp	16	12	33	40
15	Browser-based data visualization	sw	15	19	31	35
16	*Business process platforms/management suites	bp	15	18	29	37
17	Event driven architecture	comp	14	18	24	45
18	Podcasts	web	14	12	23	51
19	Smart cards	nw	14	9	28	50
20	Speech/voice recognition	sw	13	16	24	48
21	Enterprise risk management	bp	13	14	31	42
22	Expertise location and sharing	web	12	13	29	47
23	Text mining	sw	12	16	21	52
24	Desktop/small cluster supercomputing	comp	12	10	14	65
25	Human capital management	bp	11	10	24	54
26	*3G wide-area services	nw	11	10	23	56
27	Utility computing	comp	11	6	15	69
28	Electronic ink/digital paper	nw	10	9	27	54
29	Digital identity management	bp	9	15	36	39
30	Predictive analysis	sw	9	14	34	44

KEY:	
bp	Business process and business-technology strategies
comp	Computing technologies and strategies
nw	Networking and mobile technologies
sw	Software technologies
web	Web and collaboration applications

finding 2

Are SMBs Taking Advantage of Being Early?

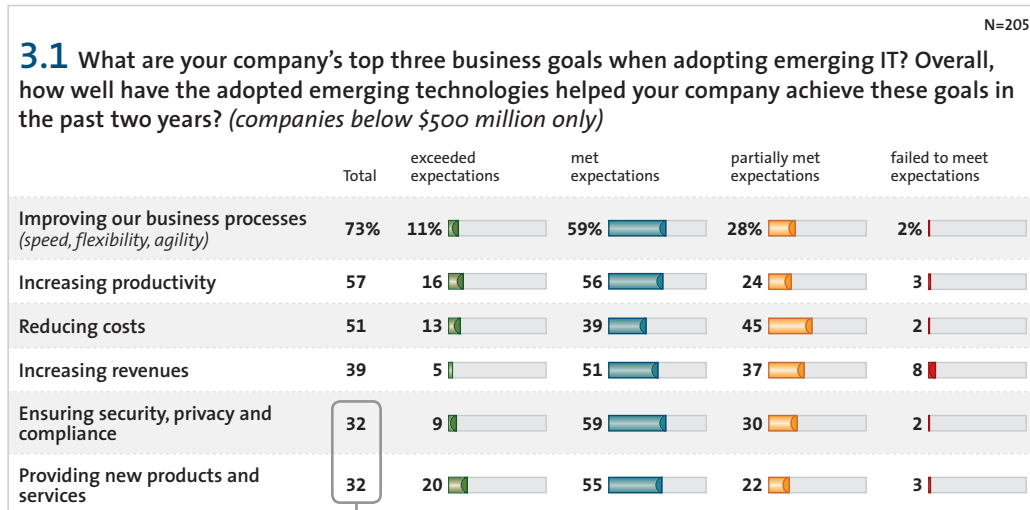
Small companies are more likely to be early and mainstream adopters—but they aren't more likely to receive significant payoffs. That's a sign that smaller companies aren't necessarily good at managing innovation, and that their cultures are not quite as receptive to using emerging technologies as they may think.



finding 3

Mid-Market Puts Premium on Process

SMBs don't have the same priorities for emerging technologies as larger companies have. Mid-market firms place more emphasis on process improvement, productivity, and providing new products than larger companies, but not as much emphasis on cost cutting or security.



At **32%**, SMBs are less likely to turn to emerging technologies for security than are companies over \$500 million (46%), but more likely to turn to emerging technologies for providing new products and services (18%).

37% of mid-tier companies have a dedicated IT function for finding, evaluating and deploying emerging technologies.

89% of these firms say these groups are successful at identifying emerging technologies.

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5

Best Practices for Governance, Risk And Compliance



By Doug Bartholomew

Getting financial systems and processes in order has proved to be a major challenge for most public companies since Congress enacted the Sarbanes-Oxley Act five years ago. While most companies have a handle on Sarbox compliance, concerns about governance, risk and compliance remain, especially as they relate to information technology. Based on interviews with CIOs and other experts, here are five best practices to help you address these challenges.

* we see a bridge that connects the two.
you.



When business and IT are working as one, some wonderful things happen. Costs go down, and overall agility goes, well, through the roof. But the best news is that you can collaborate in new ways. New products can be driven by customer insights. And you can quickly react to opportunities. In short, you can innovate. Since a CIO's panoramic view of the business is unmatched, your role in bridging



the integration gap is crucial. But how do you actually do it? Where do you start? On the next page, we begin to answer those questions. You'll find insights from a company that has a wealth of business process and IT experience. And there's one person who can bring that depth of knowledge to bear on your business. You. To find out more, go to ibm.com/special/cio

what makes you special?



Even if the Sarbanes-Oxley Act of 2002 had never come along, the panoply of compliance, risk and governance issues facing American corporations in the 21st century already was expanding quite nicely, thank you. The impact of “Sarbox” mostly was to shift things into overdrive.

“What Sarbanes-Oxley did was really a copy of what the Securities and Exchange Commission was requiring the exchanges to comply with already,” says Bernie Donnelly, vice president of quality assurance at the Philadelphia Stock Exchange.

Indeed, banks and securities firms had been dealing with similar regulations for years, so Sarbox was no big deal for them. But for the rest of corporate America, getting financial systems and processes in order was a massive undertaking.

“Most companies initially did their Sarbanes-Oxley compliance efforts with a lot of human beings, and now they are trying to automate these activities as much as they can,” says John Hagerty, vice president of research for governance, risk and compliance at AMR Research.

And while most large organizations have their Sarbox houses more or less in order now, concerns over governance, risk and compliance, especially as they relate to the role information technology plays, aren’t likely to become any less critical any time soon.

CIO Insight talked with CIOs and other executives as well as several compliance experts to identify the technology best practices companies should follow to improve their governance and risk management.

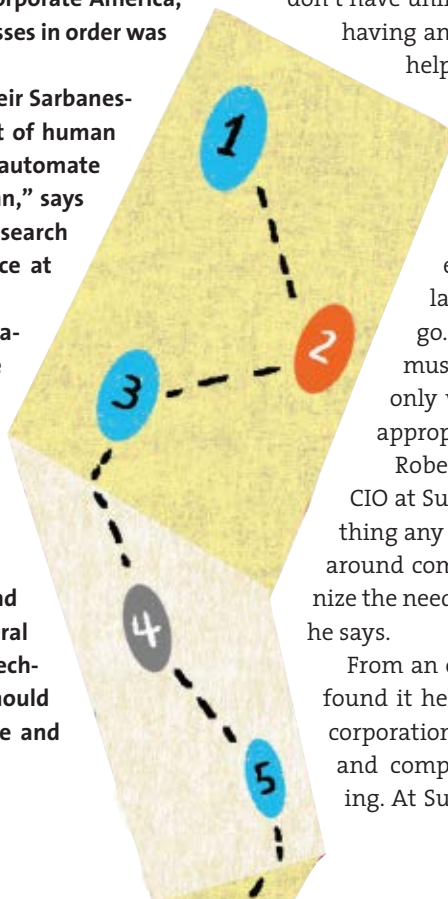
1 Develop a comprehensive, corporatewide understanding of how technology influences risk and compliance.

“It’s important to first incorporate risk into the overall framework and lexicon of how you manage the organization,” says Jeffrey Weber, managing director of Protiviti’s technology risk practice. Adds Joe Atkinson, a partner at PriceWaterhouseCoopers, “When it comes to compliance obligations, all well managed companies want to comply, but the challenge is that you don’t have unlimited resources to do so. That’s where having an enterprise vision is very important. It helps the company start to rationalize the allocation of resources.”

Most experts agree that in this early stage of scoping out the extent of a company’s risk and the processes and systems needed to ensure compliance with laws and regulations, IT must be involved from the get-go. “Regardless of the model you apply, IT must be at the table,” Atkinson says. “The only way to be effective at this is with the appropriate application of IT.”

Robert Worrall, senior vice president and CIO at Sun Microsystems, recommends the first thing any CIO do is “get the organization aligned around compliance. Most IT people do not recognize the need for compliance, so training is needed,” he says.

From an organizational standpoint, Worrall has found it helpful for the CIO, especially in a large corporation, to delegate someone with both IT and compliance experience to focus on training. At Sun, he has assigned a senior director of



Practices

compliance for IT, who is a former internal auditor of IT systems. “He understands how an auditor looks at things and he can respond in a language auditors understand,” Worrall says.

2 Use technology to enforce and monitor compliance rules and processes.

Most companies recognize that even the most effective processes can’t be monitored or sustained over time without technology to automate them and provide structure. “We have made significant use of technology in the last 18 months to automate and bring greater efficiencies to our processes,” Worrall says. “The technology brings more reliability and predictability to the processes we’ve designed.”

Of course, a key element of any company’s compliance efforts is establishing and maintaining effective control of access to information, especially financial data. “Access to data must be based on what the employee needs to look at,” AMR’s Hagerty says.

The reason is obvious—you don’t want a “fox guarding the henhouse” situation that could expose the company to internal fraud. “For example, the person responsible for setting up the list of payers can’t also be able to authorize a payment,” Hagerty says. “There should be a preventive control in place, such as someone with the ability to say no—someone who can reject the payment.”

