

GOVERNMENT TECHNOLOGY

SOLUTIONS FOR STATE AND LOCAL GOVERNMENT IN THE INFORMATION AGE



VOL 20 ISSUE 12

DECEMBER 2007

RETRACING GOVERNMENT'S JOURNEY
FROM THE PRE-WEB ERA TO TODAY'S
ALWAYS-CONNECTED SOCIETY.

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WE GET
HERE?

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to Organize
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Looking Ahead



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As 2007 ends, I thought you may be interested in our plans for 2008. We recently surveyed nearly 500 *Government Technology* readers to gauge your satisfaction with our current coverage and determine where you want expanded content in the future.

What did we learn? First of all, I'm happy to report that most of you — more than 80 percent — find *Government Technology* relevant or highly relevant to your professional lives.

You also told us you're satisfied with our coverage of key government areas, such as justice and public safety, health and human services, and administration and finance. But there also are areas where you want more, and we intend to use that information to focus our efforts next year.

for more coverage on work force issues, such as staff recruitment and retention, as well as green technology.

These results certainly make sense given the key challenges facing states and localities. The looming retirement wave is expected to hit government IT shops hard, with a recent report from the National Association of State Chief Information Officers predicting state IT departments could lose nearly 30 percent of their staffs. Security threats are growing in number and sophistication, making the job of safeguarding government assets and data tougher than ever. And state and local government IT professionals face mounting pressure to cut data center power consumption, and support telework and other practices that reduce their jurisdiction's carbon footprint.

There also are areas where you want more, and we **intend to use** that information to **focus our efforts** next year.

By functional area, here are the most popular subjects for increased coverage: Nearly 40 percent of respondents want more information on professional development and training. Almost 30 percent want more reporting on project and program management. More than 26 percent want to know more about successful project funding strategies. IT governance and homeland security also drew heavy interest, with more than 20 percent of respondents requesting more attention on each of those topics.

On the technology side, 30 percent of you want to read more about information security. Nearly 25 percent of respondents asked

Our goal for 2008 is to bring you job-critical information on these and other issues. In January, we'll launch regular coverage of project funding techniques, as well as expanded "how-to" information on a range of practical topics. We're also planning expanded research-based features on information security, work force development and other key issues.

Thanks for reading in 2007. We look forward to bringing you even more of what you need in 2008. See you next year. [GT](#)

STEVE TOWNS
EDITOR

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big picture





International WiMAX

On Oct. 22, the Taiwanese government signed memorandums of understanding with various global telecom suppliers — including Alcatel-Lucent, Motorola, Nokia Siemens Networks and Sprint Nextel — to help the country build a WiMAX broadband infrastructure.

The project is part of \$664 million in projected WiMAX investments nationwide between 2006 and 2008.

Taiwan will be second only to the United States in WiMAX investments, according to a report from the Market Intelligence Center, which states that U.S. investments are expected to top \$3 billion during the same period. Worldwide investments in WiMAX are expected to reach \$5.2 billion.



A New FEMA

Federal Emergency Management Agency director vows to change the organization's culture.

As director of the Federal Emergency Management Agency (FEMA) since September 2005, R. David Paulison has spoken of FEMA's evolution, relaying a specific message to state and local public safety agencies, as well as local political leaders: "FEMA is undergoing change and we will prove it."

The most important thing FEMA is doing is changing the culture of the organization. It's bringing in people who know what they're doing, whether those are regional directors or officials with decades of experience dealing with disasters.

"I'm using that same type of philosophy inside of FEMA — inside the Beltway

After dwindling confidence in FEMA over the past few years, Paulison acknowledged the need to re-engage with state and local governments and recover the trust of state and local leaders, as well as the trust of the American people.


"I can only do that by proving how we're going to respond," he said. "Saying it over and over again is not going to make it happen. The proof's in the pudding, so to speak. And that's what I'm going to do."

Part of that proof is that Paulison is engaging in partnerships with the private sector, and emphasizing those partnerships at the state and local levels.

"Take a particular city — they've got to make sure they look at their critical infrastructures, who owns them, how they can bring them into the planning process to protect those infrastructures, and how can they get that city up and running again?" he said. "Business plays a big part in that. One of the things I learned after Hurricane Andrew — it was very clear to me that if the businesses don't come back, the community is not going to come back. So they have to be brought in as partners."

State and local governments can also participate in the overall evolution of FEMA, and in more than one way.

First, as far as the national response framework is concerned, Paulison said he needs feedback on whether the framework is what it needs to be, and whether it accomplishes what they think it needs to do.

"Two, we have our national advisory council, we have a regional advisory council out there, we have a lot of people surveying there — those are going to help me get the right input that I'm going to need," he said, adding that the third piece of it is making sure he's in the field and not sitting behind a desk in Washington. "I [need to] meet with those state and local governments, national emergency managers, local emergency managers, chase the police, the sheriff's association," he continued, "so I can get that very honest feedback of how we're doing." 

"We're not coming in to take over, so don't misread what I'm saying. We want to come in as a partner — staying in there side by side with the local government and state."

in Washington — making sure that people managing this organization are emergency responders who know what they're doing and have credibility in the field," he said. "So they know where I want to go, they know I want a much more forward-leaning, much more inventive organization."

FEMA is also changing the way it responds to disasters, Paulison said, adding that the agency will no longer wait for a local government or a state to become overwhelmed before moving in.

"We're not coming in to take over, so don't misread what I'm saying," he explained. "We want to come in as a partner — staying in there side by side with the local government and state — so if there's a gap to fill we know what the needs are and can move those supplies or whatever they happen to need very quickly, not waiting for something to fail before we respond."

"Don't forget the private sector owns about 80 percent of our critical infrastructures, and we, in the past, have not included them in our planning process; we have not included them in our exercises, and surely haven't included them in our response capability," he said. "We need to do that."

FEMA is reaching out to private companies, asking them to share their expertise and organization. FEMA is learning what their needs are, and they are learning what FEMA's capabilities are.

"Again, bringing all these groups in as partners in response to disasters," Paulison said. "If we can do that, we can make this happen, and we're going to have a much better response than we've ever seen in this country."

And Paulison said state and local governments can be involved by doing the same thing he is doing.

Clockwise from top: Following the Southern California wildfires in October, **FEMA Director R. David Paulson** views property damage in a Rancho Bernardo neighborhood; Paulson speaks at the Sacramento Regional Citizen Corps Council conference in California; Paulson thanks a volunteer for her help after the tornado in Greensburg, Kan., in May.



PHOTO BY ANDREA BOOHER/FEMA



PHOTO BY MICHAEL RAPHAEL/FEMA



PHOTO BY ANDREW CRUZ

A Visit From St. Internet

'T was the night before the "holidays,"
and all through the state,
No employee was stirring, only I had
stayed late.

Generic greetings were hung through the office
with care,
To risk offending someone, nobody would dare.

The servers were nestled all snug in their racks,
While Trojans and viruses slipped through
the cracks.
PCs were in standby, the lights were shut off,
And outside the snow fell so gently, so soft.

Then out from the lobby there arose such a clatter,
I sprang from my desk to see what was the matter.
Down through the hallways I flew like a flash,
Tripped on the carpet and earned a nice gash.

The fluorescent light reflected on the window,
Bathing all in my sight with an unearthly glow.
When, what to my wondering eyes should appear,
But a white full-size van full of new, high-tech gear.

Bearing Cheetos and Pepsi, and quite heavysset,
I knew in a moment it must be St. Net.
Slower than dial-up his support staff they came,
And he belched, then shouted, and called them
by name!

"Now, David! Now, Daniel! Now, Phillip
and Victor!
On, Charley! On, Caleb! On, Donny and Hector!
Quick, to the data center, quickly I say!
Now dash away! Dash away! All dash away!"

Mountains of paper did suddenly fly,
As the mysterious techies went plodding by.
Down to the basement the support staff they flew,
With a box full of gadgets, and manuals too.

And then, in a twinkling, I heard from below,
The cursing of software refusing to load.
I thought I might help, but as I turned 'round,
In through the window St. Internet did bound.

He had broken the glass and was cut up quite bad,
His clothes were all bloody, and he looked
rather sad.


A bundle of gadgets he threw on the floor,
Then he ran back to the van to get a bunch more.

His eyes, they were sullen, his dimples distorted!
His cheeks were all pockmarked, his nose
all contorted!
His big, gaping maw hung open like a sack,
And years at a desk had put a nice hump in
his back.

The butt of a cigarette was tight in his teeth,
And the foul stench he exuded was beyond
my belief.
He had a round face and an impressive spare tire,
That didn't fit well with his outdated attire.

He was chubby and plump, a crabby old geek,
And I laughed when I saw him, I could
hardly speak!
Then a twitch of his eye and a twist of his head,
Sent a chill down my spine and filled me with dread.

He spoke not a word and went to the underground
floor,
He filled our IT shop with new computers galore.
And laying his finger aside of his nose,
He hacked and he spit before uttering this prose!

"Quick to the van!" he said with a yawn,
They all piled in as night gave way to dawn.
But I heard him exclaim, ere he drove out of sight,
"Don't call if it breaks, Tech Support's off for
the night!" 

Group Publisher: DON PEARSON dpearson@govtech.com

EDITORIAL

Editor: STEVE TOWNS stowns@govtech.com
Associate Editors: EMILY MONTANDON emontandon@govtech.com
JESSICA JONES jjones@govtech.com
MIRIAM JONES mjones@govtech.com
KAREN STEWARTSON kstewartson@govtech.com
JIM MCKAY jmckay@govtech.com
Chief Copy Editor:
Managing Editor:
Justice Editor:
Technology and
Politics Editor:
Features Editor:
Contributing Writers:
Editorial Assistant:

DESIGN

Creative Director: KELLY MARTINELLI kmartinelli@govtech.com
Graphic Designers: CRYSTAL HOPSON chopson@govtech.com
MICHELLE HAMM mhamm@govtech.com
JOE COLOMBO jcolombo@govtech.com
TOM MCKEITH tmcketh@govtech.com
Illustrator: STEPHAN WIDMAIER swidm@govtech.com
Production Director: JOEI HEART jheart@govtech.com
Internet Director: JUDE HANSEN jhansen@govtech.com

PUBLISHING

VP Strategic Accounts: JON FYFFE jfyffe@govtech.com
VP Bus. Development: TIM KARNEY tkarney@govtech.com
EAST
Sr. Director of Sales: PAM FYFFE pfyffe@govtech.com
WEST, CENTRAL
Regional Sales Directors: LESLIE HUNTER lhunter@govtech.com
EAST
SHELLEY BALLARD sballard@govtech.com
WEST, CENTRAL
Account Managers: KRISTA O'SULLIVAN kosullivan@govtech.com
WEST, CENTRAL
MELISSA CANO mcano@govtech.com
EAST
ERIN HUX ehux@govtech.com
WEST, CENTRAL
Director of Marketing: ANDREA KLEINBARDT akleinbardt@govtech.com
National Sales
Administrator: SHANNON DURHAM sdurham@govtech.com
Regional Sales
Administrators: NANCY GLASS nglass@govtech.com
SABRINA SHEWMAKE sshewmake@govtech.com
Dir. of Custom Events: WHITNEY SWEET wsweet@govtech.com
Custom Events Manager: LANA HERRERA lherrera@govtech.com
Custom Events
Coordinator: KARIN PRADO kprado@govtech.com
Dir. of Custom Publications: STACEY TOLES stoles@govtech.com
Business
Development Director: GLENN SWENSON gswenson@govtech.com
Director of Web Products
and Services: VIKKI PALAZZARI vpallazzari@govtech.com
Web Services Manager: PETER SIMEK psimek@govtech.com
Proj. Manager, Web
Products and Services: MICHELLE MROTEK mmrotek@govtech.com
Web Advertising
Manager: JULIE DEDEAUX jdeaux@govtech.com
Subscription Coordinator: GOSIA USTASZEWSKA gustaszevska@govtech.com

CORPORATE

CEO: DENNIS MCKENNA dmckenna@govtech.com
Executive VP: DON PEARSON dpearson@govtech.com
Executive VP: CATHIEA ROBINETT crobinnet@centerdigitalgov.com
CAO: LISA BERNARD lbernard@govtech.com
CFO: PAUL HARNEY pharney@govtech.com
VP of Events: ALAN COX acox@govtech.com

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reports from the IT horizon

\$100+ Laptop

The vaunted "\$100 laptop" that Massachusetts Institute of Technology (MIT) researchers dreamed up for international schoolchildren is becoming a slightly more distant concept.

Leaders of the non-profit One Laptop Per Child, which was spun

out of MIT, acknowledged that the devices are now slated to cost \$188 when mass production begins. The last price the non-profit announced was \$176; it described \$100 as a long-term goal.

Spokesman George Snell blamed the increase on a variety of

factors, including currency fluctuations and rising costs of such components as nickel and silicon. He said the project was committed to preventing the price from rising above \$190. —CNN.COM



Minimal Manpower

These 10 states have the smallest number of full-time equivalent state employees:



Pioneer Party

The first exclusively Internet-based political party launched a bid for a place in the Australian Senate, even though its founder admits the party has no official positions.

Senator On-Line (SOL) party would allow voters with Internet access to vote on Senate bills and other important issues. The votes would be tallied to determine the majority voice, which would automatically become the SOL party view.

SOL founder Berge Der Sarkissian said the party would make the "often-detached political process" much more accessible, transparent and engaging. — *Senatoronline.com*

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to managing
editor **Karen Stewartson**
<kstewartson@govtech.com>

Public Perks Voting Made Easy

What attracts new employees to state government?

Benefits Package	89.1%
Location	65.2%
Workplace Flexibility	47.8%
Career Opportunities/ Challenging Work	43.5%
Tuition Reimbursement	23.9%
Training and Certification Opportunities	19.6%
Salary	17.4%
Other	17.4%

— *Nascio.org*

Estonia's ruling Reform Party is preparing an amendment to let people vote by mobile telephone.

The party presented its "m-voting" proposals on Sept. 27 in order to prepare a bill along with its coalition partners. If the partners approve the initiative, the legislation will be sent to parliament.

The head of the parliamentary Constitu-

tional Committee said the introduction of m-voting would call for substantial changes in election laws.

Last year, Estonia was the first country to elect its parliament via the Internet. About 3.5 percent of all those who voted in the March 2006 elections did so online, enhancing the nation's reputation as "E-stonia."

— *THE BALTIC TIMES*



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WELL... HOW DID WE GET

RETRACING GOVERNMENT'S
JOURNEY FROM THE
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BY CHAD VANDER VEEN | TECHNOLOGY AND POLITICS EDITOR

2001

1994

ET HERE?

1989

FOR MUCH OF 2007, we at *Government Technology* took a look back at our own history. Our *Way Back Machine* feature covered some of the highs and lows of our existence, recalled notable stories and issues of days gone by, and many pioneers from those early days were highlighted once again.

Normally in the December issue, we run our annual *Year in Review*. But since this is the **20th anniversary of *Government Technology***, we felt something special was in order. So we've dispensed with a mere year in review and have instead gazed backward through time to reminisce on 20 years' worth of government and technology — the stories, the technology and the people. What follows is not our story. It's yours. It's an attempt to recapture just a bit of the astonishing ride, from the pre-Web era to today's always-on — and always-online — society. It's the tale of people who helped change government's perception of technology, moving it from novelty to necessity. Finally, this look back is also an account of the slew of wonderful gadgets that two decades ago we couldn't imagine, and today we can't live without.

You've all been part of the journey. Come with us as we look back at where you've been.