One company that uses software to provide automated checks against such abuses is Macerich Co., an \$830 million real estate investment trust and operator of shopping malls. The company uses Oracle Corp.’s Internal Controls Manager, as well as Oracle’s financial, human resources and project management applications.

On the one hand, Macerich relies on the software to restrict access to key systems and parts of systems according to each employee’s role. “For instance, an accounts payable clerk cannot cut a check as well as create an invoice,” says Sean O’Donoghue, vice president of business applications and technology at Macerich. “That one person does not have full control of a transaction.”

Of course, the system has to be set up by each

“Access to data must be based on what the employee needs to look at.”

—John Hagerty, Vice President, AMR Research

company in a way that fits its employees’ duties and functions. “It’s a matter of thinking through and doing the homework up front,” O’Donoghue says. “Otherwise, it can be a daunting task when you look at all the functions of the software that are available.”

The system also gives Macerich another piece of compliance functionality by providing the company with an IT audit capability. “We use it to monitor our e-business suite,” O’Donoghue says. “The software provides controls around our day-to-day processes, ensuring that someone cannot change the approval signature and the amount of a check, and then change it back as if nothing happened. The system gives us a full record of who changed something.”

Sarbanes-Oxley was actually a plus for IT, O’Donoghue says. “IT always wanted these controls, and Sarbanes was the stick we were given to implement some things we’d wanted to do.” He admits,

for Governance, Risk

though, that “sometimes the pendulum swings too far, and you can have too many controls. But I think that overall, having the controls in place has definitely helped us. Sure, it’s more work on the front end, but less work later on.”

Sun has developed its own product, Sun Identity Manager, to assign and track employee access to information. “It allows people to define critical access roles,” Worrall says. “It also allows us to provision access dynamically, so when employees change roles and their authority changes, we’re able to provision or de-provision accounts. In this way we can regulate access to our application environment.”

When it comes to change management, though, Sun uses a third-party software package (which Worrall didn’t disclose). “We needed a safe, reliable method for deploying new applications into production,” Worrall says. “This way we have a database of all program requisitions into IT, and we also capture the impact on Sarbanes-Oxley that the demand for new applications and changes will have. This gives us a beginning-to-end view of changes in the IT environment.”

3

Define requirements versus best practices.

“My recommendation is to make sure you are not over-engineering to start with,” says AMR’s Hagerty. Others concur. “You need to look at what the regulators and auditors are asking for, and then create the process to answer that,” says Donnelly at the Philadelphia Stock Exchange.

The PSE gets some 1,200 change requests per year to its systems. “We used to go through the hard-copy paper trail for changes to our systems, but now we key in the change number and we can

“If you automate ... the human element, you get rid of an array of potential violations.”

—Bernie Donnelly, Vice President, Philadelphia Stock Exchange

e-mail it to the SEC before they come down here for an audit.” Today the PSE tracks all its application changes electronically using a system from Serena Software.

Any changes are monitored in the system via a CIO dashboard, which replaced a large whiteboard matrix. Donnelly says tracking changes to systems electronically is more reliable. “If you automate and get rid of the human element, you get rid of an array of potential violations.”

In the case of the PSE, even a change as simple as a new electrical switch being installed on the trading floor can pose a potential risk. “There is always a chance that a change like this could take out a whole floor,” Donnelly says.

In the retail industry, the scramble is on for all companies that process 6 million or more Visa card transactions or 1 million American Express card transactions a year to comply with the industry’s new data security rules. All large merchants and retailers that accept credit cards, such as Home Depot, Safeway, OfficeMax, Chevron and Target, have no choice, assuming they want to continue doing business with the card companies and their issuing banks and financial institutions.

In fact, many major retailers are still struggling to get their systems in shape to meet the Sept. 30 deadline for voluntary compliance with the Payment Card

Work and Compliance

Industry (PCI) data security standards. “There are a lot of organizations working diligently toward compliance,” says Scott Laliberte, director of Protiviti’s global information security practice.

This is a case where what’s required, at least by law, falls short of the standards the industry itself has set. The retail industry, led by the major credit card companies, has implemented 230 data security controls that retailers and service providers storing data for banks or merchants must put in place if they want to continue doing business with the card issuers.

“The credit card associations are trying to regulate this themselves along with their member banks,” says Laliberte. The aim of the controls is to protect cardholder data from security breaches and fraudulent uses. The result: The likelihood of a data breach involving cardholder information drops,” Laliberte says, “but there is no 100 percent security against having a problem.”

The merchants must follow each PCI data audit standard, comply with that control, and have a qualified data security firm certify that they have complied. “Some companies are still in a mad scramble to meet the Sept. 30 deadline,” Laliberte says. In addition to having an audit of their controls done by an independent agency, each merchant must submit to a quarterly network scan by a qualified vendor to check for network vulnerabilities.

One of the biggest IT hurdles merchants will have to clear to be PCI standard-compliant is the encryption requirement. “With high-volume processing systems, data encryption slows things down,” Laliberte explains. “High volumes are not conducive to encryption.” One retailer that had older systems had to replace them with new network equipment in 2,000 stores. Why? “The older equipment can’t support these new data standards,” says Laliberte.

4

Work in tandem with finance and compliance groups.

“It really is a team event,” Worrall says of Sun’s governance, risk and compliance effort. “No day goes by where a compliance-related topic doesn’t involve our CFO or controller, the CIO and the chief privacy officer. Our director of compliance attends meetings with these organizations to ensure that IT is acting consistently with all the other organizations in the company.”


Laliberte concurs, adding that in the retail industry, the shift to meet the new PCI data standards demands a major, sweeping project affecting multiple parts of the company. “This is usually a pretty big effort,” he says. “Often it will be driven by the internal audit department, with the CIO responsible for a number of projects needed to get the controls in place.”

5

Leverage industry standards such as COBIT.

COBIT (Control Objectives for Information and related Technology) provides a framework of controls that “define how well the IT organization should be managed,” Sun Microsystems’ Worrall says. Sun’s CIO recommended implementing COBIT, which the IT group adopted with positive results. While the company’s IT department uses ITIL (Information Technology Infrastructure Library) as a blueprint for operational procedures, it uses COBIT to define the way the IT organization should be managed.

“We are absolutely a big proponent of COBIT,” he says. “As part of our multi-year roadmap of activities that we used to get us to where we are now with clear documentation and controllable processes, we used COBIT as an overarching industry framework.”



* we see you taking the next steps toward integration.

Translate IT into “business-ese.” Before IT and business can converge, IT and business must understand each other. So, rather than using techno-speak, explain in business terms how technology can positively impact the organization and give it a competitive advantage.

Take down that wall. Decisions on how IT is employed should be made jointly, by both IT and business decision makers. So the walls between those groups must be removed. That way, it's not “we-they.” It's “us” using IT to shape and execute the business strategy.

Balance risk and reward. An IT portfolio should balance “run the business” and “grow the business” projects. The “run” projects keep your current business model working efficiently. The “grow” projects, while more complex, help you expand into new markets and product lines.

Gain a brand-new perspective. Your entire IT organization would benefit from working directly with other business units within the organization. Once your staff is acquainted with specific business challenges, they're more likely to know how to use technology to solve them.

Now you're four steps closer to integration. The fifth step? Choosing a partner. And we can help with that, too. If you need someone with extensive integration experience, nobody even comes close to IBM. Our team of over 100,000 delivery specialists has deployed thousands of business and IT projects in multiple industries. And in many countries.

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We interviewed 170 CIOs and 765 CEOs. Want to know what most CIOs considered their greatest obstacle? Find out at ibm.com/special/cio

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You've Got Presence

Unified communications speeds interaction between colleagues and customers by bringing together voice, data and video. By Virginia Citrano

► Opportunity

For a long time, unified communications seemed as mythic as the Loch Ness monster. But in the past two years, its promise has begun to surface.

Imagine this scenario: Your largest retail client runs short of a key product during a big sales campaign. Your marketing manager sends an urgent message to your New York production manager that, thanks to your unified messaging system, lands in both his voicemail and his e-mail. But he's away and misses both alerts—and a chunk of potential sales along with them.

Now imagine *this* scenario: Your largest retail client runs short of a key product during a big sales campaign. Your marketing manager wants to send an urgent message to your New York production manager. But she can see through your unified communications system that New York is not reachable, so she routes the message instead to a production manager in Michigan. The Midwest office immediately diverts a shipment from another location, and your client makes record sales.

Being there matters: The best electronic gadgets in the world are useless if the person you're trying to reach is unreachable.

"As technology has reduced the number of people required to do many jobs, the availability of [the people left] has become

critical," says Bill Crane, communications manager at Shimano American, the U.S. arm of a Japanese company that makes cycling and fishing equipment.

Unified messaging, the first part of this availability equation, brings together fixed and mobile telephony, e-mail, faxes, instant messaging and conferencing (audio and/or video) into a single message delivery system. With voice, data and video traffic all on one network, users can send messages without having to consider whether the recipient will retrieve it on a desk phone, cell phone, PDA or other device. It's transparent. The mass migration of companies to voice over IP (VoIP) has made it possible to combine communications in ways unthinkable even five years ago.