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ACCESS OUR INTERACTIVE TIMELINE SHOWING HOW 20 YEARS OF TECHNICAL INNOVATION HAVE SHAPED TODAY'S GOVERNMENT. YOU'LL FIND ADDITIONAL INTERVIEWS AND EXCLUSIVE VIDEO FROM THOUGHT LEADERS ON THE USE OF TECHNOLOGY IN GOVERNMENT.

'WE SAW A LOT OF WHAT WAS POSSIBLE'

Internet pioneer Vint Cerf recalls the early days of personal computing.

Modern e-government wouldn't exist without the Internet, and the Net as we know it wouldn't exist without **Vint Cerf**.

In the early '70s, he and colleague Robert Kahn developed the TCP/IP protocols that let computers of any type link together via a common network.

Did Cerf have any idea of the massive changes his work would set in motion? The answer is both yes and no.

His initial research, conducted at Stanford University, was sponsored by the Defense Advanced Research Projects Agency. The U.S. military, which thought computers would be valuable for command-and-control functions, needed a way to make different networks and computing platforms compatible. Even then, however, Cerf glimpsed how the Internet eventually would be used more broadly.

His research occurred when the core tenets of modern personal computing were forming and in a place — the area that would soon be known as Silicon Valley — that was a hotbed of innovation.

"By 1973, e-mail was already two years old, the concepts behind the Web had been explored in a single machine environment, not a multiple one, by Douglas Engelbart at SRI International in Mountain View, Calif. He invented the idea of hyper linking or hyper text. He invented the mouse," said Cerf. "By the time we got the Arpanet up, the predecessor to the Internet, we were accessing the SRI online system through the network with all of these text capabilities, the sharing of documents, the unique identification, e-mails were flowing, file transfers were going back and forth, people could log in and interact remotely."

Researchers at the famed Xerox PARC research facility in Palo Alto, Calif., built on those ideas, while Cerf was nearby at Stanford. The Xerox facility became a test-tube for exotic computing concepts that are now commonplace. Researchers there built the first PCs, invented a word processing system, adopted the mouse and created Ethernet local area network technology.

These innovations in computer usability, combined with TCP/IP's ability to link millions of computing devices, eventually set the stage for a monumental shift in how the world creates, consumes and shares information.

"In 1973 they were living in a world that the rest of the world didn't see for 20 years," said Cerf. "So the answer is, we saw a lot of what was possible. [But] it's still pretty amazing to see what actually happens when a billion people are online, personal computers are something you carry around in your pocket and broadband is available everywhere."

STEVE TOWNS, EDITOR



IN THE BEGINNING ...

SOMETIME IN
THE 1980s

the Industrial Age came to an end. It's impossible to say when, exactly, but the advent of the personal computer and its growing ubiquity heralded the end of the era and ushered in a new one — the Information Age. The Information Age is unique in history. From the Stone Age to the Bronze Age to the Iron Age, everything humans accomplished in the past — be it art, literature, machines or mathematics — was in most ways a tangible thing. The Information Age is different. This is the time of the knowledge economy, an era where imagination trumps labor and ideas are commodities.

The Information Age is the antithesis of the Dark Ages — a time of regression and stagnation. It's the Enlightenment; only this time the paintbrush has been replaced by Photoshop and the canvas by FrontPage. And it all started with a desktop box that most assumed was little more than **a glorified calculator.**

BY 1987

PCs had become a fixture in the office and began appearing in countless homes. Many were now powered by Intel's 80386 micro-processor; the first commonly used 32-bit CPU. (Amazingly it was only this year, 2007, that Intel finally ceased production of the 386.) As computers' prominence grew, so did their capabilities. The PC was the public face of the late '80s computer boom. But behind

the scenes, data centers powered the growing appetite for networked connectivity, all manner of electronic information exchange and transaction, and a blossoming online frontier known as the Internet.

While to this day they're criticized for being slow adopters, governments at all levels quickly seized upon — or at least recognized — the fundamental changes triggered by "information technology." Yet with this potential came an equal amount of uncertainty. The floodgates of IT were just beginning to open, and a torrent of confusion threatened to sink government before it learned to swim. That was where we fit in. *Government Technology* was conceived as a life preserver for state and local government awash in mystifying new tools and capabilities. For 20 years, this magazine has reflected your experiences, your struggles and your successes.



1987

IBM PS/2 released

Microsoft and IBM jointly develop OS/2

Perl programming language is released

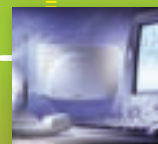
1988

IBM AS/400 released



HP launches computers with RISC (reduced instruction set computer) processors

ISDN invented



Super Dimension Fortress is launched, now one of the oldest UNIX BBS's still in existence



In 1984, **Michael Dell** was a college student who had \$1,000 and an idea. A year later, his small company had generated more than \$70 million by offering customers custom-built systems. Shortly thereafter, the company would become the world's largest PC retailer.

Robert Morris Jr. releases the Morris Worm, which infects as many as 10 percent of computers on the Net

ITIL, the Information Technology Information Library, traces its origins across the Atlantic. In the late 1980s, the framework laid out by ITIL was quickly embraced throughout Europe, but it would be another decade before Americans even heard of ITIL.



IN THE LATE '80s,

society began to embrace all things electronic, triggering an explosion in the amount of electronic data reaching the public sector. Luckily the Information Age opened the door for new, intelligent database software to better organize and store billions of bits of information. Local area networks (LANs) moved from obscurity to commonplace as agencies and organizations demanded more efficient ways to exchange data.

In those early days, office automation was on everyone's mind. How could these new capabilities

be harnessed to maximize resources? One solution championed by both the public and private sector was telecommuting. Though at the time, few had the infrastructure to permit widespread telecommuting, most correctly predicted the technology would soon be in place. But telecommuting, like the paperless office, continues to be an elusive goal. It isn't for want of technology that these scenarios remain rare; rather, it's an unwillingness on the part of those who could see it through to reality. Telecommuting exemplifies the pivotal challenge of the Information Age — whether or not the technology exists, changing people is the biggest hurdle. Time and again, this truth would play out as technology adoption progressed.

Over the years, the people problem manifested itself in countless ways. As the '80s ended, state and local governments eagerly sought ways to exchange information. Territorial issues, however, remained a thorn in everyone's side. But the outlook wasn't entirely grim. Expanding network capabilities and the impending World Wide Web would dramatically enhance people's ability and willingness to share information.

'OH MY GOD, WHAT IS THIS NEW GADGET?'

P.K. Agarwal recalls the arrival of desktop PCs in government.

In the early 1980s, the arrival of personal computers triggered a wrenching transition for government agencies.

P.K. Agarwal, now California's chief technology officer, had a front-row seat for the revolution.

In 1982, Agarwal was in charge of information technology for California's massive Department of General Services. As PCs began appearing on agency desktops, they presented a clear challenge to the status quo.

"There was a lot of suspicion with this new technology," Agarwal said. "It was taking power away from the hands of the few and putting it in the hands of the masses. So naturally there was the normal resistance to these ideas."

The unfamiliar machines were particularly threatening to upper management, he recalled. "The senior executives, they didn't want to look dumb. At the time, people felt like, 'Oh my God, what is this new gadget?' I remember personally teaching people how to use a spreadsheet, how to use simple database and word processing."

In reality, rank-and-file employees were no better prepared than their bosses. "People were literally for the first time touching computers, so they were really afraid they were going to break something," said Agarwal.

User training and acceptance was just one challenge associated with introducing PCs into government agencies. Purchasing the devices also was a struggle — every detail of the new technology had to be painstakingly specified, which often encouraged more foot-dragging by reluctant management.

Of course, those growing pains ultimately proved worthwhile. "The end result was you can see the enormous gains in productivity in government and in private sector," he said. "Really we are all benefiting from the economic impact on that."

STEVE TOWNS, EDITOR



By most accounts, a terabyte is still pretty big. But it was huge in 1988, which was when California's **Teale Data Center** reached that mark. At the time, the center, and its 400 employees, was regarded as one of the country's largest computer installations.

1989

Controversy surrounds an announcement that cold fusion has been achieved

Apple introduces Mac Portable

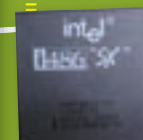
Motorola releases the MicroTAC mobile phone, which incorporated the first "flip phone" design



First trans-Atlantic fiber-optic cable



Intel releases 486 processor



'WE CALLED THEM TRASH 80s'

Seattle police chief remembers the first in-car computers.

In 1977, **Gil Kerlikowske** headed the detective division for the St. Petersburg, Fla., Police Department and was part of a team that experimented with something unique: putting computers in police squad cars.

"We bought these Radio Shack TRS-80s," he said. "We called them trash 80s. Battery operated, maybe four lines on a screen, no memory or hardly any. But the concept was that each officer would have his or her own."

At first, officers were intimidated by the machines, but they quickly grew comfortable, Kerlikowske said. "One of the things that happened was they started a football betting pool. On the one hand they got disciplined for that, but on the other hand they were enlightened and clever enough to think of different uses for it."

The computers were used to replace handwritten or typewritten reports, though most officers kept paper backups because they didn't trust the new devices. "You'd write two or three reports, and something would happen and it all would be lost," Kerlikowske said.

Nobody thought the computers were all that innovative at the time, he added. "When you're in the middle of the experiment, being the guinea pig, you don't see yourself as all that cutting edge, but now when I look back I say that was a great learning lab."

Kerlikowske later received a one-year fellowship from the U.S. Department of Justice to evaluate police procedures nationally. He went on to become the police commissioner in Buffalo, N.Y., in 1994, where he found the department had no computers. By the time he left in 1998, the department had installed 150 workstations and mobile data terminals in all of the squad cars. "I got seniors in high school to teach these 25-, 30- and even 40-year veteran officers," he said.

Kerlikowske is currently the chief of police in Seattle, where he just finished equipping every officer with individual laptops. "All these years later, we're just getting to that, although we've had in-car systems for quite a while."

JIM MCKAY, JUSTICE EDITOR



ALTHOUGH THE WEB

would really kick-start the Information Age, none of it would've been possible without technological marvels that began appearing in the late '80s and early '90s. To exist then meant growing familiar with a horde of new acronyms — LAN, DOS, IBM PS/2, GUI, OS, RAM, MB, IT, CIO, AFIS, CAD, AS/400 — and a wild assortment of terms such as integration, automation, telephony, Windows, telecom, collaboration, Macintosh, worms, viruses, servers, optical storage and data centers. And that barely scratches the surface. Every corner of government dealt with a rapidly changing technology landscape, but it could be argued that the

king of the IT hill was, in those days, a little thing called GIS.

In the '80s, companies like ESRI (and for the record, it isn't pronounced ez-ree) and CARIS established themselves as premier commercial vendors of GIS applications. Though around since the late '60s, GIS had been largely relegated to specialized agencies. Thanks to the growing number and power of PCs, GIS tools were finally available to small government agencies and the general public. ArcGIS, ESRI's flagship product, is perhaps the most widely used GIS application, with desktop, server, mobile and online versions available.



1990

IBM launches Lotus Notes



Cisco goes public, at a split-adjusted price of about 6 cents per share.

Hubble Space Telescope is launched



Time Inc. and Warner Communications Inc. merge

1991

First GSM cellular network launched

High Performance Computing and Communication Act of 1991 (aka the Gore Bill) is passed, creating the National Information Infrastructure

GIS WASN'T THE ONLY HOT TOPIC IN STATE AND LOCAL GOVERNMENT IT.

Through the late '80s and early '90s, governors, mayors and county supervisors started realizing they needed someone in charge of their respective technology initiatives — or lack thereof.

And so was born the public-sector CIO.

Or director of IT. Or CTO. Or even the rare EIO (enterprise information officer.) Some names you might recall from those days include Steve Kolodney in California, John Carrow in Philadelphia, John Thomas Flynn in Massachusetts, John Kost in Michigan — having the name John apparently meant you were a shoo-in for the job. These represent just a few of the pioneers who assumed the unenviable task of establishing the CIO as a credible and vital part of government strategy.

By 1990, a pattern appeared in personal computing technology. What had been cutting edge just a few years ago was now available in a smaller package at a cheaper price. Take the laptops of the day. A top-of-the-line model included features like a 286 processor,



THE TOSHIBA T3100 SERIES WAS AMONG THE FIRST "LAPTOP" FORMAT PORTABLE 286 COMPUTERS, AND WAS BUILT IN 1987.

PHOTO COURTESY OF DAVE DUNFIELD

40 MB hard drive, 640x400 display, and weighed around eight to 12 pounds. Sure, they're fun to laugh at now. But only 10 years earlier, virtually no one even had a desktop computer, let alone a laptop. It's the same today. Your bargain basement cell phones have more capability than the laptop just described, they're smaller and cost a fraction of the price.

AS THE FINAL DECADE of the 20th century began,

state and local governments were spending more on IT than ever before. One leading expenditure was **systems integration**. By 1990, state and local government was spending more than \$1 billion annually on systems integration, especially in areas like health and human services, administration and network connectivity. This electronic merging of normally disparate entities set the stage for a whole host of transformations in terms of government service delivery to citizens.

With increased systems integration came even more intense focus on data. The early '90s saw dramatic increases in practices such as data warehousing and data mining, not to mention the expansion of data centers. The effects of Moore's Law were becoming plainly apparent, as one generation of computers was quickly rendered obsolete by endless successors. Intel's forthcoming Pentium processor was already sounding the death knell of the relatively new 486.



1992



Sumio Iijima, a Japanese physicist, discovers carbon nanotubes

Sun Microsystems creates Java programming language

First released in 1991, **Linux** is regarded as the most popular open source operating system. Widely used in servers and supported by a long list of heavy hitters like IBM, Sun, Oracle — even the PlayStation 3 — Linux is now making inroads to the mobile phone market.



Apple Newton debuts



Microsoft releases Windows NT



EDS founder Ross Perot makes bid for White House

Adobe co-founder Charles Geschke is kidnapped in the company parking lot

Mosaic (aka Netscape Navigator) was the browser created by Marc Andreessen and Eric Bina in 1992. The browser would dominate the market for several years. However, Internet Explorer, using much of Mosaic's original code, would eventually drive Netscape almost out of the market.

CompuServe introduces WYSIWYG e-mail

'IT CREATED A REVOLUTION'

NYPD's CompStat changes the face of policing and city management.

When, as a police lieutenant in Boston, **William Bratton** first began putting up huge maps to show his officers where to patrol, and then later, as New York police commissioner incorporated a computer into the equation, he had no idea it would stretch into today's version of CompStat.

"When CompStat was conceived and implemented in the New York Police Department in 1994, I don't think any of us involved in its creation ever envisioned that it would have the rapid and phenomenal impact on policing that it had and continues to have," Bratton said.

"CompStat helped to significantly refocus policing from use of its crime statistics for reactive, after the fact purposes, to preventive policing initiatives and accountability," he said. "It created a revolution in how police thought of themselves and their capabilities."

CompStat continues to impact policing, but also has found its way into other aspects of government. Baltimore developed CitiStat, a program modeled after CompStat that helps the city keep track of things such as trash pick-ups and overtime. City data is entered into a computer, and GIS maps are made showing such things as potholes that need filling and trash cans that need emptying. City staff meet every other week to discuss the data garnered by CitiStat and the resulting strategies that enable the city to function efficiently.

Cities everywhere have developed their own forms of CompStat, including programs like HealthStat, ParkStat and TrafficStat.

Now the police chief of Los Angeles, Bratton employs CompStat to fight the violent gangs so entrenched in the city. He announced recently, along with Mayor Antonio Villaraigosa, Community CompStat, a program aimed at reducing crime in schools by engaging parents and teachers and keeping track of at-risk kids. It's another arm of community policing and aims to prevent crime rather than react to it.