But increasingly, companies are discovering that simply getting messages in one place isn't enough. A message must be delivered on the right device at the right time to the right person—a person who can respond immediately. That's where unified communications and its key feature, "presence," comes in. Simply put, presence lets users know who's reachable where and when. How? Think about how instant messaging works: Users can see which coworkers are active and which have stepped away. Put all communications tools (voice, data and video) on the

same IP network, add an instant messaging-style interface and, voila, you've got presence. You also have everybody in your organization on a single, secure IM network, with record keeping if necessary.

There's one more part to this communications equation, something Yankee Group calls "intelligent communications." Not only are your many communications options unified and given the power of presence, but they are embedded in your user applications. Bank loan officers, for example, can reach out, in real time, to experts on particular lending practices without ever exiting their loan processing software.

The Internet, of course, is the technology that makes this all possible. In recent years, businesses have moved rapidly to embrace the Internet for their telephony needs. As of February, 82 percent of U.S. enterprises had adopted IP telephony or were testing it, according to Yankee Group. What puts the spark in IP telephony, though, is session initiation protocol, which was devised about a decade ago and does pretty much what its name suggests: It starts a session—phone call, IM conversation, audio or videoconference—on an IP network. It's akin to HTTP and SMTP, the protocols that govern the Internet and e-mail, respectively.

Companies are moving toward unified communications one step—or spoke—at a time.

Shimano American salespeople don't spend much time at their desks, so they need to stay connected to the company's U.S. headquarters in Irvine, Calif., as well as to Shimano Canada, the parent company in Osaka, Japan, and the factory, support team, original equipment manufacturers and warranty center. But it was a growing need for the sales team to stay

connected with the buyers and ensure no customer orders were being missed that led Shimano American to consider unified communications, Crane says. Two years ago, the company moved to VoIP telephony and presence-enabled communications, selecting Siemens HiPath 4000 and its OpenScape real-time communications software suite. The HiPath system, which cost Shimano about \$500 a user, supports digital and IP phones, which is the way Shimano elected to go.

Now, there are no more long distance calls. All Shimano American employees—not only those in the same office—are just a four-digit extension away. The company got a "pretty good" return on its investment just from buying one phone system for both locations, Crane says. And best of all, perhaps, the company has peace of mind knowing that customer needs, from handlebars to pedals, are communicated promptly to the people who can deliver.

Ask your sales manager:

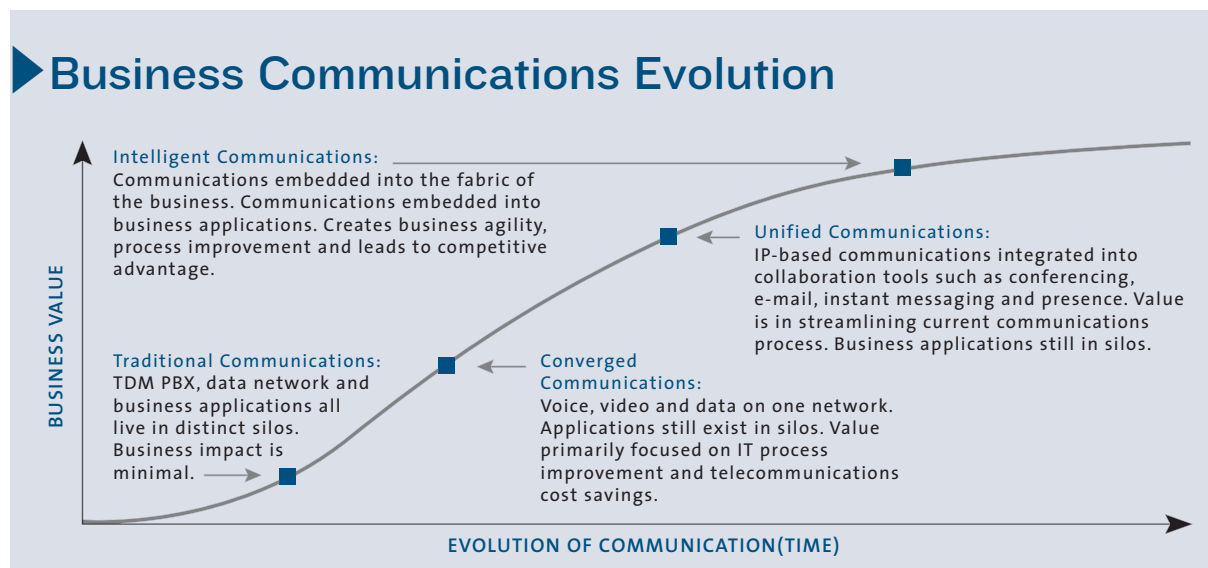
- ▶ How many sales have your staff lost because a message about a key opportunity failed to reach them in time?

Ask your key customers:

- ▶ How much time would you save if you could reach our sales rep with one phone call or e-mail?

▶ Strategy

Determine how each business unit uses the communications tools at its disposal and identify any communication problems, then consider how each unit might benefit from unified communications.



Source: Yankee Group

In 2004, Lieff Cabraser Heimann & Bernstein had run out of room in its then-telephony set-up, one of Nortel's Norstar key systems. The San Francisco-based law firm's three offices were expanding, so IT director Dario Mileto looked at traditional phone systems, pure VoIP and VoIP hybrids (which let legacy PBXs work with IP systems). Lieff Cabraser segmented out just one line before settling on a pure VoIP system from Avaya.

trip, for example, that employee's contact list remains accessible. Also, one compliance system applies to all the tools in a unified communications system, simplifying compliance and saving on costs.

Before you can decide which, if any, unified communications system to implement, ask your firm's employees how they use real-time communications. Are they at their desks all the time, or on the road? Do they telecommute from remote offices? Do they get

► **“Unified communications is more than just a standalone tool set; it is embedded into an app. We wanted users to have the same experience regardless of the app.”**

—Michael Fuqua, Senior Vice President, Global Crossing

But it took the firm's partners some convincing to make the decision. “They were concerned that voice quality would not be as good with VoIP as traditional TDM,” says Mileto, referring to time division multiplexing, the older method whereby voice and data share the same space on a public-switched telephone network. “But we learned that voice quality is perfectly fine if your infrastructure can support it.” Still, the firm hedged its bets just a bit: The firm's main number was left on a traditional telecom line. “We're a plaintiff's law firm,” Mileto explains, “and if that number ever went out, we would lose all sorts of business.”

The firm fully integrated some 300 phone lines across offices in New York, San Francisco and Nashville, for a total cost of about \$100,000. Voicemail and e-mail are stored on the same server. Lieff Cabraser is weighing instant messaging, which Avaya offers, but opted to forego a fax server. Company policy is to maintain a hard copy of all documents in its records. The firm added a bridge for conference calls. By switching from a teleconferencing service, the firm will cut its conferencing costs in half and the bridge will pay for itself in six to eight months, Mileto says.

Unified communications vendors are quick to assert that implementing their systems does not mean ripping out legacy systems and the investment that was made in them. Their systems are software-based, they say, and can be layered on top of existing set-ups.

Vendors say their systems play a role in protecting investments in other ways as well. Users' phone directories are preserved on the main system, for instance, so if an employee loses a cell phone during a business

frequent high-priority or emergency calls? Are there gaps in workflow that can be closed only with real-time communications?

It was that last problem that pushed Global Crossing in the direction of intelligent, unified communications. When Michael Fuqua, senior vice president for global information systems at the IP-based network operator, analyzed the company's workflow, what immediately jumped out at him was its execution of exception processing. But the right tool to close the communication gap would have to be something that did more than ping the right problem solver. To Fuqua, it needed to operate from within the application the employee was using. And that ability to communicate and function with a core application is the difference, for many, between simple unified messaging and true unified communications. “We had the view that unified communications is more than just a standalone tool set; it's embedded into an app,” Fuqua says. “We wanted to have users have the same experience regardless of the app.”

After evaluating unified communications options from Avaya, Cisco, Microsoft and Nortel (elements from all four were operating within the company), Global Crossing went with Microsoft, starting in 2005 with Microsoft Live Communications Server, which it integrated with Cisco CallServer. Microsoft announced a big push into unified communications last year and Global Crossing has since moved up to its Office Communications Server, a session initiation protocol server that can handle IP-based voice traffic, instant messaging and Web conferencing. Global Crossing spent \$25

to \$30 a seat on the changes—the investment will save the company 30 percent on its telecom costs, Fuqua says. It includes a secure instant messaging structure for the entire company.

Ask your IT unit heads:

- ▶ Is the equipment more important to the company's strategy, or are the applications?

Ask your business unit heads:

- ▶ What do you aim to accomplish with unified communications?

▶ Implementation

Unified communications doesn't mean putting all your eggs in one basket. And your rollout will be as unique as your company.

"Right now, companies are purchasing their communications from many different sources and they all have evolution ahead," says Bern Elliot, a Gartner vice president. "Each channel is expanding and growing, but at the same time there is consolidation. CIOs will start using this to rein in and get control over the wide variety of communications techniques."

This does not mean, though, that you can get all your communications needs met by one vendor, even if the major players in this market are touting their ability to do it all. But it does mean you can begin to substantially pare the number of vendors you deal with. Eventually, experts say, you may be able to count your vendors on one hand instead of two.