JIM MCKAY, JUSTICE EDITOR



ONE RESULT from the combination of growing amounts of electronic data and the beefier desktops was **new software applications for electronic publishing.** Government bodies large and small began maximizing new desktop publishing capabilities while saving themselves millions in the process. North Carolina, California, Dallas, New York City and many more could finally forgo traditional publishing techniques. In addition, as more state and local governments began expanding their networks, meeting minutes, directories, legal documents and more began appearing on agency intranets — arguably laying the groundwork for the coming era of e-government applications.

ACROSS THE ATLANTIC,

the next chapter in technology was being written. As 1990 drew to a close, **Tim Berners-Lee created the first Web server.** Berners-Lee, an independent contractor working at CERN in Switzerland, also is credited with creating the World Wide Web. In only two years, the Web went from academic obscurity to household name. By 1992, commercial Web browsers were being developed, with Marc Andreessen's and Eric Bina's Mosaic transforming the way the

world exchanged information. Even Gopher, the largely text protocol popular among universities, quickly folded under the enormity of the Web phenomenon. Despite the clichéd criticisms often leveled at government when it comes to technology adoption, almost everyone recognized that the Web offered tremendous potential.

The Web was a boon to government across all levels, from education to the department of motor vehicles to criminal justice. In 1994, the nation's first city Web site was launched in Palo Alto, Calif. Only 14 years ago no city Web sites existed. Now even the smallest municipalities have them.



1993

The World Wide Web goes public

National Center for Supercomputing Applications releases Mosaic Web browser



Intel introduces Pentium processor


AT&T develops the computer video phone

1994

lomega introduces 100 MB zip drive



The Superhighway Summit is held at UCLA. Among others, Al Gore, Rupert Murdoch, Jeffery Katzenberg and Michael Eisner attend.

 In 1994, **Palo Alto, Calif.**, became the first city in the nation to have a Web site. After viewing a presentation of the Web given by local business leaders, city CIO Dianah Neff immediately saw the potential and began work on launching a city site.

THE DAWN OF THE WORLD WIDE WEB

finally ushered in the capability to get online instead of in line, as CIOs would begin to routinely say. However you choose to define it, e-government was essentially impossible prior to the Web. And the timing could not have been better. Growth of the Web reduced the need for government kiosks that briefly were all the rage, saving countless agencies from investing in already-obsolete technology.

By 1995, the word of the day was **Internet**. But for many in and out of government, it was difficult to wrap their heads around the difference between the Internet, the Web, file transfer protocol and the National Information Infrastructure (NII). The federal government defined the NII as a "seamless web of communications networks, computers, databases and consumer electronics that will put vast amounts of information at users' fingertips." OK, right — but



THE WORLD WIDE WEB'S HISTORIC LOGO WAS DESIGNED BY ROBERT CAILLIAU.

what does that mean, exactly? The bigger question for state and local government was what it meant for them. The NII, often what people referred to when using the phrase "information superhighway," was the national telecommunications backbone as envisioned under the High Performance Computing and Communication Act of 1991 — aka the Gore Bill. The NII described a sprawling network of hardware and software linked via fiber optics, satellites and microwaves. In many ways, the NII served as a road map for the nation as it sought to build the infrastructure necessary to support the Information Age.

As government plunged headlong into the new digital expanse, confusion reigned. Public officials scrambled to make sense of the Web, but it would be several years before the position of CIO was given the respect it deserved. Ill-defined and underutilized, the job of public-sector CIO was sometimes ridiculed by insiders who redefined the acronym to stand for "career is over."

'I WANT TO BE A CIO'

John Thomas Flynn and others pioneer a new position.

John Thomas Flynn spent most of the 1980s in the federal government as a presidential appointee. In 1991, he started a chain of events that would change the landscape of technology management in government. That year, he worked on the successful campaign of Massachusetts Gov. William Weld. In return, Weld asked Flynn if he'd like to work for the new administration.

"As a matter of fact, I want to be a CIO," replied Flynn. Although CIO titles had begun to sprout in the private sector — a reflection of technology's growing importance — the post was virtually unknown in state government. Indeed, Flynn's request stumped Weld's staff, who thought he was inquiring about an "AFL-CIO" job, said Flynn.


Despite the initial confusion, Flynn was named director of the Massachusetts Office of Management Information Systems, and began the task of pulling together the state's highly decentralized technology operations. Flynn drew up a new IT governance structure for the state, basing his plan on the CIO position and management model established by General Motors, and Weld signed off.

"The next thing you know I was the chief information officer, and I had to get some new business cards — that was probably late 1993 or early 1994," Flynn said. Around that same time, Gov. John Engler appointed John Kost as CIO of Michigan, and several other states were following the same path.

Thus, the state CIO position was born.
STEVE TOWNS, EDITOR



YAHOO!

 **Yahoo** was created by Jerry Yang and David Filo in 1994. Originally called Jerry's Guide to the World Wide Web, the uninspired moniker was changed to Yahoo. The search engine was one of the primary drivers of the dot-com boom, and by 2000 its stock was trading at an all-time high of \$118.75.

1995

Craig Newmark
founds craigslist

Dot-com
boom
begins

Microsoft
launches
Windows 95

Microsoft
introduces
MSN Web
portal




Netscape
Navigator 1.0,
formerly Mosaic,
is released

Commodore
goes out of
business

Alta Vista Internet
search engine
launches

ebay

 Created by Pierre Omidyar in 1995, **eBay** was originally known as AuctionWeb. The first item sold by Omidyar was a broken laser pointer. Omidyar described the \$14 transaction as an epiphany when he realized the Web could bring people and products together like never before. **Fun Fact:** Former Calif. State Controller Steve Westly was an eBay vice president.

amazon.com

Amazon.com Inc.
becomes one of
the first major
companies to sell
products online

ON THE TECHNOLOGY FRONT,



optimism abounded. 1995 was, in many ways, the year the Information Age grew from infancy into adolescence. Industry insiders began making predictions, some startlingly accurate, as to what was in store for the coming years. John Thibault, then-CEO of GeoTel, saw a **"significant re-emergence of new voice technologies,"** a prediction the coming era of VoIP certainly satisfied. Kenneth Hamer Hodges, then a vice president at Telco Systems, said Ethernet would soon overtake ATM and frame relay systems. Art Zins of the now-defunct Digital Equipment Corp. claimed PCs would become "the platform of choice for delivering all sorts of digital products and services — from online magazines to interactive games to home shopping and virtual classrooms" — check, check, check and check. Some even expected to see mass introduction of wireless WANs by 1997, though in reality, wireless networking would not be commonplace until after the turn of the century.

DOT-COM BOOM.

Many have also pinpointed 1995 as the year the **dot-com boom** began. Investors everywhere noticed the digital economy's tentacles could reach almost anyone, anywhere. Fortunes were apparently ripe for the picking, and traditional business philosophies were cast by the wayside in favor of new strategies like "growth before profit" and "get large or get lost." In Silicon Valley, it seemed almost anyone with a pen and a cocktail napkin could formulate a business plan well enough to warrant millions in venture capital. Countless new companies sprang forth from seeming nothingness. The mid- to late '90s saw the creation of eBay, Amazon, PayPal and Travelocity — each a roaring success in their respective marketplace. Many more companies, however, folded quickly or suffered agonizing, drawn-out deaths. Webvan, the online grocer, simply couldn't sell enough products

to justify the cost of its infrastructure. And, of course, poor Pets.com and its much-loved sock puppet mascot became the icons for dot-com failure. During the Super Bowl in January 2000, Pets.com aired one of the most memorable and acclaimed commercials of all time. The pet supply retailer went public a month later only to close its doors, real and virtual, the following November, with shares of stock valued at a pitiful \$0.19.



It's worth recalling that government at the time — e-government in particular — wasn't immune to the dot-com hysteria. Several e-government companies sprang up during the boom, including one called govWorks, which was profiled in *Startup.com*, a documentary film about the firm's rise and fall in the late '90s. govWorks epitomized the dot-com boom and bust, becoming one of many companies that disappeared as quickly as they came.

1996

The first State and Local Government Best of the Web awards are presented

WRAL-TV, in Raleigh-Durham, N.C., sends first high-definition broadcast signal

MapQuest debuts



Palm Computing releases the PalmPilot

First DVD players made available

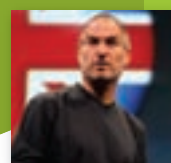
1997

WorldCom merges with MCI Inc., forming MCI WorldCom

Intel releases Pentium II processor



Steve Jobs returns to Apple



In 1997, the Los Angeles Police Department began work on a \$20 million **IT infrastructure overhaul** that gave police access to WANs and LANs that worked across all city government systems. In addition, thousands of new workstations were added and laptops were provided for officers in the field.

Original IEEE 802.11 (Wi-Fi) standard developed, providing bandwidth of 2 Mbps

In 1996 an Israeli company called Mirabilis created the first Internetwide instant messaging (IM) program. **ICQ** allowed anyone with an Internet connection to communicate in real time. For the public sector, IM challenges the standard definition of what is and isn't public record.

CONNECTED CAPITOLS.

The dot-com era may have been the most high-profile technology story of the late '90s, but many behind-the-scenes innovations changed the world far more than the comings and goings of online retailers. Electronic uniform commercial code (UCC) filing, for example, began appearing in various states in the mid-'90s, drastically reducing paperwork and saving countless hours of processing. Electronic benefit transfer (EBT) had long been a goal of state agencies. The Information Age finally allowed state coalitions, such as the Southern Alliance of States (SAS), to form and begin paving the way for a national EBT system.

In state capitols, cutting-edge technology was changing the way legislators did their jobs — though, depending on who you ask, the end result might not have changed much. Regardless, wired state houses and legislators with laptops were becoming the norm in places like Michigan, Texas and California.

The technology inside state capitols was rapidly being transformed. And with that transformation came more tech-savvy lawmakers, as evidenced by a 1995 interview we conducted with Michael O. Leavitt, then-governor of Utah, now serving as U.S. secretary of Health and Human Services. Leavitt was on top of technology issues like electronic RFPs, the need for developing fiber-optic backbones and intelligent transportation. Leavitt also spoke of what has surely become the de facto mission statement for government IT.

"In an environment where [people] are required to do more with less or more with the same, technology is the element that will ultimately make that possible," he said.

LAPTOPS BEGAN APPEARING IN STATE CAPITOLS IN THE MID-'90s.



1998



Compaq acquires Digital Equipment Corp.

Microsoft unveils Windows 98


Southwestern Bell becomes SBC

Apple launches the iMac

Wireless carriers rush to build antennas

U.S. Postal Service launches e-stamps



 **Bluetooth** is the wireless technology behind PANs — or personal area networks. Conceived to connect computers, phones, printers and other gadgets, it has found its way into our daily lives. Today, thanks to Bluetooth, people standing on the corner seemingly talking to themselves may not actually be crazy.



'OH, THIS IS JUST A FAD, IT'LL GO AWAY'

South Dakota consolidated before consolidation was cool.

Today, state governments across the nation are struggling to consolidate their IT operations. South Dakota did it more than a decade ago.

In 1996, the state hired **Otto Doll** to head the Bureau of Information and Telecommunications, its newly created central IT organization. Doll, a newcomer to South Dakota, said he encountered resistance and skepticism as state agencies were forced to hand over staff and resources to the central IT shop.

"I had never been to South Dakota until the interview. So I get the job, I come on board ... [and] all the IT people are now under this new person who's not even from the state," said Doll. "I had heads of agencies telling me, 'Oh, this is just a fad, it'll go away.'"

Doll relocated former agency staff members into the central IT bureau's new headquarters to help them identify with the organization. Even then, it took several years for the new outfit to act like a central IT group. But the operation eventually came together — and began delivering benefits — with the help of a stark mandate from the state's chief executive.

The governor cut 65 staff positions from the newly combined organization and slashed its capital budget by 20 percent, requiring the consolidation to deliver immediate results.

"We lost people — mostly management — and we lost a lot of dollars, and now we were supposed to run the whole state on such a smaller pie of resources," said Doll. "It forced us to accelerate change in order to support that. But we saved money for the state of South Dakota from day one."

STEVE TOWNS, EDITOR



AOL buys Netscape for \$4.2 billion

Java development kit reaches 1 million downloads

'HOW DO WE BEGIN TO USE THE INTERNET?'

NC@Your Service leads a new wave of government portals.

By 2000, government Web sites were moving beyond mere collections of static information. That year, North Carolina's innovative NC@Your Service led the emergence of a new breed of Internet sites known as portals. These sites — now commonplace in

states and localities — revolutionized electronic government by presenting comprehensive information in a single location and allowing users to tailor that data to their needs.

NC@Your Service was among the most ambitious of these new sites. State officials worked with Accenture — then known as Anderson Consulting — and Yahoo to apply the Internet firm's My Yahoo personalization interface to government information. As a result, citizens could customize the state portal to show only information they wanted to see.

"It was the first deal, interestingly, that Yahoo had ever done with a public entity," said former North Carolina CIO **Rick Webb**, now an Accenture executive.

NC@Your Service, which finished first in the Center for Digital Government's annual Best of the Web awards for 2000, was driven by Gov. Jim Hunt's desire to "dot-com" North Carolina, according to Webb.

"He was very much caught up in how we really begin to use the Internet — not only for information, but to sell industry and jobs," said Webb. "It was all about how you make North Carolina more attractive."

STEVE TOWNS, EDITOR



ONE GROWING CONCERN

for state and local government was that as new technology kept hitting the shelves, people began to wonder what to do with their aging "big iron" systems — those antique legacy systems that still ran many of government's mission-critical applications. The problem then, as it often is today, is that switching out hardware was costlier

than many budgets would allow. This left many CIOs with little choice but to maintain existing systems. Of course, necessity being the mother of invention, new database management tools, middleware and integration software began to fill the gap — enterprise resource planning (ERP) software in particular. The late '90s became a battle for dominance of the ERP market, with giants PeopleSoft and SAP facing off.

Many smaller (though not small) ERP vendors entered the fray as well, including Oracle, SSA and Lawson. Today, of course, ERP and customer relationship management (CRM) remain huge business, as there are countless agencies that still rely on siloed, obsolete infrastructure.



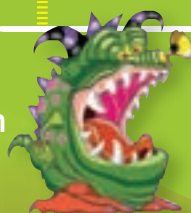
1999

802.11b Wi-Fi standard boosts bandwidth to 11 Mbps

AMD releases Athlon processor



Pyra Labs launches Blogger.com, which helps popularize the blogging technique



Monster.com debuts

Intel launches Pentium III processor

Google

➔ Larry Page and Sergey Brin created **Google**, believing search engines should produce results more relevant than simple keyword matching. Multiple patents, acquisitions and billions of dollars later, Google is one of the most recognized companies on Earth. In fact, the word **Google** has come to mean "search the Internet."

State and local consolidation efforts signal the end of the big iron days

2000

PayPal electronic payment service appears

ASPs gain popularity



Heavy metal band Metallica sues Napster file sharing service

2001

Seven states offer Web-based tax filing

Love Bug computer virus cripples numerous organizations

➔ **Y2K.** Was it global disaster averted or a harum-scarum flap over nothing? We'll probably never know for sure. But by 2000, the widespread fear of planetary computer meltdowns vanished, leaving us to wonder if IT wasted its time or really did save the world. Check back in 7,993 years.