Most of the big vendors in this arena partner with each other, and there have been many acquisitions, which can complicate matters for customers. Earlier this year, Cisco acquired the videoconferencing company WebEx for \$3.2 billion, while Microsoft paid a reported \$800 million for Tellme Networks, which does voice-enabled mobile search. Siemens bought the wireless LAN startup Chantry Networks and integrated it into its HiPath products.

So all the big vendors will want to talk to you, and that's great. But in the end, you have to go where your business needs to go, not necessarily where the vendor goes.

Take this test to see if you are traveling in the same general direction: Ask your instant messaging provider if it offers an application programming interface (API), which allows the exchange of data between two applications and lets you create what Avaya calls "communications-enabled business processes."

Avaya's Doc2Doc, for example, being developed in partnership with consultancy Computer Resources, will let doctors immediately reach colleagues to speed patient care decisions by linking up with systems tracking doctors' schedules.

And spend money where it makes the most sense. Instead of investing in an expensive desktop visual display phone, for example, CIOs should put their money toward softphone software that lets users place calls from their computers over the Internet, says Gartner's Elliot.

Unified communications rollout strategies vary based on company needs, budget and timeframe.

If you have time for a phased rollout, follow a simple strategy of early adopters first, others later. Or target first salespeople and others who place a high value on staying in constant communication, regardless of location or device, for instance. Another group to consider prioritizing: People who do all their work on PCs and would benefit from communicating in a more varied way through that device, too.

Lieff Cabraser didn't have the luxury of time. After an intensive test phase, the firm had to cut everybody in its main office over to its new VoIP system in a single night, amid a move to a larger space. It added its other two offices to the VoIP system several months later.

It's key to keep an open mind when it comes to the rollout. Shimano American deployed unified communications to its salespeople first for their work with customers, but quickly found the salespeople needed it to connect with people in the company's home offices at least as much.

"The major thing is the flexibility," Shimano American's Crane says. "It's going to be different for each organization. If we'd had a hard design on what we did, we wouldn't have achieved what we did. We were continually surprised. And once you start to use it, it's often the people who were the most resistant who come up with the best suggestions."

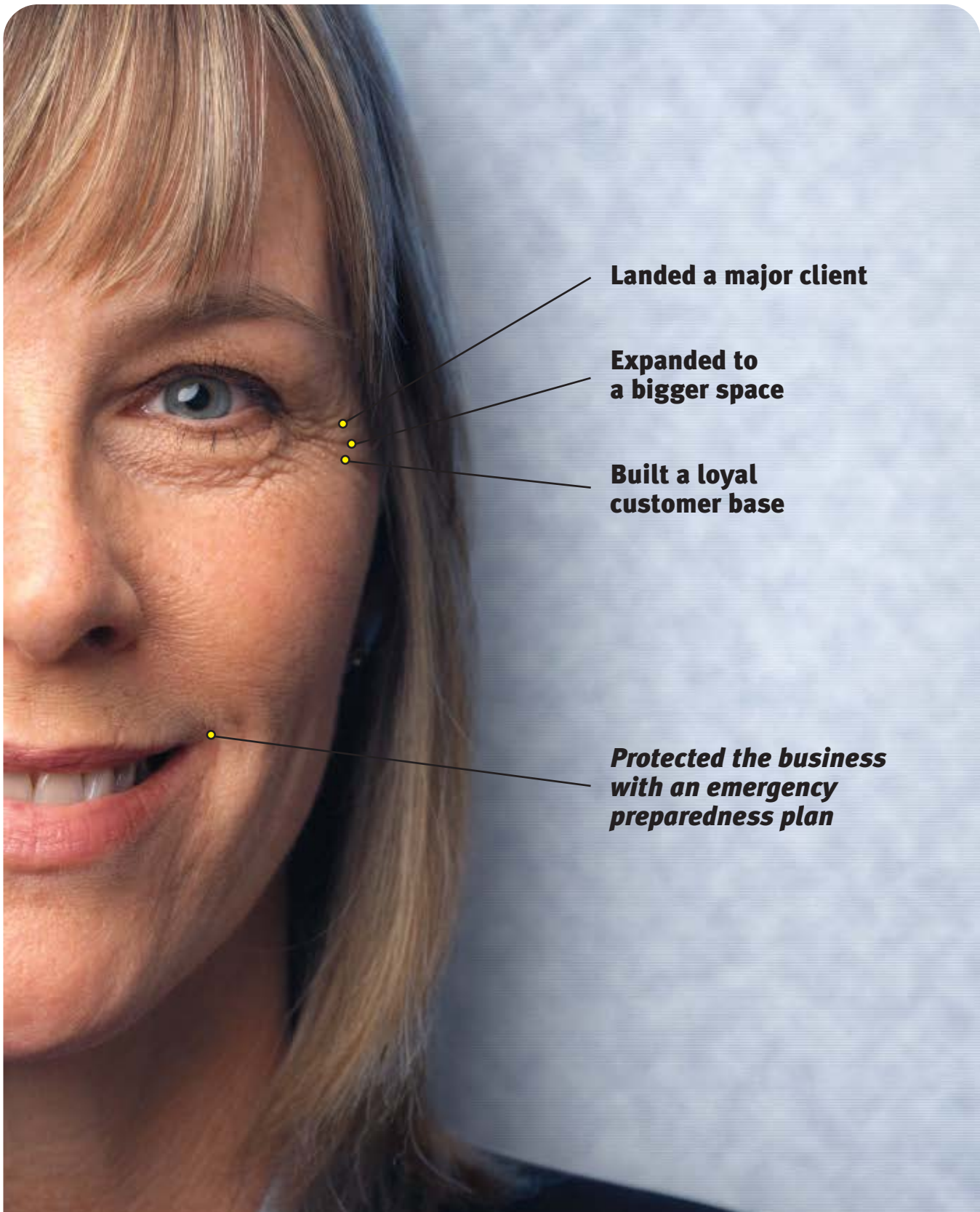
Ask your compliance officer:

- ▶ How would a unified repository of all voice and data communications improve our record-keeping?

Ask your CEO:

- ▶ What does increased productivity add to the bottom line?

Please send questions or comments on this story to editors@cioinsight-ziffdavis.com.



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a bigger space**

**Built a loyal
customer base**

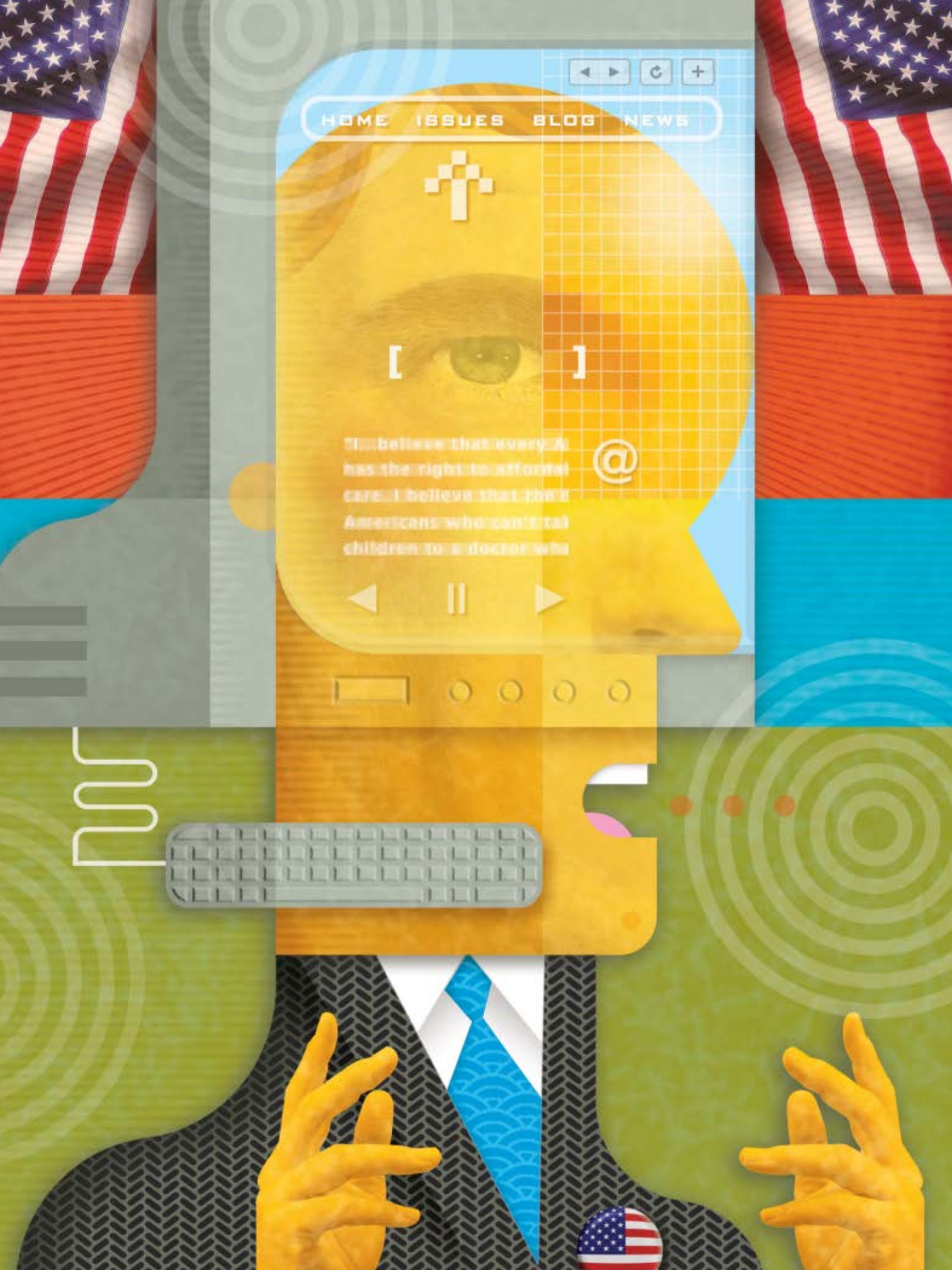
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has the right to affordable
care. I believe that there
Americans who can't tal
children to a doctor who





Campaign Promises

The 2008 election is the first real Internet campaign, but online strategy and technology remain works in progress.