ANOTHER FASCINATING EPISODE

from the late '90s was **the attack of the Y2K bug**, a date-coding problem that threatened to wipe out computers and networks around the world. IT staff in all sectors worked feverishly, going through millions of lines of computer code to change dates from two to four digits before the year 2000 arrived. Ultimately more than \$300 billion was spent to squash the bug before it could wreak havoc, according to the BBC.

For CIOs, Y2K was somewhat of a double-edged sword. Because the Y2K problem was so urgent and pervasive, governments began viewing IT from an enterprise perspective — and the CIO became a high-profile player in government operations. Unfortunately success meant that nothing happened. Although some jurisdictions used the Y2K threat as a reason to replace old systems, many others chose to fix their legacy applications. Therefore, the investment of significant time and money left them no better off — but luckily no worse — than they were before.



As the 1990s came to a close, many technology issues government faces today were just beginning to rear their heads. Wireless technology was poised to flourish and cell phone use expanded rapidly. Indeed, cell phones would present governments with a significant challenge in the coming years. The devices had a glaring drawback — the difficulty of pinpointing the location from which wireless 911 calls originated.

New Jersey was among the first states to address the problem. Using electronic mapping and triangulation of cell phone towers; the state had good success in narrowing down a caller's location. In 2000, the FCC ordered wireless carriers to implement technologies that could provide public service answering points (PSAPs) with precise locations. The dual-phase FCC plan called for a rollout of new technologies over several years. Generally new phones are now equipped with GPS chips that give a caller's exact location. The issue would come up yet again, however, with the rise of voice over IP.

'IT WAS VERY CLOSE TO COMING APART'

San Diego County, Calif., outsourcing pays off after a few rough years.

In the late 1990s, San Diego County wanted to implement sweeping operational changes aimed at making the jurisdiction run like a business. Unfortunately the county's creaky IT infrastructure wasn't up to the task.

Facing a modernization price tag of several hundred million dollars, San Diego took a different path, opting in 1999 to outsource county IT operations to a consortium of private companies led by Computer Sciences Corp.

It was a bold move, coming just months after Connecticut cancelled a \$1 billion initiative to outsource state IT systems. At first, San Diego's seven-year, \$644 million outsourcing plan seemed destined for a similar fate.

"The deal got off to a pretty rocky start, quite honestly," said **Michael Moore**, who saw the initiative from both sides, first as an executive with one of the outsourcing vendors, then as San Diego County CIO from 2002 to 2007. "The companies made assumptions about what was there, the county made assumptions about what was there, and some of those assumptions turned out to be fairly off in mark. So the first couple of years of the deal were really a discovery period for both the county and the contractor."

The initial years were so rough that the contract was nearly scrapped, but the county and its contractors eventually worked out their differences and began reaping the benefits of the comprehensive — if painful — IT overhaul. Nearly 10 years later, San Diego's outsourcing contract, recently renegotiated with Northrop Grumman, remains one of the largest and most successful of its kind.

"In retrospect, it was very close to coming apart, and many predicted it would come apart," said Moore, who left the county earlier this year. "[But] we got that transformation, and that transformation has allowed us to do a lot of things that governments are struggling with."

STEVE TOWNS, EDITOR



State and local governments begin adopting CRM software

Microsoft releases Windows XP

Color PalmPilot is introduced

In June 2001, the **WiMAX Forum** was created to promote compatibility among the IEEE 802.16/ETSI HiperMAN (the European equivalent) standard wireless equipment manufacturers. However, limited spectrum and chipset availability have slowed its adoption in the U.S.

Wikipedia begins



Apple's **iPod** brought digital music out of niche and into mainstream. The first iPod had a 5 GB capacity and an acclaimed user interface. Current iPods include the classic, with 160 GB of storage, Mini, Nano, as well as the iPod Shuffle, which is literally the size of a postage stamp.



Terrorists attack the World Trade Center and Pentagon on Sept. 11





ONE OF THE GREAT TECHNOLOGY ACHIEVEMENTS

of the early 2000s — and perhaps of all time — was **Web-based tax filing**. In 2000, seven states already had online electronic filing available for taxpayers. Interestingly smaller states were pioneering this wonderful new development. Colorado, Delaware, Illinois, Indiana, New Mexico, Pennsylvania and South Carolina had left the big boys in their rearview mirror. However, that's not to say the big states weren't working on it. California had its online filing initiative stalled by, what else, a lawsuit. Eventually, though, everyone came around, including the IRS. The amount of paper and number of man-hours saved by this innovation is likely so large as to be unknowable.

The early years of the new millennium witnessed the arrival of other groundbreaking technologies. While they didn't immediately seem as important, new capabilities like



instant messaging and the growth of blogs contributed significantly to the Information Age. **Instant messaging**, as it is known today, began in 1996 with the launch of ICQ. Other instant messaging applications did exist, but ICQ was the first to work regardless of hardware across the entirety of the Web. Meanwhile,

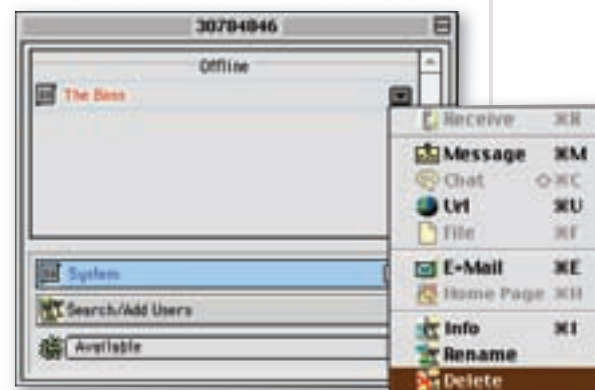
blogs (short for Web logs), were in many ways the precursors to the coming trend of social networking. Sites like MySpace and Facebook are little more than a collection of mostly hideous blogs.

But with the rise of blogs and instant messaging came new questions about how we communicate, what forms of communication are private and which are public records.

Increasingly instant messaging is becoming the dominant way for employees to communicate in the office. In the public sector, instant messaging has come under scrutiny as the industry tries to determine



everybody, everywhere



whether this sort of communication is, in fact, public record or little more than an electronic version of the sticky note. Blogs also pose a problem. Recent accounts of employees being terminated because of something they posted on their blog have shed light on the growing concern — and confusion — surrounding this issue.



Launched in 2003, **MySpace** was originally intended for unsigned bands to share their music. However, MySpace was adopted by the growing legions of people involved in social networking. MySpace, along with Friendster, made it easy for users to build customized home pages decked out with photos, video and music.



Space Shuttle Columbia explodes on re-entry



Software as a service (**SaaS**), the successor to ASP, started getting attention a few years after the dot-com implosion as a low-cost way to take advantage of high-end applications. For government, SaaS means smaller agencies with limited resources can play on the same field as the big cities and states.



In the early 2000s, tiny **memory cards** suddenly became extremely popular, thanks to the vast number of devices being created that used them. In 2003, the miniSD card offered storage capacity up to 256 MB. Ever since, improved cards have been continually released, each boasting more capacity than the last.

2002

Microsoft settles DOS suit

WorldCom files for Chapter 11 bankruptcy protection in the largest such filing in U.S. history

HP merges with Compaq

Intel releases Intel Pentium 4 processor



The California Department of Information Technology shuts down following a high-profile contracting scandal

2003

802.11g standard developed — 54 Mbps now possible

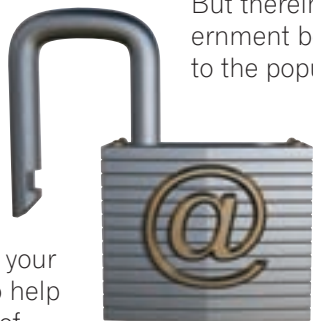
BY 2001, merely having a Web site was largely passé for state and local government. The next big thing was Web sites that advanced a concept some called **"smart government."** At its core, smart government was the creation of state and local Web portals — online access points where citizens could begin to truly interact with the public sector. One of the first states to use the portal concept was Virginia, with many others right behind it. The Web portal movement really opened the public to the e-government concept in the fashion many early visionaries had imagined. Licensing, registration, renewals — it would be like having your own personal assistant to help you navigate a multitude of government agencies.

Web portals also started forcing agencies to take a second look at why they operated using siloed systems and programs. The possibilities of e-government added a renewed sense of urgency in terms

of achieving interoperability. But no good deed goes unpunished, and Web portals were no exception. As e-government grew, so did the need for people to input private data and submit it online. As such, privacy and data security became even more volatile concerns than they had been in the past.

Web portals, smart government, knowledge management — these things were all beginning to serve well the public that accessed them. But therein lay a problem. As government began to reach out digitally to the populace, the so-called digital divide became ever more apparent. An array of attempts to bridge the divide were — and continue to be — considered. Municipal Wi-Fi has long been the leading strategy to increase accessibility.

But jumping ahead a bit to present times, the muni Wi-Fi movement seems to be very much off track, and the digital divide has yet to be crossed.



THE ATTACKS ON THE WORLD TRADE CENTER AND THE PENTAGON

brought to bear a number of issues most Americans hadn't thought much about. The deranged and dangerous nature of Islamic extremists was, of course, the concept all Americans became immediately familiar with that day. But for those who responded to 9/11, another reality demanded a second look — the inability of emergency personnel to communicate with each other. In a strange twist of fate, our October cover story, written several months prior to 9/11, took an in-depth look at this exact issue. The era of the global threat of terrorism was, regrettably, upon us. One of many truths that emerged is that for the foreseeable future, state and local government would need to take a far more proactive role in their own security. Technology could either help or hinder this war on terror. And all officials, including CIOs, had yet another critical issue to contend with.



2004

Massachusetts directs state agencies to consider open source options in IT procurement

Computer viruses, including Sasser and MyDoom, strike with regularity

Mars rovers Spirit and Opportunity reach the Red Planet

Blizzard Entertainment releases World of Warcraft multiplayer online role-playing game

Lenovo acquires IBM PC division

Government agencies begin investigating VoIP

Researchers complete Human Genome Project

Mass market VoIP services become available




Google Earth is launched

Symantec merges with Veritas

ORACLE

Oracle strikes \$10.3 billion deal to buy PeopleSoft, ending an 18-month hostile takeover battle

Facebook debuts

 **Second Life**, which began in 2003, has struggled to define what it's meant to do. Most activities in **Second Life** revolve around fetishes of some kind, often sexual. The world is so large most places are usually empty. And its game engine software is sorely out of date. Still, **Second Life** has been a media darling because it represents the extraordinary potential of virtual worlds.



'THE BIG VISION WAS TO BRING GIS TO THE MASSES'

Selected quotes from Google Earth's Chikai Ohazama and Virtual Earth's John Curlander.

Google Earth and Microsoft's Virtual Earth may arguably be the next step in the evolution of GIS. These two applications humanize GIS and present geographic information in a more accessible format.

Chikai Ohazama and John Curlander are central figures in this new era of GIS. We spoke with both of them in 2007.

Ohazama on bringing GIS tools to the public using Google Earth:

"The big vision was to bring GIS to the masses, bring GIS technology to the everyday person. Today I get so many people telling me their 6- or 7-year-old kid used Google Earth to play with it. And they're learning how to use it themselves. We're taking technology that was very inaccessible, required a lot of training, you had to know the software, and taking that and bringing it to the everyday person so they can do the same thing very easily through a nice interface that is very engaging."

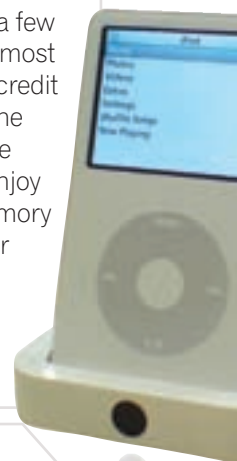
Curlander on how government can leverage Virtual Earth:

"What we're planning to do is process the data as a service and make the finished product available to the government. We're trying to free the government from having this big infrastructure that's required for geospatial data. The data quality is high enough that it meets a large percentage of the applications that an urban planner or any city user would need. They won't need to have custom flights done to collect their data. They won't need to have custom processing done to create their products. They can simply access the Virtual Earth databases through our viewer and get most of what they need from that, if not all. Potentially it's a huge savings for cities to be able to access these kinds of databases and not have to commission them themselves. I see a transition to using this data pretty easily just for the budget reasons if nothing else."

CHAD VANDER VEEN, TECHNOLOGY AND POLITICS EDITOR

BY 2003, the economic impact of both the dot-com collapse and 9/11 was beginning to wane. Things were looking up. New gadgets were fueling the consumer electronics industry and causing headaches for hoary organizations like the Motion Picture Association of America and the Recording Industry Association of America. The digital music and video revolution was well under way, and peer-to-peer networks again moved issues like security, privacy — even network neutrality — to the forefront. No device made a bigger impact than the MP3 player, the **iPod** in particular. MP3 players — and the

video-enabled players that would soon follow — coupled with new cell phones that began incorporating digital music and video, represented an astonishing advance in technological capability. Only a few years prior, it would have been almost unimaginable to carry around a credit card-sized hard drive, let alone one with multiple gigabytes of storage capability. Today, of course, we enjoy MP3 players, compact flash, memory sticks, and secure disks that offer enormous storage capacity in housings sometimes no larger than a Cheez-It.



IN 2004, the Mozilla Foundation released its open source, cross-platform browser Firefox. Created by Dave Hyatt and Blake Ross, Firefox was the first browser in years to give Microsoft's Internet Explorer serious competition. The open source architecture of Firefox was a sensation with the geek set. Its user-friendly interface and customizability soon made it a hit in layperson circles as well. Firefox has since made significant inroads in the

browser wars, now commanding some 15 percent of the market. Another benefit of Firefox is that it finally forced Microsoft to upgrade the perpetually vulnerable Internet Explorer 6. In 2006, Microsoft released IE 7, which incorporated some of the features, like tabbed browsing, that had won Firefox so many new fans. IE 7 also boasted much-improved security, and many analysts now compare it favorably to Firefox.



2005

Three Texas cities — Arlington, Grand Prairie and Carrollton — launch joint ERP project

Massachusetts CIO Peter Quinn releases a policy to phase out Microsoft and other providers in favor of document formats based on open standards

Many claim the **Real ID Act**, signed into law in 2005, is little more than a *de facto* national ID card. Others decry the legislation as the worst kind of unfunded federal mandate. Already, some states have sworn to reject the Real ID Act, passing laws of their own requiring non participation. Supporters say the law will provide Americans with better security and also help curb illegal immigration.

2006

Google buys YouTube

Peter Quinn resigns

Problems with emergency responders' ability to communicate hamper efforts during Hurricane Katrina.

YouTube

It's hard to believe **YouTube** has been with us less than three years. Created in 2005, the site became a phenomenon whose popularity led Google to purchase it for \$1.65 billion, despite concerns about how to make it generate revenue. Perhaps more important to Google is the fact YouTube is ground zero for Web media, which by almost all accounts will soon dominate traditional media like TV and film.

AS WE NEAR THE END OF OUR LOOK BACK,

it seems the more things change the more they stay the same. Hurricane Katrina again highlighted the desperate need for widespread interoperability in public safety.

The growth of Wi-Fi and the coming age of WiMAX hold a lot of promise, yet connectivity issues and the digital divide still exist. Many high-profile muni Wi-Fi projects recently have come under fire for poor service, and some have fallen apart altogether.

Google Earth and Microsoft Virtual Earth are transforming GIS into a more palatable and user-friendly technology, just as the Web changed the Internet from obscure academic network to an integral part of our lives. Social networking and virtual worlds are establishing the Web as the foundation for the next generation of community.

Hot-button issues like the Health Insurance Portability and Accountability Act, network neutrality, electronic health records, global warming, green technology and intelligent transportation present government with more challenges and opportunities.



New tech gadgets continue their evolution, becoming ever smaller, faster, more powerful and — in many cases — more affordable. If the past 20 years are any indication, CIOs 20 years from now will grapple with technology and policy issues that seem both inconceivable and eerily similar to those of today. These two decades have been challenging and rewarding, and have borne witness to a radically altered technology landscape. And through it all, government has done its best to keep pace. Evaluating how well it's done in that effort, even the harshest critic would have to agree that government hasn't done bad. Not bad at all. [GT](#)

'WE'RE GLAD TO SEE YOU'

Missouri's search for IT workers moves beyond real life.

With more than half of his staff reaching retirement age within 10 years, Missouri CIO **Dan Ross** is trying a series of new methods for attracting and retaining qualified workers — including one that's literally out of this world.

In what may be a first for state government, Missouri established a recruiting outpost in *Second Life*, a bizarre online universe inhabited by the computer-generated avatars of more than 7 million real people. The online multiplayer environment is a popular destination for young IT professionals, with its own news media, a functioning economy and at least one government embassy.

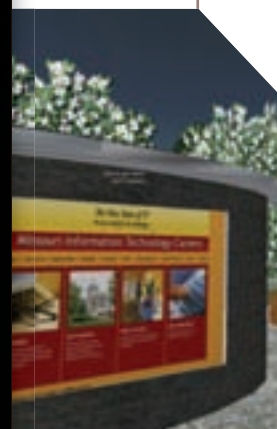
Launched with little fanfare a few months ago, Missouri's *Second Life* recruiting kiosk offers information on state government IT jobs and already has generated employment inquiries, said Ross.

"You can maneuver in *Second Life* up to our message board and receive static information, or you can touch a kiosk that we created there, and that will pop up static information," he said. "We've had half a dozen contacts from people saying, 'Tell me more about IT jobs in Missouri' or 'We're glad to see you there.'"

Encouraged by those results, Missouri intended to expand its "in-world" presence by the end of the year.

"Our plan within the next 30 days is to host a virtual job fair," said Ross, "and in an interactive fashion whoever would come to that, we will communicate to them using a keyboard or possibly through the microphone attached to the PC."

STEVE TOWNS, EDITOR



2007

Microsoft releases
Windows Vista



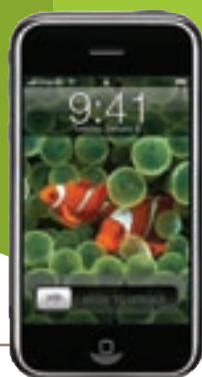
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pulls the plug on a
\$500 million outsourcing
project with Accenture

E-passport
testing
begins

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the iPhone



Carnegie Mellon
University wins the
DARPA Grand Challenge
— Urban Challenge

Mac OS X v10.5
Leopard is released



Synopsis: New York state battles cyber-attacks by monitoring the dark space of the Internet.

Agency: U.S.-CERT, New York State Office of Cyber Security and Critical Infrastructure Coordination.

Dark Spaces

state
local
federal



Monitoring unallocated Internet addresses reveals potential DoS attacks.

BY CHANDLER HARRIS | CONTRIBUTING WRITER

When computer hackers attacked Estonia earlier this year — shutting down numerous Web sites connected to the country's electronic infrastructure, including government, commercial banks, media outlets and name servers — the event was nothing new in the world of cyber-security.

Since the mid-1990s, denial-of-service (DoS) attacks — generally a computer assault that floods a network or Web site with unnecessary traffic, rendering it slow or completely interrupted — have caused serious problems for the Internet. DoS attacks are often waged by “botnets,” which are a series of computers that have been hijacked by viruses and take part in attacks without their owners' knowledge. Attackers often launch attacks from unallocated IP addresses so the assailants can't be found.

The attack on Estonia has been called “cyber-warfare” and the first time botnets threatened the security of an entire nation. Over the years, similar attacks have closed some of the largest e-commerce companies such as Amazon.com, eBay and Buy.com, as well as federal and state government Web sites.

With an estimated 2,000 to 3,000 DoS attacks daily worldwide, large corporations, small Web-based businesses and governments have been forced to take precautions to defend against DoS attacks or face costly shut downs and/or the demands of “cyber-extortionists,” a new breed of Internet criminal who demand payment in exchange for not launching a DoS attack.

Dark Address Space

In 2003, the federal government established the U.S. Computer Emergency Response Team (U.S.-CERT), an arm of the Department of Homeland Security that protects the nation's public and private Internet infrastructure, in response to DoS and other harmful cyber-attacks. To help prevent DoS attacks, or at least warn private and public sectors of impending attacks, U.S.-CERT uses its Einstein program to monitor federal network “dark address space” on the Internet. Dark address space,

"I knew from the beginning that geographic borders make no sense in state cyber-security. A cyber-attack in California can have an effect in New York."

William Pelgrin, director, New York State Office of Cyber Security and Critical Infrastructure Coordination

which is sometimes referred to as "darknet," is the area of the Internet's routable address space that's currently unused, with no active servers or services. On computer networks, darknet is the addresses held in reserve for future network expansion.

Often when DoS and other cyber-attacks occur, blocks of Internet address space, including darknet space, briefly appear in global routing tables and are used to launch a cyber-attack, or send spam, before being withdrawn without a trace. By monitoring all traffic to and from dark space, U.S.-CERT and other cyber-security organizations gain insight into the latest techniques and attacks.

The U.S.-CERT's Einstein program provides information about darknet activity originating from state and local government systems, helping notify states of potential cyber-attacks and other malicious activities.

New York is in the process of implementing its own plan to combat cyber-attacks by collecting malicious cyber-attack information directed at the state's IT infrastructure, which can provide early warning intelligence about the nature and characteristics of the attacks.

New York state receives warnings of potentially malicious cyber-activity from U.S.-CERT on a daily basis, said William Pelgrin, director of the New York State Office of Cyber Security and Critical Infrastructure Coordination. His office is working with the University at Albany to create the Multi-State Information Sharing and Analysis Center (MS-ISAC) Darknet Sensor system, which will help New York and other states prevent cyber-attacks by monitoring dark space and other nonallocated IP addresses. A darknet server will be configured to capture all traffic destined for this unused space. The server listens to all traffic directed at the unused address space and gathers the information packets that enter the dark space.

"Just the fact that we are seeing state-targeted traffic in federal dark space is definitely worth the investment to deploy this program to monitor state dark space," said Pelgrin. "Our goal is not only to do this for New York state, but for all other states."

The MS-ISAC Darknet Sensor system, which is expected to be implemented by late 2007 or early 2008, will monitor and gather information for all traffic directed through the nationwide darknet, which is considered malicious since no legitimate services are available at dark address spaces. New York's internal and public networks will be analyzed, which is expected to provide invaluable insight into the security of New York's networks and help predict impending network attacks.

Pelgrin is also the founder and chair of the MS-ISAC, whose mission is to raise the level of cyber-security readiness and response for state and local governments nationwide. Although the MS-ISAC Darknet Sensor system will be centered in New York, Pelgrin said the system will benefit other states too.

"I'm a big believer in sharing information and a collaborative and cooperative approach to my job," Pelgrin said. "I knew from the beginning that geographic borders make no sense in state cyber-security. A cyber-attack in California can have an effect in New York."

A MS-ISAC volunteer member will see what information on dark space should be shared with other states to prevent cyber-attacks. Alaska and Montana have agreed to join New York's Darknet sensor system, and Pelgrin expects others to join once the program is running. States participating in the program will set up a monitoring system with sensors placed in strategic places on the network to create an early warning system. A monitoring center will interpret and evaluate warnings, which will eventually help accurately evaluate cyber-attacks.

"I think it's a very valiant effort and it's a very useful approach," said Jose Nazario, senior security researcher of Arbor Networks, a network security provider. "I liken the approach of darknet monitoring to throwing a petri dish out there or sticking your finger in wind; it's a tremendous way to measure all the junk on the Internet and discover both in terms of known and existing threats, 'Where is it coming from, who's

launching them, and who do we need to block or shut down?'"

Dark space monitoring is valuable for protecting municipalities since more government infrastructure and resources are being made available online, Nazario said.

"Clearly it's very valuable for federal governments," Nazario said. "I would argue that state governments depend just as much on infrastructure not only for their own infrastructure but for their resources, whether business or educational institutions, or other research statewide networks."

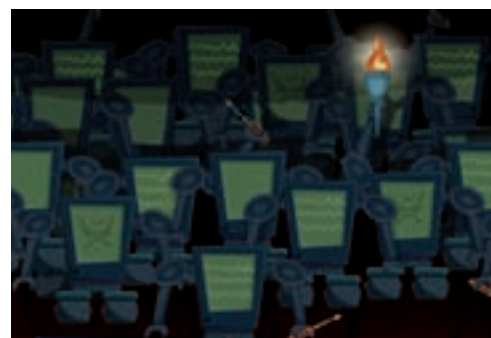


Nazario said his firm tracks between 2,000 and 3,000 major DoS attacks every day, all of which come from forged addresses.

Although the U.S.-CERT program often warns states of potential cyber-attacks, the program is oriented primarily at the federal level, and states often don't have adequate defense against DoS attacks, according to Pelgrin. With the shared connectivity of the Internet, cyber-attacks can come from anywhere in the world, therefore, a collaborative approach is the best defense for states and organizations worldwide, he added.

"Whatever we learn from states and across the world will help New York state, and hopefully what we do will help other states as well," Pelgrin said. [CT](#)

CONTRIBUTING WRITER CHANDLER HARRIS REGULARLY WRITES FOR GOVERNMENT TECHNOLOGY MAGAZINE. HE ALSO WRITES FOR PUBLIC CIO, A BIMONTHLY JOURNAL, AND EMERGENCY MANAGEMENT AND DIGITAL COMMUNITIES MAGAZINES.



A three-week cyber-war was waged against Estonia, one of the most tech-savvy states in the European Union, shutting down the country's infrastructure. Nicknamed E-stonia for its heavy reliance on technology, it became the first country to have a legally binding general election via the Internet.





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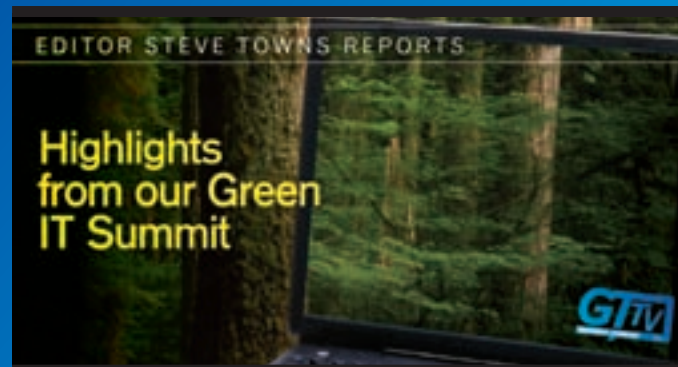
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- Provide near real-time access to on-line data
- Expedite decision-making by empowering employees to quickly share information

Reduce costs and increase Productivity

- Reduce operational expenses through enhanced productivity
- Set up a temporary or remote office for an individual or workgroup quickly and economically

- Reduce or even eliminate paperwork and redundant reporting through field-based access
- Back-up or replace wireline connections to home offices or branch locations

Improve constituent satisfaction

- Increase responsiveness and face time with constituents
- Handle requests quickly and completely

Sprint Leadership

- Sprint's nationwide Mobile Broadband network reaches over 212 million people with Rev. 0 service and reaches over 211 million people with Rev. A service.
- Sprint was the first to market with Rev. A service and devices in 2006.
- Sprint was the first provider to offer an unlimited Mobile Broadband plan for \$59.99 per month, without requiring a voice plan, and has been a leader in device pricing.
- Sprint carries the largest Mobile Broadband device portfolio.
- Sprint has extensive wireless spectrum resources and a clear network migration path to 4G WiMAX.

About Sprint Nextel

Sprint Nextel offers a comprehensive range of wireless and wireline communications services bringing the freedom of mobility to consumers, businesses and government users. Sprint Nextel is widely recognized for developing, engineering and deploying innovative technologies, including two robust wireless networks serving 54 million customers at the end of second quarter 2007; industry-leading mobile data services; instant national and international walkie-talkie capabilities; and a global Tier 1 Internet backbone. For more information, visit www.sprint.com/government.

Sprint Nextel

2001 Edmund Halley Dr.
Reston, VA 20191
1-800-SPRINT-1

www.sprint.com/government



NIC

The People Behind the Nation's Most Effective eGovernment Portals.

Company overview

NIC helps governments, businesses, and citizens communicate more effectively by putting essential services online. As the leading provider of official Web portals and online services for government, NIC manages more than 1,500 unique software applications that processed 123 million eGovernment transactions in 2006. Based in Kansas City, NIC is publicly held (Nasdaq: EGOV) and has 370 employees working in 24 states.

Our core business — outsourced eGovernment portals

For 15 years, NIC has been delivering eGovernment portal services that get results — starting with the nation's first eGovernment portal for the state of Kansas in 1992. NIC currently provides enterprise portal management services for 21 states and hundreds of local governments.

Get online, not in line

With NIC's eGovernment services, citizens and businesses can take advantage of timesaving online solutions. Our technology makes renewing a driver's license, obtaining a building permit, paying taxes, and filing Uniform Commercial Code documents as easy as checking e-mail. NIC's online services accelerate processing time for government transactions and deliver cost and time savings to agencies and the constituents they serve.

NIC's government partnerships

NIC manages official Web portals and online services for federal, state, and local government entities:

Alabama — www.Alabama.gov
Arizona — www.Arizona.gov
Arkansas — www.Arkansas.gov
Colorado — www.Colorado.gov
Des Moines, Iowa — www.ci.des-moines.ia.us
Federal Election Commission — www.FEC.gov
Hawaii — www.Hawaii.gov
Idaho — www.Idaho.gov
Indiana — www.IN.gov
Indianapolis & Marion County, Indiana — www.IndyGov.biz

Iowa — www.Iowa.gov

Iowa county governments — www.IowaTaxandTags.com

Kansas — www.Kansas.gov

Kentucky — www.Kentucky.gov

Maine — www.Maine.gov

Michigan Secretary of State — www.Michigan.gov/sos

Montana — www.Mt.gov

Nebraska — www.Nebraska.gov

Oklahoma — www.OK.gov

Rhode Island — www.RI.gov

South Carolina — www.SC.gov

Tennessee — www.Tennessee.gov

Utah — www.Utah.gov

Vermont — www.Vermont.gov

Virginia — www.Virginia.gov

West Virginia — www.WV.gov

Unique funding solutions

No two governments are the same, and every government works within a different set of political and financial constraints. To support the unique needs of government partners, NIC has developed several innovative solutions to fund eGovernment services. NIC has successfully implemented fee-based, blended funding, and transaction-based solutions for its federal, state, and local government partners.

The transaction-based approach encourages NIC and its government partners to develop online services that constituents demand — and to invest in marketing activities that will drive higher usage of the online service delivery channel. NIC absorbs the costs of building the technical infrastructure and developing online services for its government partners. Approved fees applied to select electronic transactions are then used to recoup initial development costs, enhance existing services, and launch new online solution on behalf of our government partners.