By Edward Cone

Joe Trippi is rolling down I-95 toward Charleston, S.C., headed for a debate he could only have imagined four years ago. A senior adviser to the John Edwards presidential campaign, Trippi helped pioneer Web politics as Howard Dean's campaign manager during the 2004 election. Now, though, Internet campaigning is mainstream. "No one's laughing this time," Trippi says. "There are all these amazing ways for people to connect with a campaign, to follow it, or create their own mini-campaigns, things that didn't exist or barely existed last time."

The July debate, carried live on CNN, featured questions for the Democratic contenders submitted to the YouTube video Web site by people across the country. Afterward, Edwards went online at his campaign site to answer questions sent in via social networking sites, text messages and the Twitter micro-blogging service. The other campaigns, including those of front-runners Hillary Clin-

ton and Barack Obama, covered the debate at their own sites.

Trippi believes this kind of technology will be a real difference-maker in the race for the White House, and that his party has a big lead in using it. "There is this amazing competition between the Democratic campaigns; nobody is giving an inch," he says. "It's going to lead to an explosive, powerful progressive community online for the general election, with millions of people connected and hundreds of millions of dollars in small contributions. The major thrust is engaging voters, creating community around candidacy and getting people to be evangelists for the campaign. It could decide the election."

But not everyone agrees on best uses of technology in politics, with differences often breaking down along party lines. As of early August, for example, leading GOP candidates, including Rudy Giuliani and

Mitt Romney, were planning not to participate in a September CNN/YouTube debate similar to the Democratic event in Charleston, so that debate may be canceled.

Snubbing YouTube nation is a terrible idea, says Patrick Ruffini, a Republican consultant who worked briefly this year for Giuliani, but he is less enthusiastic about social networks than many of his Democratic counterparts. “Having more Facebook friends won’t make you President,” he says. “It might tell you something about the enthusiasm of your supporters, but it’s just one metric.” The issue, he says, is perspective. “The emphasis, especially in the media, and to the exclusion of other technologies, is out of whack.”

into votes (see sidebar). Getting candidates and senior staffers to buy fully into an Internet strategy can be a challenge, and some of the basic plumbing needed to integrate applications and share information across organizations is still in development. “A campaign should not be made up of segmented, vaguely competitive subgroups, but the technology hasn’t been there to help the campaign staff work with the field organization in a productive way,” says Jascha Franklin-Hodge, a partner at Blue State Digital, a software and consulting firm he co-founded with fellow Dean campaign veterans. “The most useful thing is not going to be a specific tool or product, but a model for operating



“This is the new reality: The Internet people are at the most senior table.”

—Elizabeth Edwards, wife and top adviser to presidential hopeful John Edwards

A former online strategist for the Republican National Committee and Webmaster of the 2004 Bush-Cheney campaign, Ruffini favors what he calls “a mid-tech approach” to campaigns and organizing. What really jizzes him is integrating older technology like phone, television or snail mail, things millions of people already use regularly, with an online approach. “You do it by improving upon existing media,” he says, pointing to the “Tele-Town Halls” run by the Mitt Romney campaign in Iowa. These conference calls involve perhaps thousands of people in that caucus universe, but when people on the call respond to prompts—pressing 1 to volunteer, for instance—their action is translated into ones and zeros that the campaign can store and use at will. Everyone is working on these kinds of approaches, Ruffini says, but “I think Republicans may be a little more attuned to it.”

Whatever their different emphases, campaigns in both parties are feeling their way toward the same big goal: close alignment of technology efforts with the mission of winning elections. “It’s a false dichotomy to divide campaign strategies into bottom-up versus top-down,” says Zack Exley, a Democratic consultant who was director of online communications and organizing for the Kerry-Edwards campaign after stints with Dean and the liberal advocacy group MoveOn.org. Successful campaigns must build large communities and coordinate their activities, letting individuals act independently within the overall campaign strategy.

But technological and cultural obstacles remain. Nobody is sure precisely how social networks translate

with the tools out there and understanding the value of shared information.”

Even in a campaign that kicked off with a series of candidate announcements on the Web nearly two full years prior to Election Day, time is of the essence “It’s still an open question whether any campaign will run a truly well-organized Internet campaign on Feb. 5,” says Exley, referring to the early primary date shared by big states including California, Georgia, Illinois, Missouri and New Jersey. Franklin-Hodge expects to see “credible strategies and well-coordinated campaigns” emerge during this election cycle, but adds, “Nobody at any level has figured out what the optimum campaign even looks like. It’s a year of learning and experimentation.”

State of the Art

Six months before primary season and 16 months before the 2008 general election, Democratic candidates are raising record sums of money online and signing up thousands of contacts on social networking sites. Obama led the pack in early August with about 122,00 Facebook contacts—more than twice the combined total of all the Republican candidates combined—and more than 158,000 MySpace friends. GOP candidates lagged their Democratic rivals by large margins in fundraising, too. Small contributions via the Internet have provided Obama, the fundraising leader, and Edwards with about one-third of their funding; small donors (usually defined as those giving less than \$200) are prized because they can be tapped

[campaign toolkit]

The Web 2.008 Campaign

Web video and social networks are two of the hottest technologies for Campaign '08. Video is ready for prime time, social networking is a relative unknown.

Video arrived in 2006, when George Allen, then a Republican Virginia senator, called a rival staffer the crypto-racist slur “macaca.” The clip of the incident helped tip the Senate to the Democrats.

The Web can be liberating. “It’s about bypassing the sieve of the mainstream media,” says Elizabeth Edwards, wife and confidant of Democratic presidential hopeful John Edwards. “The idea that you have people standing between you and the voter is diminished, and the capacity to speak directly empowers candidates to trust their own voices.” With Hillary Clinton and Barack Obama hogging media coverage, campaigns can push their messages without paying for ads.

“In some ways, it’s the way we have to go,” Edwards says. “We can’t make John black, we can’t make him a woman. Those things get you a lot of press, worth a certain amount of fundraising dollars. Now it’s nice to get on the news, but not the be all and end all.”

Candidate Edwards, dogged by stories about his expensive haircuts and a YouTube video showing him priming before the camera, released a video set to the song “Hair,” with images of Iraq and New Orleans and a tagline, “What Really Matters?” Clinton warmed her image earlier this summer by starring in a *Sopranos* spoof.

Social networks made their mark during the 2004 presidential race when Meetup.com helped organize thousands of people in physical space. MySpace, Facebook and others improve on that with communication and networking tools, and people are signing up for campaigns by the tens of thousands. But to what end?



The Web is “about bypassing the sieve of the mainstream media,” says Elizabeth Edwards, with her husband John.

“The thinking across the board is uninspiring and lacking in strategic focus,” says Fred Stutzman, a University of North Carolina Ph.D candidate who studies social networks. “The outcomes haven’t been clearly defined. If it’s raising money, perhaps it’s not the right medium. If it’s microinfluence, one person influencing two people, there are some interesting opportunities.”

Earlier this year, the Obama campaign took over a MySpace domain created by a volunteer, then balked at the price he asked for his work. That generated bad buzz, and temporarily reduced the campaign’s contact list. But GOP Internet strategist Michael Turk thinks the campaign misunderstood the deal. “The price wasn’t bad when you can message people and set up contribution buttons,” he says. “A misconception among people who don’t spend all day thinking about the Internet is how much it costs to do things online.”

One technology notable for its absence: mobile devices. “It should be maybe the most important technology of 2008, but it isn’t,” says Republican consultant Patrick Ruffini.

Then again, that could change by Election Day.
—Edward Cone



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For the first time, each campaign has hired an experienced professional to develop an Internet strategy. Campaigns also are reaching out to bloggers online and off. Presumptive GOP candidate Fred Thompson has been blogging himself, and the Democratic front-runners appeared in early August at the YearlyKos convention, a new-media-and-politics event that grew out of the powerful liberal Web site Daily Kos. Meanwhile Web video, in its larval phase during the last presidential race, helped shift control of the Senate in 2006 and has become as essential as baby-kissing (see sidebar).

sending out an e-mail filled with what he calls “campaign platitudes” instead of speaking with the frankness expected by Internet users.

Online politics will not reach its potential until overall campaign strategy is planned with the Internet in mind. “When a bank builds its advertising campaign around online banking, it’s not the Internet guy pushing it, it’s the senior marketing people and the consumer banking, the ones at the top,” Democratic consultant Exley says. “In campaigns, the Internet gets delegated and ghettoized.” Ultimately, says Ruffini, the campaign manager should be the Internet director and understand the Internet as the



“The Net is not so sticky that it will stick with you through anything. If you live by the Web, you can die by it.”

—Joe Trippi, senior adviser to the John Edwards presidential campaign

In at least some campaigns, the Internet pros have penetrated the inner circle. “This is the new reality: the Internet people are at the most senior table,” says Elizabeth Edwards, the candidate’s wife and adviser, herself an early proponent of online campaigning. “Trippi reports to John. It’s a straight line. Whenever there is a process of trying to get out a message, or engaging people on an issue, the Internet is honestly the first place we start.” Trippi, who works with a full-time Internet staff of eight from Edwards headquarters in Chapel Hill, says the candidate understands the online environment and participates online to a much greater degree than the early 2004 Democratic front-runner Dean ever did.

The Edwards campaign, trailing Clinton and Obama in dollars and the polls, is strongly committed to the Internet for reasons of philosophy and necessity. Other campaigns use the Internet without making it part of their DNA. “Even if they say they give a seat to the Net person, many conversations are happening without that person involved,” says Michael Turk, an adviser to Thompson’s shadow campaign and former online campaign director for the Republican National Committee and Bush-Cheney ’04. Some campaigns seem not to understand the essentials of e-mail list usage. “On Friday night, I got e-mails from McCain, Giuliani and Romney within 20 minutes of each other. There wasn’t 2 cents of difference among them, and they were sent at a time when nobody would read them.” Turk criticizes McCain for responding to bad news on fundraising and staff turnover by

essential platform for communication. Even Trippi says his organization is not all the way there yet: “It’s an evolution, putting the Web at the center. The problem is that people trained in a top down world—including me—take orders from the top, and that’s not the way YouTube and MySpace work. It may take a few cycles to get there.”

One measure of success will be the building and benefiting from much larger online communities around campaigns. “In a country of 300 million people, we’re still jumping up and down about having 250,000 donors,” says Trippi. “We’re still scratching the surface. As amazing as the tools are, we ain’t there yet.”

Detail Work

Political technology is a subculture unto itself, with many consultants and vendors as partisan as their clients. “We want Democrats to win,” says Jim St. George, a principal at Voter Activation Network (VAN), a company that hosts electronic voter records for state Democratic parties; the parties make that data available to the presidential campaigns. St. George says the shared purpose among companies in what he calls “the Democratic family” (including Blue State Digital) makes it easier for vendors to integrate with each other.

VAN is working with other IT service providers and vendors to build application programming interfaces that will surround the basic voter file with data from other applications—a person’s history as a donor or an activist, for example—and make it all accessible in one place. The idea is classic business intelligence, con-

necting the right people the right way at the right time, and ultimately to turn people out on voting day. "When you go to a house in Iowa, you should know if the person has given to a campaign, so maybe you talk about volunteer or fundraising opportunities instead of their vote, or even not knock on that door," says Blue State Digital's Franklin-Hodge. "Maybe a strong supporter who promises to vote hasn't given, so you change your approach on e-mail. But you need systems integrated and talking together to do that kind of intelligent targeting."

That level of integration can't happen fast enough for either party. Whatever Internet strategy best suits a campaign, it won't be fully effective until the basic connections are in place. And yet connecting all parts of a campaign, says St. George, presents "a meaningful challenge. I think we see where the solutions are, they are largely sketched out, but we're not there in every case." Franklin-Hodge concurs: "There is nothing approaching standardization or a turnkey software solution or strategy when it comes to integrating field and campaign operations."

The failure of the Dean campaign to integrate thousands of Internet-inspired volunteers who flooded Iowa in 2004 has become a cautionary tale. More successful was the 2004 Bush campaign, which tightly integrated its voter files with an extranet used by field offices and its own Web site. "We had a very complete picture of what we needed to do and where we stood," says Turk. "Everything online was aligned with our strategic goals." The campaign used microtargeting, a software-enabled process that matched consumer data to individual voter file records and built tools that matched volunteers with prospective voters who fit similar profiles.

That second Bush campaign, though, had two years and a lot of money to build its systems, and was not especially focused on newly emerging social media. Now, campaigns are all over the map in terms of organization and focus. Some have chief technology officers, others put technology decisions in the hands of strategists who lack technology experience. But none of them can afford to waste time on the wrong back-office system. "If you put in these applications after the work flow is established and tell people to do things a different way, you have a problem," Ruffini says. "You need that emphasis at the beginning of the campaign." Says Turk, "I don't know if any of the presidential candidates this year will build something comparable to what we had in '04 by February. Next November is more likely."

And there are some problems that technology will never solve. "Just because you've built an amazing network to support your candidate, it doesn't make you immune to Kryptonite," says Trippi, who saw the "Dean Scream" remixed and repeated endlessly across the Web. "If you say something stupid the week before the caucus, your network may not support you anymore. The Net is not so sticky that it will stick with you through anything. If you live by the Web, you can die by it." +



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It's time to flip the coin and turn IT risk into business gain, says MIT research scientist George Westerman.

Security, Reconsidered

BUSINESSPEOPLE KNOW RISK and return are opposite sides of the same coin; you can't have return without risk. So successful companies learn to analyze, accept and manage risk... most kinds of risk, anyway. When it comes to IT risk, organizations tend to focus on avoiding risk instead of managing it, by preventing intrusions and preparing to respond to catastrophic events. But instead of protecting companies, this approach to risk has blindsided IT to a long stream of IT disasters, from system meltdowns (Comair, Jet Blue) and stolen credit card data (TJX, CardSystems Solutions) to pilfered laptops (Veterans' Administration) and stolen data (U.S.

Department of Transportation). Putting IT security back in the context of

risk management has been the focus of George Westerman's work.

Dr. George Westerman is a research scientist at the Center for Information Systems Research (CISR) at the MIT Sloan School of Management and co-author, with Richard Hunter, a group vice president at Gartner, of the new book *IT Risk: Turning Business Threats Into Competitive Advantage* (Harvard Business School Press, August 2007; 256 pages, \$35). "When I first joined the Center for Information Systems Research, it was right after 9/11, it was right after these major worms had hit, and different security issues and Sarbanes-Oxley were hitting at the same time," says Westerman. "People kept asking us questions about risk, and we didn't have a good answer on what risk means to the organization." The book is the culmination of five years' thinking and research devoted to IT risk management, and on finding a way to flip the coin and turn IT risk into business gain. *CIO Insight* Executive Editor Allan Alter asked Westerman what he learned during that past half-decade. The following is an edited version of their conversation.

Our focus on security keeps us from addressing other IT risks, says MIT's George Westerman. The solution? Adjust how we think about security, and develop capabilities we often overlook.

By Allan Alter

CIO INSIGHT: Our research studies have found many IT executives believe they take an enterprise risk management approach to security. Do they, or are they fooling themselves?

WESTERMAN: We haven't seen a lot of firms that take a full, holistic view of risk. Risk has four elements we call the four A's: Availability, keeping the systems and the processes running. Access, making sure the right people have information and the wrong people don't. Accuracy, making sure the information we have is accurate and timely and complete. Agility, is IT helping or hurting an organization's ability to make major strategic changes? Yes, IT security is a big element of those four risks, but this holistic view is different from talking about risk in terms of silos like continuity, security and regulations. It means thinking about risk in terms of tradeoffs among the four business risks that are most affected by IT, rather than in terms of silos. While it's very hard for a businessperson to engage in a discussion of the importance of strong authentication or encryption,

procedures in to manage risk, although we call those procedures standards, governance, architecture. But we often have trouble making our case for investment and changing behavior when we are dealing with the business.

How might a more constructive conversation about risk sound?

WESTERMAN: We talked to a medical transcription firm that went from zero to 3,000 transcriptionists over the course of about six years. They're a highly virtual firm, and they had to replace their backbone IT infrastructure to make this virtual firm work. So they put together two infrastructure plans. One was an Internet-based platform where hospitals could download doctors' voices to the system through the Internet, transcriptionists could download and transcribe them, and ship the transcripts back up again. The other plan called for a hardwired, bulletproof setup with all the kinds of hardware and software protections you would expect.

The management team, when deciding between

Risk awareness training is the Rodney Dangerfield of risk management; it gets completely no respect."

we can engage the business executive in the question of which processes are most important, and what is the business impact of having an availability problem in this process. We can have similar discussions about access, accuracy and agility. Tektronix, a big electronics equipment manufacturer, wanted to do a major corporate restructuring back in the late Nineties, and it turned out they couldn't: To spin off one of their major divisions, they would have had to give a copy of basically every system in the organization to the buyer. They actually had to put an ERP system in place, spending over \$50 million in three years, just to disentangle the system so they could do acquisitions and divestitures. That's a major, *major* agility issue.

I think we in IT have always known these things, and many of the conversations we have with business executives have been about risk. But because we tend to talk about risk in these technical silos, it appears IT is standing in the way of thinking about security as risk. This is not about failures in IT; IT people ask good questions on risk and try to put good

the two viewpoints, had a holistic discussion of risk. The bulletproof infrastructure was great for two of the risks that should matter most to this firm: availability and access. It's health care data, so the setup had to be very secure. But it was hard to hook new hospitals into it, or use transcriptionists in other countries. In the end, management decided to go for the Internet, even though it meant a little bit of a hit on access and availability risk. If they hadn't thought all the way through to agility, they would have adopted a platform that would have made them more rigid and hurt the company's ability to compete.