Delivering enterprise solutions

Managing a successful eGovernment portal involves much more than just technology imple-

mentation. NIC delivers the diverse elements that allow an eGovernment portal to grow and thrive over time, including:

- Flexible funding solutions
- Policy & legal support
- Political advocacy
- Cross-jurisdictional collaboration
- Measurement & accountability
- Marketing
- Public relations
- Market research
- Web design
- Usability & accessibility
- Customer service
- Training
- Project management
- Financial processing
- Application development
- Security
- Technical infrastructure

The NIC difference

NIC is unique because of its dedication to serving government partners:

Experience — NIC developed the first enterprise-wide government portal and manages more official government Web sites than any other company.

Focus — NIC focuses exclusively on the eGovernment space. As eGovernment specialists, the company's employees have spent 15 years working alongside government partners to build portal solutions that deliver results.

Trust — NIC created the public-private partnership model in 1992 and is committed to being the best business partner governments have ever worked with.

Adaptability — One size does not fit all. NIC specializes in designing customized eGovernment solutions that meet the unique technological, political, financial, and customer service requirements of each government partner.

NIC

25501 West Valley Parkway, Suite 300
 Olathe, Kansas 66061
 877-234-EGOV
 703-288-0980
www.nicusa.com



15 years old and still growing.



Thanks to our 26 State and Local Government Partners

Many thanks to the federal, state and local government entities that have put their trust in NIC for the last 15 years. It is an honor to be the eGovernment provider of choice for branches of government nationwide, and we look forward to another 15 years of growth.



www.nicusa.com

Xerox

Technology . Document Management . Consulting Services

Xerox Corporation (NYSE:XRX) is the world's leading document management technology and services enterprise. A \$16 billion company, Xerox provides the document industry's broadest portfolio of offerings. Digital systems include color and black-and-white printing and publishing systems, digital presses and "book factories," multifunction devices, laser and solid ink network printers, copiers and fax machines. Xerox's services expertise is unmatched and includes helping businesses develop online document archives, analyzing how employees can most efficiently share documents and knowledge in the office, operating in-house print shops or mailrooms, and building Web-based processes for personalizing direct mail, invoices, brochures and more. Xerox also offers associated software, support and supplies such as toner, paper and ink.

The company's operations are guided by customer-focused and employee-centered core values — such as social responsibility, diversity and quality — augmented by a passion for innovation, speed and adaptability.

- **Headquarters:** Norwalk, Connecticut, U.S.A.
- **Chairman and CEO:** Anne M. Mulcahy
- **Employees:** 53,700 worldwide, including 28,400 U.S.
- **Fortune 500 ranking:** No. 145

Xerox Corporation

800-ASK-XEROX
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WINNING COLOR



Xerox announces color prints for the same price as black and white. Now with the Phaser® 8860, making the move to color really is a no-brainer. Checkmate.

Xerox Color. It makes business sense.

Black and white prints used to have one big advantage over color. Cost. But now, Xerox levels the playing field with the new Phaser 8860 network color printer. It prints color for the exact same price you've always paid to print in black and white. Print speed is exactly the same as black



Phaser® 8860
Color Printer

and white, too: 30 ppm. The solid-ink Phaser 8860 is surprising in other ways, too: it saves up to 50% on color consumables over 3 years* and creates 90% less waste than typical color laser printers. So don't shy away from color, embrace it. After all, it's a move any budget can easily accommodate. Brilliant.

XEROX®

xerox.com/checkmate
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Technology | Document Management | Consulting Services

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*Based on a 4,000-page print volume per month when compared to HP and Lexmark using own-brand consumables.

GTSI

Using information technology to create public value

Since 1983, state and local governments have leveraged GTSI's brand name products and professional services to fulfill their responsibilities to constituents and communities. From electronically managing Medicaid records to reduce fraud to implementing in-car video surveillance systems that decrease crime to deploying municipal broadband networks for expanded communications to developing IT infrastructures that safeguard personal data, authenticate identity, and improve traffic flow, GTSI's information technology products, services, and solutions create public value.

Teams of GTSI engineers with more than 100 industry, vendor, and professional certifications and PMI-certified project managers work closely with agency staff to develop technology roadmaps aligned to each state's IT strategic plan. Years of working with state and local governments give GTSI a high level understanding of agency policies, purchasing requirements, budgets, and business objectives. This knowledge and insight along with the precise application of technology figure prominently in each GTSI IT infrastructure solution that addresses agency priorities for:

- Server Consolidation
- Storage Consolidation
- Network and Physical Security
- Unified Communications
- Mobile Evidence Capture

Increasing accessibility and responsiveness through technology-enabled government

All GTSI's IT infrastructure solutions support the public sector's move toward technology-enabled government and address each stage of the technology lifecycle. They are designed for long-term security and scalability and incorporate technology innovations that support advanced applications such as VoIP, digital video, and wireless communications; e-discovery; virtualization; mobility, in-car and fixed-camera video surveillance; and ID authentication and

authorization. GTSI recommends the best hardware and software components and designs, deploys, manages, and supports each IT infrastructure solution. Agencies can easily adapt each solution to their technology roadmap without compromising budgets or performance.

GTSI's professional services are the change agents that transform technology components into core IT infrastructure solutions. Extensive knowledge of brand name hardware and software is leveraged with the skills of GTSI's certified engineers, practice-area experts, and project managers. From project inception to end of life, GTSI enables agencies to successfully execute their IT programs through:

- Management Consulting Services
- Financial Services
- Project Management Services
- E-Business Services
- Network Services
- Support Services
- Integration and Asset Management Services
- Education Services

Transforming state and local governments into high-performance organizations

As state and local government agencies continue to transform into high-performance organizations, GTSI adopted a Technology Lifecycle Management approach. This strategic, multi-phased methodology provides the framework for agencies to effectively and efficiently address the IT infrastructure lifecycle, from initial assessment to product acquisition, implementation, refresh, and disposal. It also addresses systematic budgeting requirements so that agencies can execute cost-recovery strategies that reduce the burdens and risks of technology asset ownership.

The public sector can procure IT products, services, and solutions without delays or risk using GTSI's financial services. Each agency can work with GTSI's financial expert to devise a plan, such as IT as

a service, that allows all products and services to be bought and paid at an agreed-upon rate over a period of time. Through these options, agencies can structure their IT expenses so they are predictable and manageable. As a result, agencies:

- Reduce large initial cash and resource outlays
- Drive projects to completion quicker
- Obtain the best and most relevant technology and services, when they are needed
- Build in refresh cycles so technology remains current
- Eliminate the responsibility of ownership
- Reduce total cost of ownership
- Retain a single source for IT assets, services, and financing

Strengthening buying power with competitively solicited pricing

Further facilitating the acquisition of innovative technology and services are GTSI's numerous state and local government contract vehicles, including U.S. Communities. As the exclusive information technology provider on the U.S. Communities contract, GTSI provides more than 300,000 brand name information technology products; engineering, project management, support, and financial services; and turnkey solutions to all registered entities. Because the contract was pre-competed, it satisfies most state and local government competitive solicitation requirements, saving public sector agencies time and millions of dollars. This means agencies can quickly put solutions in place to meet constituent demands and federal requirements for improved security, collaboration, and information sharing.

GTSI's expert application of brand name hardware and software combined with engineering and project management services propels public sector's technology-enabled government initiatives from future state into the realm of accomplishment.

For more information, visit GTSI.com

GTSI Corp.
3901 Stonecroft Boulevard
Chantilly, VA 20151
1-800-999-GTSI
www.gtsi.com

 **gtsi**
One Mission. Yours.

GTSI Solutions



When Safety and Security Depend on More than Image

GTSI's Mobile Evidence Capture and Physical Security solutions provide a solid technology architecture that supports in-car video management systems and protects critical infrastructure.

Going beyond live incident recording and video surveillance, GTSI's solutions are the first and last line of defense against crime, security breaches, and disasters. All solutions include digital in-car or IP-based video cameras; wired and wireless networks that quickly and securely transport video images and alarms; and storage and video management systems for fast remote access, analytics, and tamper-proof chain of custody.

Using a technology lifecycle management approach, GTSI's teams of engineers and project managers conduct a thorough assessment and develop a detailed plan that addresses vulnerabilities; financing; and operational, logistical, and evidentiary requirements. Additionally, GTSI's pre-competed U.S. Communities and federal contracts let government agencies acquire, upgrade, and maintain each solution without delays or exposing security weaknesses.



Visit GTSI.com/safetyandsecurity to learn more.

Hyland Software, Developer of OnBase®

Making government service more efficient and effective.

These are the new standards for better government. Better government requires more effective use of information — sharing among and between levels of government. It also means responding to constituents efficiently and effectively — within budget, on time, and in a manageable infrastructure.

Responsiveness

Without removing paper and manual processes, it is nearly impossible for government to operate at the speed, budget and convenience that constituents demand. OnBase reduces paperwork, reclaims staff time from manual processes and provides greater access to information through Web access to public records, all the while significantly increasing constituent service.

Interoperability

Joined-up governments communicate effectively both within, and between, state and local entities. OnBase can organize and distribute information via e-mail, the Web, XML output or physical mail to allow a government to pass information to other departments regardless of what system they are using to control documents. With OnBase, crucial documents are always available from any location in nearly any format.

Rapidly Deployable

OnBase requires little or no custom coding to implement, so it can be deployed in less time and with fewer professional services. Because OnBase is point-and-click configurable and integrates with virtually any application, often without programming, the length of time from great idea to solution is reduced. And, with more than 6,700 OnBase customers, including nearly 600 government entities, OnBase has proven that solution deployment can be on time and on budget.

Tailored for Departments. Comprehensive across the Enterprise.

With shrinking government budgets in mind, OnBase's modular design allows department



implementations to lead the way towards a long-term view that expands the solution across different departments and levels of government with minimal disruption and expense.

With this government-wide vision, municipalities, counties and states can realize a fully joined-up government that communicates effectively and works together. Centralized management, standardized indexing taxonomies and a robust security model in departments as diverse as the clerk of courts, building regulations and social service agencies lead to significantly greater value and return on investment. Joined-up governments better meet the needs of citizens with more efficiency, effectiveness, cost management and compliance.

With the primary goal of providing better constituent service, OnBase Government Solutions improve document access, increase process efficiency and support compliance initiatives through an

integrated Enterprise Content Management (ECM) system. Governments and agencies worldwide use OnBase to fulfill their responsibilities to those they serve with more ease and effectiveness.

Responsiveness. Interoperability. Rapid Deployable. Enterprise-wide.

Hyland Software, Inc. is the developer on OnBase, a rapidly deployable suite of enterprise content management (ECM) applications. OnBase is a modular suite of ECM applications that includes document imaging, workflow, electronic document management, COLD/ERM and records management. OnBase is used by government departments around the world to reduce the time and cost of performing important business functions and address the need for regulatory compliance through the management, control and sharing of digital content with employees, business partners, customers and other constituents.

Hyland Software Inc.

28500 Clemens Road
Westlake, Ohio 44145
440-788-5000

www.onbase.com/government



capture · store · search · retrieve · collaborate · manage · distribute · comply



Responsiveness.

Reach new levels of service with your constituents.

Using OnBase enterprise content management (ECM) solutions from Hyland Software, you'll eliminate the slowdowns and inaccuracies caused by manual, paper-based processes.

Whether deployed in a single department or government-wide, OnBase delivers comprehensive yet flexible capabilities in document imaging, management and workflow automation. From a single platform, your staff will be able to address the document capture, routing, retention and retrieval requirements allowing you to better serve your constituents, reduce service costs and leverage your existing IT investments.

To learn more about how other government departments use OnBase to drive efficiency and effectiveness visit us at www.onbase.com/government. GSA# GS-35F-4127D

engage. empower. evolve.™

OnBase®
a Hyland Software solution



ALTERNATIVE THINKING:

A User's Guide.



Alternative Thinking About Business And Technology

Alternative thinking is recognizing that information technology is now business technology, and there's no going back.

It's realizing that the proper role of technology in this era is not just to be safe and steady and reliable, but to spur the business to compete more aggressively, more imaginatively and more daringly.

It's deploying the collective brainpower of HP Labs and our annual \$4 billion invested in R&D—particularly in the "R" of R&D.

It's HP together with you demanding simplicity, killing complexity, meeting metrics, enforcing efficiency, igniting innovation and speeding the idea, the product, to market before competitors even know what's coming.

Technology for better business outcomes.

hp.com/alt

Verizon Wireless

The Network for Government

Wireless communications, wireless Internet access, and wireless collaboration are critical to helping government customers operate effectively and efficiently. Verizon Wireless offers complete, packaged wireless voice and data solutions designed to meet the specific needs of government agencies and military operations. We are dedicated to partnering with government and industry leaders to provide enterprise solutions that meet the challenges of evolving requirements and threats.

Government-specific solutions.

We offer a suite of solution sets geared specifically to the distinct needs of the government enterprise. We serve the government market with proven and tested offerings such as Continuity of Operations (COOP) solutions, Field Force Manager mobile employee management solutions, Fleet AdministratorSM vehicle management systems, and Wireless Priority Service (WPS), as well as secure voice and data products and services. Our flexible, innovative approach ensures scalable solutions that are geared toward meeting evolving requirements. We also hold multiple contracts in the defense, civilian, and state and local government sectors, including GSA, FSS and USPS.

Financially committed to continuity.

Verizon Wireless has invested \$5 billion annually on average since 2000 to expand its network and increase capacity. The Verizon Wireless Code Division Multiple Access (CDMA) voice technologies and EV-DO data access network deliver high network reliability and bandwidth.

Support that's COOP-ready from day one.

Verizon Wireless has dedicated teams of engineers and technicians, reliable voice and data networks, disaster solutions, backup plans, and disaster planning to help ensure successful operations during a time of crisis. These teams work to anticipate continuity issues before they occur, to ensure proper operation of the network, and to

solve continuity issues quickly when they cannot be avoided.

Verizon Wireless also has experienced customer service groups dedicated to government clients. Each member receives specialized training on the issues, applications and challenges most important to your agency's planning.

A network designed and built for resiliency.

The Verizon Wireless network is supported by robust redundancy and maintenance measures, including:

- **Redundancy:** The Verizon Wireless network employs battery backup power at all facilities, along with generators at all switching facilities and many cell sites. The company's fleet of portable generators can be deployed to provide emergency power during extended power outages to those cell sites without permanent generators.
- **24/7 network operations centers:** Verizon Wireless has two network operation centers located in different parts of the country that continuously monitor all cell sites and switches across its nationwide network, helping provide customers with assistance and continuity of service.
- **Rapid disaster response — COLTs:** Verizon Wireless "Cell on Light Trucks" (COLTs) can process thousands of calls every hour in the event that cell sites or other key communications equipment are damaged or disabled by a community disaster. The 25,000-pound vehicle is also fully equipped with resources needed during emergencies and features retractable masts, a microwave antenna to link network components, an emergency power generator, and a small office.
- **Portable cell sites — COWs:** Verizon Wireless "Cell on Wheels" (COWs) are fully functional, generator-powered, mobile cell sites that enhance coverage and capacity in a given area. They can accommodate both voice and CDMA data services.

Verizon Wireless COOP in action: Gulf Coast Recovery

The Verizon Wireless commitment to high availability for critical voice and data communications was visible time and again during recent hurricane seasons.

In the wake of Hurricane Katrina, Verizon Wireless kept its oath to serve its communities in times of crisis. Thousands of hurricane victims and emergency workers turned to Verizon Wireless Emergency Calling Centers to make critical connections inside communities devastated by the storm. Verizon Wireless also distributed wireless phones to disaster relief agencies and other community groups, helping complete their vital missions in rescuing residents, protecting communities and beginning basic recovery. Verizon Wireless support was confirmed by its own drive tests, which showed that the company's network averaged a higher call completion rate than any other wireless provider in areas impacted by the storm.