Does addressing risk require different capabilities beyond what IT professionals think of as security, in addition to new ways of thinking?

WESTERMAN: There are three core disciplines of IT risk management. The first is the IT foundation: the applications and the infrastructure and the supporting skills. If you are well architected, you are just less at risk. A good architecture is only as complex as it needs to be. So how can we make the architecture only as complex as it needs to be, and make sure we are

managing our IT foundation extremely well?

Another core discipline is risk governance: how we identify, assess and make decisions about risk, and then take action and monitor the results to make sure we have done something about it. We don't always think about how to do that with this holistic view of risk. There is this dilemma that the people at the highest levels, who are best able to make priority decisions among risks, are least able to know what risks the organization is facing because they're not down in the details. On the other side, the people who know what risks the organization is facing are least likely to have the enterprise-wide perspective to prioritize risks.

In most organizations an effective risk governance process is highly distributed; the people who are closest to the work identify risks, and higher-level folks can look and make those prioritization decisions. Then the work of mitigating the risks can be sent back down to the people who are managing at the field or corporate level. It's a way to take the distributed knowledge and the centralized perspective and put them together. And having done that, expand the set of risks to talk about to all the risks, not just the ones we typically think about with security.

The third core discipline is having a risk-aware culture. Without it, the other elements will fail. A risk-aware culture has two elements: awareness of what threats they're facing, and how to behave in a risk-aware way. The ability to talk about risk among your peers and what we can do to fix it is a big deal.

Beyond top executive support, how do you create real risk awareness, not just lip service?

WESTERMAN: We did some survey research on risk management mechanisms. It turns out that risk awareness training is the Rodney Dangerfield of risk management; it gets completely no respect. But as it turns out, it's one of the most important things we have. Firms that do risk awareness training actually have lower risk for availability, accuracy, access and agility.

The trick to making risk-awareness training work is letting people at each level know what is appropriate for *them* to know. Talk to end users about protecting their own access, privacy issues, and how to deal with people outside the company. On the IT development side, talk about how we think about controls, how we make sure we've architected well, and that we have the right security in place. At the very top level, the key element is how to lead by

example. Do we ask about risk at the same time we ask about return? Do we talk about funding projects that will reduce risk even though they might not have a huge ROI? The most important thing, though, is that the senior team leads by example and says, here is how we want to think about risk, here are the kinds of questions I'm going to ask regularly, here's how we're going to make those tough decisions, and even sometimes go against our own personal interests in the interest of a less risky enterprise.

It can be hard to assess and agree on risk. How should companies do it?

WESTERMAN: One of the best ways to identify risk is to do, in essence, an internal audit. Hold an internal brainstorming session or get an external IT auditor to help you identify the risks you're facing. Internal folks don't always see the situations that lead to risk, because they're in the middle of them. But eventually we want to get out of that audit-oriented view and imbed risk management into IT projects. So as you go through your basic business case to do a project you think about architectural compliance, data center capacity and other elements, and about what IT is going to do to the operational risks of the firm at the same time. Then you can say whether this project is taking us in the direction of less risk or more risk, and ask what we can do to prepare for any additional operational risks this project may create.

Let's say you do a risk assessment and you find that many areas need improvement. That can feel overwhelming. How do you get started and how do you follow through afterward?

WESTERMAN: We recommend doing business continuity planning in parallel with the IT audit. Business continuity planning requires not only understanding what is going on inside IT, but also what it means in terms of priorities for the business. If a system goes down, what processes are affected and how important are those processes to the business. In the process, we make decisions about, say, our tolerance for downtime on this system versus that system. Those are business decisions on priorities that really need to be made with the business. In addition, business continuity planning talks about when systems go down, which ones need to come up first and in which order. Business continuity planning is a wonderful way to start those conversations about business tradeoffs. But at the same time, do the audits to find the holes we ought to fill immediately.

Many companies run into trouble because risks that

seem low turn out to be high, or because they were unable to anticipate risks. How do you avoid these problems?

WESTERMAN: This is a big issue. A lot of that is done through external benchmarking, comparing and measuring incidents you've experienced with incidents other people have experienced, to try to figure out whether your likelihood and impact estimates are correct. It's a matter of taking your assessment and continually revising it. Monitoring what's happening to competitors is also helpful.

Many companies, like TJX, have had credit card data stolen. Using your approach, how can companies make

response: We want to make sure we've got something in all those areas.

Should the IT security function remain part of the traditional IT organization or be part of another function, such as risk management or the legal department?

WESTERMAN: Obviously, having the IT security organization within IT gives it the kind of focus it needs, because the CIO is in many ways on the hook for security, and CIOs understand the importance of investing in security. On the other hand, we need to have links to legal, compliance, and business executives.

It's less important where security resides and more important it's in a place where it has all the links it

“If you think about risk as a capability, you can take on competitive opportunities other people would consider too risky.”

sure something similar doesn't happen to them?

WESTERMAN: This is clearly an access issue. So the way we would look at it is to say, for this access risk, how do the three core disciplines apply? Have we set up our foundation in a way such that external hackers can't get into the information? What are we doing to protect technically the private information in the system? But then we want to go beyond that and talk about, say, credit bureaus that have sold information to the wrong people. That's the awareness side. How can organizations clarify for frontline people what kind of privacy threats are out there and how to diagnose these threats when somebody calls in looking for information? What procedures do we want to check out the people we give information to?

Given the complexity of today's systems, aren't breakdowns and break-ins inevitable?

WESTERMAN: I would like to be able to say that they are not inevitable, but given the complexity, they may be.

So how do we respond when they happen? In the case of the failure of Comair's crew-scheduling system, they had two issues: the failure of the system, and the lack of an adequate backup plan to bring the system back up again. What can we do to detect when a problem is happening? How do we make sure our information is accurate? What do we do when a project runs into trouble? When we have data quality issues, how do we respond? Protection, detection and

needs and it can get the funding.

The subtitle of your book is “Turning Business Threats Into Competitive Advantage.” How do you turn threats into competitive advantage?

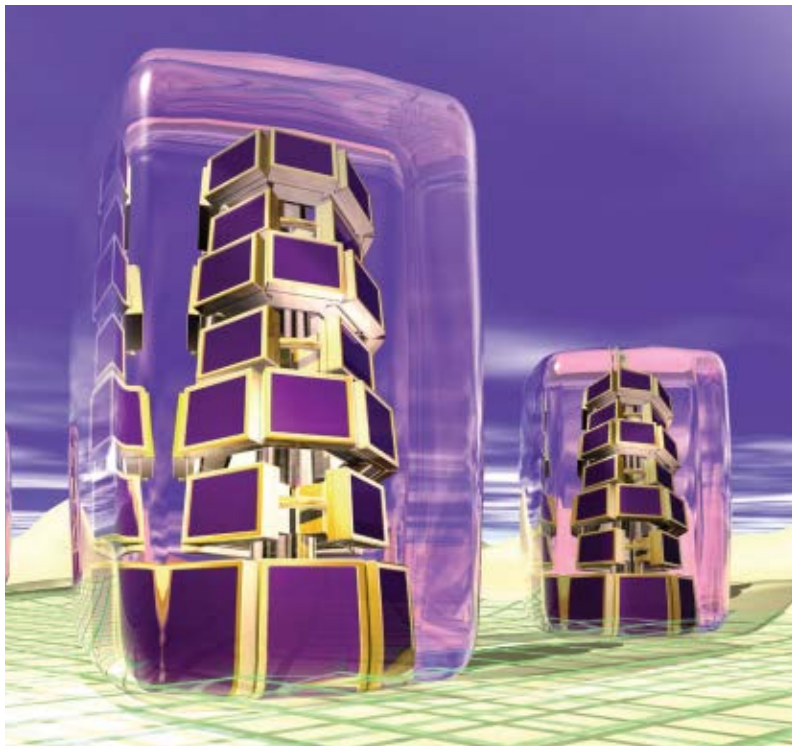
WESTERMAN: There are two ways to do it. When you look at IT risk management as kind of a compliance effort, the value is avoiding certain risks. But if you think about risk management as a capability, you create value in three other ways. One, you have fewer fires to fight, and that creates value because you don't spend resources on the fires. Two, we actually structure IT better and our relationships with the business work better. We can do more, get more bang from our buck. Third is the upside of risk: If we manage risk well, it makes the organization more agile. The organization can take on competitive opportunities other people would consider too risky.

By fixing availability and accuracy we actually go a long way to fixing agility risk, and that's an upside. Looking at the downside of risk creates upside potential for us. 📌

Please send questions or comments on this story to editors@cioinsight-ziffdavis.com.

MORE ONLINE

For more of George Westerman's ideas about balancing security and agility, check out go.cioinsight.com/Westerman.



[CIO POWER REPORT | DATA CENTER EFFICIENCY]

Cool Savings

Cimarex Energy's data center was overcrowded and dangerously overheated. A new, more efficient and cheaper way to cool the room kept the equipment safe.

BY DAVID F. CARR

LAST SUMMER, CIMAREX Energy encountered a crisis in its Tulsa, Okla., data center. Its data systems, as well as the seismic and geologic data critical to its oil and gas exploration and production business, were at risk due to overheating equipment.