To learn more about our solutions, services and products, please visit www.verizonwireless.com/gov.

Innovative solutions. COOP-ready support. Network Resiliency. Verizon Wireless is uniquely positioned to deliver on your team's demands.

From field tested COOP solutions through network reliability, no other wireless provider has a better grasp of building a successful partnership with government and military operations. As your agency anticipates its future requirements, know that your dedicated Verizon Wireless team is uniquely qualified to deliver today.

To learn more, visit www.verizonwireless.com/gov or call 800.817.9694 today.

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REQUIRES THREE KEY CONSIDERATIONS:
RELIABILITY. RELIABILITY. AND RELIABILITY.**



It's the NetworkSM for Government

Reliable network. Reliable partners. Reliable support. Each are critical when addressing the wireless network requirements inside your agency's COOP plan. Verizon Wireless delivers them all, with an integrated family of voice and data devices, and agency service solutions. All backed 24/7 by America's most reliable wireless network and the people who stand behind it.

**Visit www.verizonwireless.com/government or call 800.817.9694
for information on all our Government Solutions.**



Red Hat | DLT Solutions, Inc.

DLT Solutions, Inc. Company Overview

Founded in 1991, DLT Solutions, Inc. delivers best-of-class technology products and services to federal, state and municipal governments and businesses from its headquarters in Herndon, Va. To achieve that mission, DLT has tightly integrated itself with some of the most prominent IT software and hardware manufacturers in the world including Oracle, Symantec, Autodesk, NetApp, Quantum, Red Hat, and Quest Software.

DLT concentrates its efforts on obtaining deep technical expertise and process-integration with key technology partners. In recent years, to further help solve the complex IT problems of its customers, DLT has significantly expanded its professional services and engineering capabilities, such as developing a consulting alliance program, building a full-service onsite technology lab, and launching the 24x7x365 DLT Service Center for first-call support.

The same vendor-centric model on which DLT was founded in 1991 still holds true today. DLT carries only the top manufacturers in each market segment and distinguishes itself by focusing on obtaining deep subject matter expertise and process integration with those world-class manufacturers.

Red Hat | DLT Solutions, Inc. Partnership

As Red Hat's largest government reseller, DLT Solutions, Inc. offers open source solutions for federal, state or local government agencies as well as educational institutions. Red Hat's open source solutions are available through DLT's GSA schedule, DoE BPA, and many other procurement vehicles. Red Hat and DLT Solutions, Inc. provide the most trusted open source architecture available, helping government agencies and businesses overcome real-world challenges.

Red Hat Open Source Architecture

As the world's leading provider of open source solutions, Red Hat enables government agencies to meet budget constraints and provide improved services to constituents. By assuring the scalability and security of open source software we make mission-critical open source deployments possible.

Together with our partners, we bring the vast benefits of open source computing into an enterprise environment where cost-effective performance is crucial. That's why agencies in 50 states and 16 cabinets of the Federal Government turn to Red Hat for their FEA-compliant Open Source Architecture.

Infrastructure Solutions: affordable, reliable, secure

Red Hat Enterprise Government Platform

Designed to meet the mission-critical demands of government agencies.

Red Hat Enterprise Linux

Red Hat Enterprise Linux provides superior reliability on affordable hardware platforms. With integrated virtualization and clustering technologies, we deliver high availability while reducing capital and operating expense.

JBoss Enterprise Application Platform

Whether you're migrating to a more flexible, standards based environment or building next generation applications, JBoss Enterprise Application Platform allows your agency to balance innovation with enterprise stability. Technologies for application presentation, services hosting, and data persistence are integrated into a single middleware solution at a fraction of the cost of traditional Java offerings.

FreeIPA

FreeIPA allows agencies to centrally manage and correlate vital security information including

- Identity (machine, user, virtual machines, groups, authentication credentials)
- Policy (configuration settings, access control information)
- Audit (events, logs, analysis thereof)

FreeIPA authenticates and authorizes access to sensitive systems and data.

Red Hat Network

Red Hat Network technology enables an IT organization to manage thousands of systems as easily as managing a single system. With Red Hat

Network, you can remotely manage, update, and monitor your systems.

Information Management Solutions: rapid, reliable access to the information you need

MetaMatrix Data Services Platform

Government IT challenges often include the need to provide access to data from disparate sources and resolve semantic differences between sources and consumers of data. MetaMatrix Enterprise Data Services help agencies efficiently bridge the gap between existing diverse data sources and the new forms of data required by new projects, applications, and architectures.

Global File System

Global File System (GFS) with integrated high availability clustering from Red Hat provides a scalable, high performance, reliable cluster file system that can expand to meet the growing needs for information storage.

Interoperability: reliable, secure exchange of data between different systems

Red Hat Enterprise Messaging

The growing use of web services in government is increasing the amount of data that needs to be exchanged. Traditional transports either do not scale or are proprietary and expensive. Red Hat Enterprise Messaging implements the open Advanced Message Queuing Protocol standard to provide affordable scalable message transport.

Enterprise Service Bus

Red Hat's Service Oriented Architecture Platform provides an open, flexible standard for interoperability and information sharing. Route and transform messages between disparate applications. Mediate interactions between enterprise applications, business services, business components, and middleware to integrate and automate business processes.

Learn more at: www.redhat.com/government

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13861 Sunrise Valley Drive, Suite 400
Herndon, VA 20171
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Trust Linux and open source technology as the foundation for your FEA-compliant computing infrastructure. Just as 15 Cabinet-level departments in the Federal Government, and state and local governments across the US already have. With the Red Hat Open Source Architecture, public sector CIOs have the tools to comply with initiatives like e-government, mobile computing, and governmental directives.

LEARN MORE www.redhat.com/government

Symantec

Confidence in a connected world.

State and local government agencies face a multitude of tough IT security challenges, in addition to ensuring that information is readily accessible to a broad array of public and private groups. To serve the community and protect vital resources, you need a trusted partner with deep IT experience. To help your organization achieve its unique mission imposed by limited resources and complicated, sometimes conflicting, laws and regulations, Symantec provides the tools and expertise agencies need to keep critical information safe and available and to promote the continuity of government operations.

Citizen Information Protection

Symantec's enterprise security solutions provide anticipatory protection against Internet threats of known and unknown variety, helps to ensure necessary information access throughout the remediation process, and provides a seamless route to fulfilling internal and regulatory compliance needs.

Our security solutions allow organizations to proactively protect their assets by blocking threats before they damage systems, allowing IT operations to remediate systems in a more organized manner. They also assess threats, monitor controls, shield individual applications, and protect desktops with multi-tiered, end-to-end security that goes beyond simple perimeter firewalls to protect networks and critical business processes.

Data Loss Prevention

Email and instant messaging have become essential tools inside agencies, helping employees communicate vital information. The amount of electronic information being generated and stored in agencies today has drastically increased and become more broadly distributed.

Symantec's information risk management solution can help state and local organizations protect email and instant messenger data and systems from abuse and attack while making information readily available for authorized purposes, including internal investigations.

By keeping data secure and available, your agency can work to meet requirements for regulatory compliance and legal discovery. Symantec's messaging solutions enable the discovery of content held within email, file system, and collaborative environments with a flexible archiving framework and also protect against spam, fraud, viruses, and spyware accurately, effectively, and easily.

Data Center Infrastructure

On a daily basis you depend on enterprise applications and the Internet for operations, financial transactions, and communications. That's why having IT systems that are reliable, responsive, and resilient is essential.

Symantec's data center management solutions can help your organization standardize, consolidate, and simplify its infrastructure while protecting the applications and data you depend on every day. They enable agencies to deploy data protection from the desktop to the vault across storage networks, while centralizing backups at remote sites via Web-based tools. They also allow agencies to centrally manage data growth, maximize storage hardware investments, protect data, and adapt to changing demands.

IT Policy Compliance

Government agencies are also mandated to comply with a variety of laws and standards, many of which don't affect the private sector. Regulations such as HIPAA, the State Records Act, and PCI require agencies to secure their critical information infrastructure and communications capabilities while making public records accessible. In addition, organizations must measure, manage, and report on IT risk.

Symantec's compliance solutions help public sector agencies define, measure, and report on the compliance of information systems against security policies, standards, and regulations. They also help to demonstrate compliance with security policies and government regulations, while integrating compliance enforcement across endpoints through network access control.

Disaster Recovery Solutions

In addition to growing cyber threats, agencies must also be able to react quickly to other unexpected disasters that jeopardize the safety of their data. Continuous backup and fast recovery must be employed in tandem to protect critical data and systems. And centralized operations are required to provide continuous, live protection so that the data that is backed up is always up to date and systems are recovered quickly and accurately.

Symantec offers a comprehensive set of leading backup and recovery solutions to help ensure that your agency stays up and running, no matter what. They provide consistent, reliable protection for systems and data while simplifying backup and recovery tasks. And they enable faster and easier recovery from equipment failures, virus attacks and the accidental loss of vital files.

Symantec Services

Symantec Services combines extensive IT risk management knowledge, technical and operational expertise, and global insight to balance cost, risk, and service quality. With Symantec Services, your agency can implement and maintain comprehensive, customized security and availability solutions to protect and manage critical organizational assets.

Our services also include outsource security management, monitoring, and response needs and can provide you with advance notice of cyberattacks, customized threat analyses, and effective strategies to mitigate risk, manage threats, and help ensure government continuity.


Symantec provides the tools and expertise state and local agencies need to help keep critical information safe and available and to promote continuity of government operations. For more information on Symantec products and solutions for state and local governments, please visit our Government Resource Center at <http://edm.symantec.com/publicsector/sled>.

Symantec Corporation

20330 Stevens Creek Blvd.
Cupertino, CA 95014
1-800-745-6054

www.symantec.com/publicsector_us






The legal investigation is connected to the discovery request

is connected to combing through terabytes of archived email

is connected to your clean bill of health

is connected to Symantec Enterprise Vault, the comprehensive archiving solution
that makes managing email fast, efficient, and thorough.



Lisa Mueller
Chad DeMoss
Megumi Kiyama
Pooja Kukde
Lauren Smith
Jeff Van Herpen
Erik Welch
Danielle Bird
Postmaster
PG

Delivery scheduled	Jan 8, 2007, 1:26 PM	4.4 KB
Re: Meeting Request	Jan 8, 2007, 1:34 PM	1.2 KB
Assistance required	Jan 9, 2007, 1:52 PM	19.1 KB
Mail attempt failed	Jan 9, 2007, 2:13 PM	11.0 KB
Fashion accessories	Jan 9, 2007, 2:33 PM	1.1 MB
HELP	Jan 9, 2007, 3:50 PM	1.8 KB
Networking question	Jan 8, 2007, 12:32 PM	12 KB
Contract for review	Jan 2, 2007, 9:42 AM	3.1 MB
Software upgrade requests	Jan 8, 2007, 12:46 PM	18.2 KB
Re: Inquiry regarding your availability	Jan 2, 2007, 9:37 AM	3.3 KB
Contract for review	Jan 2, 2007, 9:42 AM	695 KB
Release form for approval	Jan 4, 2007, 10:03 AM	560 KB
Retirement plan offer	Jan 8, 2007, 11:25 AM	1.1 MB
Re: Data Center	Jan 8, 2007, 11:55 AM	4.4 KB
Networking question	Jan 8, 2007, 12:32 PM	1.2 KB
Software upgrade requests	Jan 8, 2007, 12:46 PM	19.1 KB

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A Paler Shade of Green?

state
local
federal

Survey blames bureaucracy for apparent lack of environmental concern in government IT.

BY ANDY OPSAHL | FEATURES EDITOR

Do state and local government IT departments care about being green? The answer is “yes,” but far less than the private sector, according to a survey conducted by Info-Tech Research Group, a global consulting firm. This puts government in a somewhat ironic position, given that states continue implementing stiffer green regulations on businesses and utilities. What accounts for the inconsistency? Info-Tech says inflexible government budgets and long technology replacement cycles play a major role. However, the organization doesn’t view that as a valid excuse for government’s seemingly lukewarm interest.

“Although lack of budget is certainly a factor in terms of implementing green initiatives in the government sector, this should not

affect the level of concern, which is the lowest among all industries,” the report said.

The survey, taken by nearly 700 IT professionals in North America, noted that 49 percent of primary industry respondents were either very or extremely concerned with being green. By comparison, only 10 percent of government respondents felt the same sense of urgency.

Surging energy costs have motivated some states, such as California and Virginia, to begin green IT research. However, a lack of internal incentives keep that process sluggish in government as a whole, said Aaron Hay, research consultant with Info-Tech Research Group.

“Civil servants are required to provide a fixed level of service,” Hay said. “They’re not necessarily pushed by positive or negative

incentives to deliver the maximum performance and the maximum service possible for a given level of budgeting,”

He said survival pressure in the private sector naturally drives businesses to implement green best practices.

“A CIO or IT director in a private enterprise often has an incentive to deliver the maximum performance possible, whether that be the most economical solution, most profitable solution or the most environmentally sensitive solution,” Hay said. “Those types of incentives are rare in government. They do them in pockets, but I don’t think that is the way government is set up. Government is set up as a cost center, not as a profit center.”

Avoiding Tunnel Vision

San Jose is bucking the trend, however. The municipality is about to embark on several 15-year initiatives to become the greenest city in the United States, including powering the entire city with 100 percent renewable energy, diverting 100 percent of its land-fill waste into energy, reducing per capita energy usage by 50 percent and numerous other goals.

The city converted to energy-efficient green data centers over the past four years, a change it couldn’t afford not to make, according to Collin O’Mara, CleanTech policy strategist for San Jose.

“We’ve already saved about \$20 million in the last four years. Granted, we are a billion-dollar organization, but that’s still a substantial savings from energy that we can use for other programs,” O’Mara said.

Government’s tendency to separately budget capital costs and operating costs makes green data center conversions more difficult, he said. Green data centers require a larger capital investment, but lead to lower operating costs due to their low energy usage. He said that budgeting tunnel vision makes it difficult to account for operating cost issues in capital RFPs.

“With so many of the governments I’ve been a part of,” O’Mara said, “operating costs and capital costs are divorced from each other in the budgets and the way they plan. In San Jose, we’re trying to look at them as part of the same bottom line.”

He said this long-term procurement view enabled San Jose to make green considerations part of its government culture.

“We’re doing as much environmentally profitable procurement as possible,” O’Mara

Synopsis:

A survey shows weak government interest in being green, despite government’s stiff green regulations on others.

Contact: Aaron Hay, research consultant, Info-Tech Research Group, 866/312-2896

said, “It’s just kind of become standard operating procedure here.”

Hopeful Signs

Info-Tech’s Hay added that recent federal government mandates offer hope for increased green priorities in government. In July, the White House issued an executive order that 90 percent of all federal technology purchases must comply with the Electronic Product Environmental Assessment Tool (EPEAT). The U.S. Environmental Protection Agency gave a grant to the nonprofit Zero Waste Alliance to create EPEAT, a list of green criteria for electronics companies to meet for green bragging rights.

Hay said forcing government to purchase mostly EPEAT-compliant products was a useful step.

“That’s a new order,” Hay said. “That’s something that has come from the top. That’s an example of a really great mandate. It’s going to cause these IT managers to say, ‘Now we have to do this.’”

No Time to Care

Hay said a lack of green priority among top agency management makes caring about green IT impractical for IT managers.

“Those managers are forced not to care because they’re saying, ‘I don’t have a budget to make green improvements in my operation. I don’t have top-level management that cares about this. I have to fight tooth and nail to make any of this happen. Why will I even bother?’”