The server room was at capacity: There was simply no space available for equipment. And the company learned the hard way that it had packed in too much equipment for its power and cooling systems.

The densely packed micro-circuitry was overheating servers and other IT devices.

It's no wonder the data center ran into problems.

Exhaust from one device was sucked into the air intake of others nearby. Equipment—including Network Appliance enterprise storage devices and Hewlett-Packard servers—was failing despite running the air conditioning at full throttle.

"NetApp tech support was replacing two or three drives a

week in the array due to failure, and were telling us just as often that if we didn't do something with the heat issues we were having, they were going to discontinue support for these devices," explains Cimarex network engineer Rodney McPhearson. "We were seeing temperature logs running from 74 to 76 degrees on the front side of the rack row, and above 100 degrees behind the racks. This was causing drive failures in our HP servers."

Beyond the "Glass Room"

The traditional approach to data center cooling, going back to the days of mainframe "glass rooms," has been to provide good ventilation and a powerful central air conditioning unit. But the trend toward packing more computing power into each IT device and more devices into each rack means it's not always enough to rely on the circulation of chilled air through the room. Gartner recently predicted that by 2011, the predominant strategy for high-density computing will be to use cooling equipment built into each row of server racks or installed in the racks themselves.

So, where the old Cimarex computer room relied on a 10-ton Liebert air conditioner, the new one wound up being built around American Power Conversion's InfraStruXure product, a server rack system that features integrated in-row cooling, along with APC's battery backup technology. Cimarex also chose to take advantage of APC's Hot Aisle Containment system—an arrangement where two back-to-back rows of server racks vent their exhaust into an enclosed area with a roof and doors on either end.

In-row cooling can be more

Data Center Squeeze Play

NEW SERVER RACKS WITH IN-ROW cooling allowed Cimarex Energy to pack more of its data center equipment into a smaller space, with better management of excess heat and reduced energy consumption.

The reduction in the energy required for the new set-up is reflected in the meter readings below, which measure chilled-water consumption for the two computer rooms. The old 400-square-foot server room was overcrowded and overheating before Cimarex expanded into a second, 235-square-foot server room. Yet the new room now houses most of the data center's equipment (about 85 servers) without suffering the same overheating problems.

Even with just three Network Appliance storage servers remaining in the old server room, the whole-room air conditioning unit installed there continues to consume about three times the energy (as measured by meter readings for the chilled water supplied to the air conditioning equipment). The difference is that the whole-room unit consumes chilled water at essentially a constant rate, while the in-row chilling system uses it only as necessary and delivers it more efficiently to where it is needed.

Usage in Ton Hours

2007	Old Room	New Room	% Change
January	45639	14561	-68.1
February	86154	29483	-65.8
March	51763	17425	-68.3
April	64080	21295	-68.8
May	86523	19189	-67.8
June	92691	36497	-60.6

Source: Cimarex Energy

efficient because the cool air can be delivered closer to the equipment to be protected. In the traditional approach of cooling the whole room, the air coming out of the air conditioning vents needs to be made that much cooler because it's not being delivered with the same precision. "So, you end up with 45-degree air coming out to the floor," says APC Chief Technology Officer Neil Rasmussen, even though most IT equipment doesn't need to be kept anywhere near that cool. "And it's a lot more expensive to make 45-degree air than 70-degree air."

Also, while APC's power protection equipment is rated about 97 percent energy efficient, making further gains hard to come by, the company believes there's potential to improve the efficiency of data center cooling by another 20 percent to 30 percent, Rasmussen says.

Although other vendors including Liebert also make in-row cooling equipment, McPhearson first learned about the approach after seeing a demonstration of the InfraStruXure equipment in the back of a truck that APC had taken on a promotional tour.

After visiting an APC facility in St. Louis, at first-reluctant Cimarex managers became convinced to give it a try. While continuing to run the Liebert air conditioner, McPhearson began migrating servers and network equipment into the APC racks a piece or two at a time. By the end of the year, he plans to move those over as well and retire the old 10-ton air conditioner.

Although the move to in-row cooling was originally driven by a crisis with overheating equipment, it also had a financial

payoff, McPhearson says: "We weren't trying to drive down electric use and cost, but those savings have in fact materialized as an unintended benefit."

Another benefit of the APC rack and cooling design: Cimarex could pack more equipment into less space, without causing overheating issues. The effect was multiplied by a virtualization effort Cimarex was pursuing at the same time, using VMware technology to consolidate the workload of 38 or 39 physical servers onto two servers hosting multiple virtual machines.

Impressive Savings

The cost savings numbers tend to look more impressive for much larger installations. Even though Cimarex is a billion-dollar company, the Tulsa data center is really a modest-size computer room equipped with just eight InfraStruXure racks. "The savings in floor space is one of the major benefits they realized from this kind of installation, since traditional data-center racks and cooling are very space inefficient," APC Account Manager Andrew Terminese says.

The last thing McPhearson says the arrangement provides is peace of mind. Whenever the old cooling system failed—and it happened twice in the year prior to the APC implementation—the server room would heat to 118 degrees within 15 minutes, and servers had to be shut down to avoid permanent damage.

"This is why I am so fond of the new system all being tied together," McPhearson says. "If we lose chilled water, the system powers down gracefully before we see heat issues." 🌱

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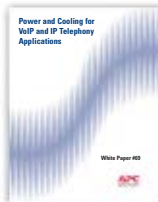
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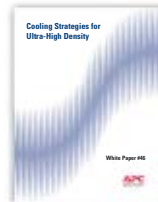
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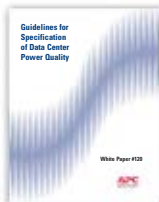
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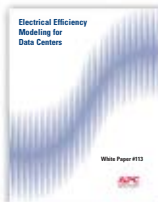
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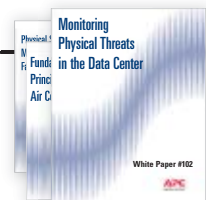
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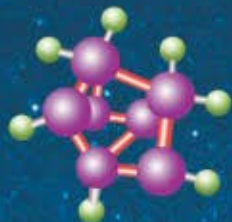


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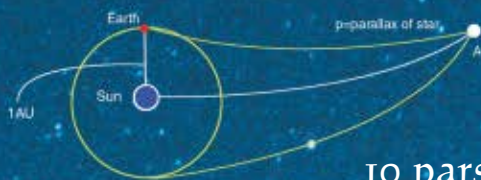
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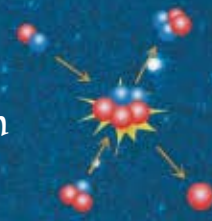
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STRONG SIGNALS
by john parkinson



Ending Privacy As We Know It

Big Brother isn't just watching—he's tracing our every step. Event correlation software creates new challenges for CIOs.

Here's a quick Trivial Pursuit question: How many data items would it take to uniquely identify you from among the other 6.7 billion people on earth? The answer is at the heart of the debate over personally identifying information, which in turn is at the center of the evolving information privacy debate. Let's make it a little tougher by disallowing all direct personally identifying information: no names, no Social Security or driver's license or passport numbers, no fingerprints or retinal patterns or DNA profiles.

The answer might surprise you. A combination of just gender and the U.S. five-digit zip code (or its foreign equivalent) for your address would on average eliminate all but about 35,000 people. In most zip codes, a date of birth would narrow it down to around 95 people. That's just three data items, none of which would generally be regarded as unique to you, and you're down to fewer than one in 100.

If we add in some situational data—facts about you that don't identify you specifically but build a recognizable context around you—the kind of car you drive, the restaurants you frequent—I can typically identify you with just a couple more items, usually a dozen max, none of which would be considered personally identifying information. It's this ability to build context and use it as an efficient information filter that makes privacy so hard to maintain. We all leave a trail of data items as we move through the world, and we always have. Technology has simply made it easier and cheaper to record and analyze these traces. Today, for about half the world, there is no real privacy. The key questions, therefore, become: Who owns our personally identifying information? Who assures its accuracy and relevance?

Who can access and use it? What are its permitted uses?

Too many of the answers depend on where you live and how the laws there constrain or allow data use. This leaves businesses and technology managers facing some complex issues even beyond the ethical debate on how the information can be used.

But as bad as things have gotten from a privacy viewpoint, they're about to get a lot worse. As the world becomes more routinely instrumented (think E911-enabled cell phones, GPS, WiFi access points and black-box recorders in autos and surveillance in the name of public safety), event correlation software will make it possible to construct a nearly complete record of your life and make it very hard to hide. This can be a blessing if you have to prove where you were (or weren't) at some point, but I'm not sure we as a society are ready for this level of transparency. And as information managers, we have to be careful, where appropriate use is not yet defined, to avoid making post hoc decisions on what can and can't be done with the data our systems collect.

For CIOs, that means staying on top of the debate and getting some appropriate policy defined—or at least getting a discussion of the issues under way internally—even if you have to modify process and practice later.

Determine what compliance and audit requirements you'll have to meet before you have to meet them. Consider training and awareness needs. And add one more item to the long list of concerns demanding your attention. +

JOHN PARKINSON has been a business and IT consultant for more than two decades. Please send questions and comments to editors@cioinsight-ziffdavis.com.



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