Indeed, paying attention to green issues could be a liability for these IT managers because it could distract them from the full load of IT headaches they already face each day.

“How are they ever going to have time to care or time to plan for green issues if it’s not a directive that they’re going to be given time to do, and given resources and money to do? It’s impossible for them to care,” Hay said.

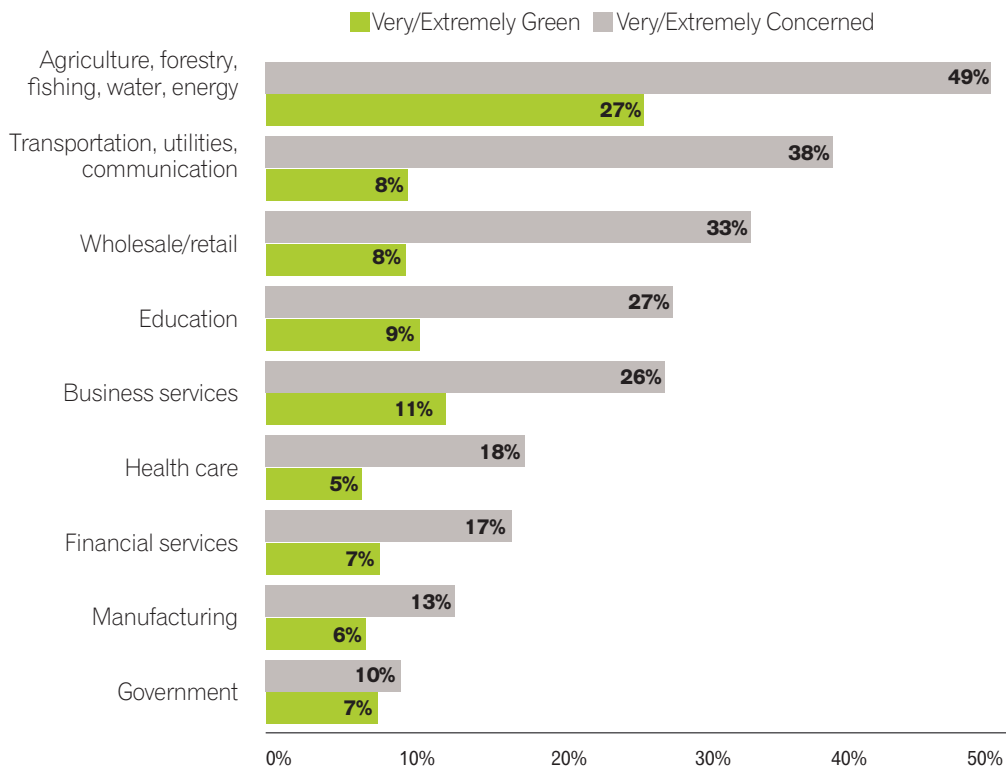
Nuts and Bolts

The Info-Tech survey questioned 700 respondents, 60 of whom were government officials, mostly from state government.

“I feel that 60 government organizations was an appropriate representative sample because [the results] fairly accurately reflected what we tend to see in all of our government clients, anecdotally,” Hay said, adding, “Many of our clients are in the U.S., and state-level organizations generally start these kinds of

initiatives first. However, ‘green’ adoption is a mixed bag, with pockets of greening applied to data center and IT resources throughout the state level. There hasn’t yet been a comprehensive effort at the federal level in either the U.S. or Canada for greening IT, other than in very isolated cases.” 

Who’s Leading the Green Index?



Source: Info-Tech Research Group

Respondents
N=686

Determining Concern

Below are questions that state, local and federal governments answered to help produce Info-Tech’s data on green concern in government. How might your office answer them?

To what degree is IT leadership concerned about improving energy efficiency and environmental responsibility?

- ☐ Not concerned
- ☐ Somewhat concerned
- ☐ Concerned
- ☐ Very concerned
- ☐ Extremely concerned

Which of the following IT-related green initiatives are implemented by your organization?

- ☐ Budget allocation for green IT projects
- ☐ Optimizing energy efficiency in the data center
- ☐ Green considerations in sourcing and RFPs
- ☐ Rightsizing IT equipment to meet near-term requirements
- ☐ Server consolidation and virtualization
- ☐ Data center airflow management
- ☐ Hot aisle/cool aisle data center layout
- ☐ Liquid cooling for IT equipment
- ☐ Airside/waterside economizer
- ☐ Print optimization
- ☐ Equipment recycling (e.g., PCs, monitors, print cartridges, batteries, etc.)
- ☐ DC-powered IT equipment
- ☐ Carbon offsetting
- ☐ None of the above

In your opinion, how green is your organization’s IT operations?

- ☐ Extremely wasteful
- ☐ Very wasteful
- ☐ Wasteful
- ☐ Neutral
- ☐ Green
- ☐ Very green
- ☐ Extremely green



Decertification Dilemma

California's restriction of two e-voting systems creates a quandary.

Synopsis:

A decision by California's secretary of state to decertify two electronic voting systems leaves 21 counties scrambling to replace their main in-person voting method before February's presidential primary.

Agency: Office of the Secretary of State, California; various California counties.

Technologies: Diebold Election Systems, Sequoia Voting Systems, Hart InterCivic.

state
local
federal

Debra Bowen doesn't hate electronic voting. In fact, California's secretary of state anticipates a time when she can whip out a BlackBerry or iPhone to cast her ballot if she's out of her home district on Election Day.

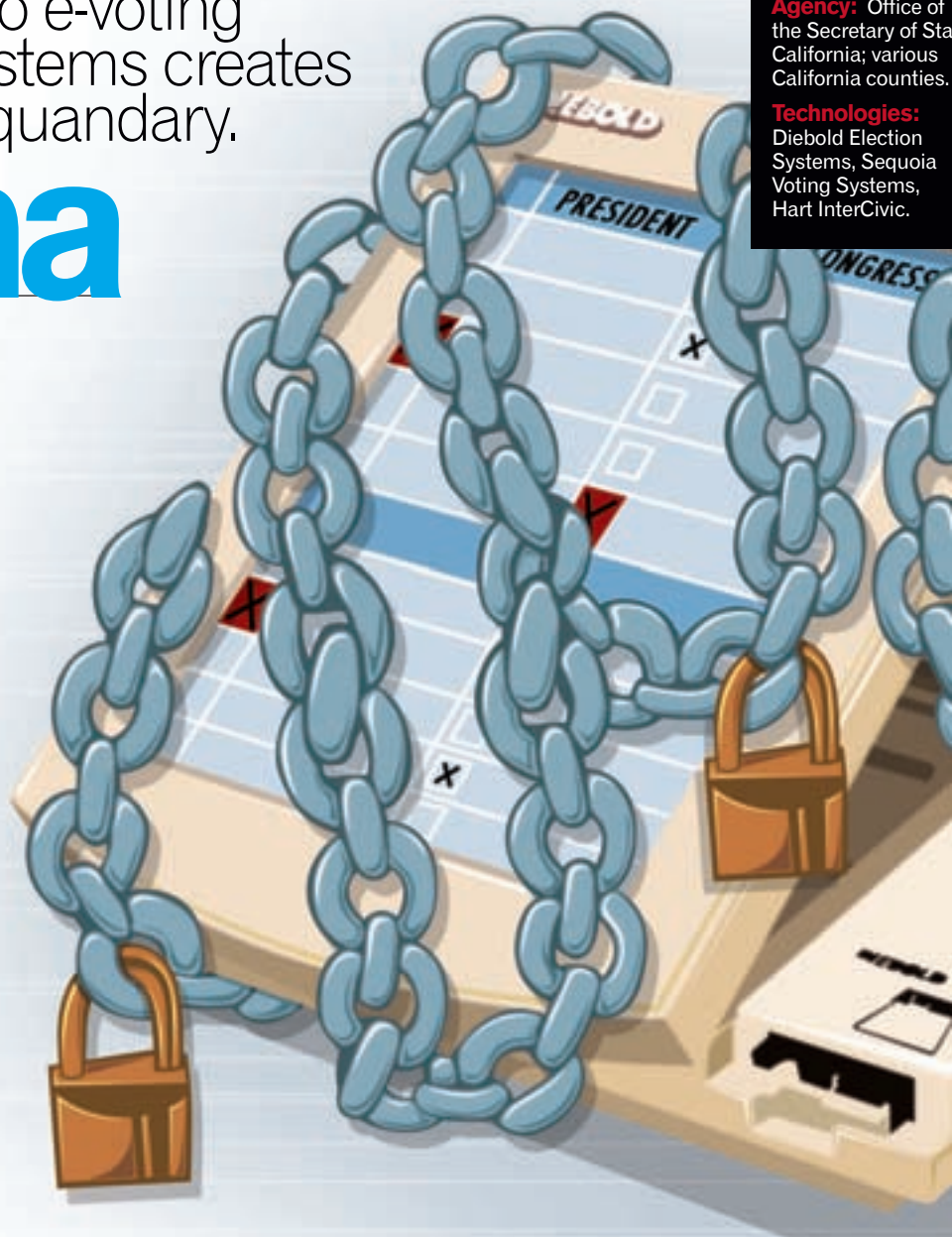
"But we're not there yet," Bowen said. And there lies the reason why this August, Bowen placed restrictions on the use of certain e-voting machines that left election officials in many counties scrambling to figure out how to hold California's presidential primary on Feb. 5, 2008.

Last spring, Bowen commissioned a team of experts assembled by the University of California to review many of the voting systems previously certified for use in California. As a result of this two-month assessment, Bowen decertified all the systems and then recertified them for use under certain conditions.

For all of the machines, Bowen's office will require election officials to implement stronger security and post-election auditing procedures. Counties may continue to use direct recording electronic (DRE) systems from Hart InterCivic for general voting, as long as they comply with the stiffer security and auditing requirements. But counties may only use DRE systems from Diebold Election Systems and Sequoia Voting Systems to conduct early voting and provide one machine per polling place for disability access.

The ruling hits hardest in 21 of California's 58 counties that have been using the Diebold or Sequoia DRE system for all Election Day voting, said Stephen Weir, president of the California Association of Clerks and Election Officials (CACEO) and clerk of Contra Costa County.

"The impact on counties is that there's precious little time to put any Plan B into effect," Weir said. Most likely, counties will use their DRE machines to make voting accessible to disabled citizens, he said. However, they'll probably have to revert to using paper ballots for most in-person voting in February.



They can then tally votes in one of two ways: run all ballots through the centrally located optical scanning systems they currently use to count absentee ballots, or buy new scanning systems to count votes at the precinct level.

The Cost of Conversion

The total cost to the 21 counties for converting from DRE to optical scanning will depend on which strategy they choose. If they stick with their centrally located scanners, costs will total about \$18 million, Weir said. But adding paper ballots to the absentee ballots the counties already run through their central

scanners will slow the counting process, he said. "It's going to take much longer to get a sense of what Election Day looked like for those counties that aren't able to scramble and get a precinct-based system."

Adding lots of new scanners, though, will raise costs considerably. "If you're going to put a precinct-based scanner in all of those 10,000 polling places that are losing their DREs as their main voting, if you train the poll workers and do all the things you have to do, my estimate was about \$66 million," Weir said.

Some counties can cover this cost with money they received through California's Voting Modernization Bond Act of 2002,

BY MERRILL DOUGLAS | CONTRIBUTING WRITER

“Somebody said it was tantamount to **giving the inmates the key** to the jail and putting the correctional officers on break, and then saying **the jail is unsafe.**”

Paul McIntosh, executive director, California State Association of Counties

Bowen said. Some still have federal money provided through the Help America Vote Act (HAVA). But a few have depleted both sets of funds. “We’ll have to work with the counties, as Florida had to do, and New Mexico, to figure out the best way to handle the financial impact of the problem.”

In addition, provisions in their contracts with voting system vendors, which require the vendors to provide certified election equipment, protect some counties, Bowen said. If the technology is decertified, the vendor must replace it with another voting system that the county is allowed to use.

California’s liberal vote-by-mail policies also should soften the impact of the decertifications. “Close to half of our voters are now voting by mail,” Bowen said. “Last November [2006], somewhere between two-thirds and three-quarters of California voters cast their ballots on paper, either in an optical scan system at the polling place, or on an absentee ballot which is mailed in, and which, of necessity, has to be on paper.”

At the time the counties bought them, the e-voting systems in question were all certified by California and the federal government. Bowen said she took a new look at the systems because state law requires the secretary of state to periodically review voting systems for defects, obsolescence or other factors that might make them unacceptable.

Bowen said her concerns about e-voting stem from ongoing debates — dating back to the 2000 presidential election — about the reliability and security of various voting methods. She highlighted numerous incidents where DRE systems left thousands of votes uncounted.

Take the precinct in North Carolina where the voting server was configured to hold up to 3,200 votes, and more than 7,000 people voted there, she said. “That meant 4,000-some people were completely disenfranchised.”

Minibar Key

Bowen also pointed out documented security flaws in e-voting machines — for example, the use of identical keys to lock the memory card doors on all systems in a product line. “Researchers

at Princeton last fall discovered, using one of the Diebold systems, that a hotel minibar key or an office filing cabinet key would unlock the voting machine. And it’s the same key for every piece of equipment,” she said.

Some county officials have questioned the process used to evaluate the DRE machines. “The secretary of state, first of all, never contacted election officials. They were not part of the process,” said Paul McIntosh, executive director of the California State Association of Counties.

Moreover, McIntosh said, the secretary’s office gave the researchers information about the machines and their software that real hackers would need to unearth on their own. And researchers had ample time to work with the machines.

“When I **certify elections**. I want to be able to say to voters, ‘I am certain that these are **the results of the election** that was just conducted in California.’”

Debra Bowen, secretary of state, California

“Somebody said it was tantamount to giving the inmates the key to the jail and putting the correctional officers on break, and then saying the jail is unsafe,” McIntosh said.

“When the secretary did her review, she did it under the worst-case scenario model, without any defenses,” Weir said. “From most registrars’ perspectives, the true test wasn’t given.” Such a test would consider not only safeguards built into the machines, but also safeguards that election officials put around the machines, he said.

Bowen termed this sort of criticism “naive,” given the ingenuity of many hackers. And, she said, researchers didn’t always need inside knowledge to violate the systems. “In the Sequoia system, for example, the testers were able to create an exploit that allowed them not only to change the results of an election, but to hide their tracks, without having any access to the source code or any knowledge of the password.”

According to one security expert, California’s effort to pinpoint security flaws and demand that they are fixed is beside the point. Writing in *Wired* magazine last August, Bruce Schneier said that while the University of California tests represented a laudable effort, no matter how many security flaws one may patch in an IT system, more will inevitably appear.

“Insecurity is the norm,” wrote Schneier. The real solution is security assurance, a series of processes that build security in from the ground up and maintain it throughout the life cycle of the system.

It’s true, Weir agreed, the best way to provide security in voting systems is to layer it in. “Believe me, we get that.” But HAVA required election officials to provide machines that disabled voters can use and machines that offer “second-chance” voting — the opportunity to correct

PHOTO COURTESY OF JOSEPH LORENZO HALL



Millions of U.S. citizens will cast **electronic ballots during the 2008 presidential election**, but there’s still debate about the machines’ security after a few states had thousands of invalidated votes due to errors in 2000.



an apparent error, such as unintentionally marking two candidates for the same office. Counties had to meet those requirements with technology that was already on the market.

“We’d love second-generation stuff,” Weir said. But given the time it takes to develop new systems, get them through the permitting process and bring them to market, better-designed technology probably won’t become available until 2014, he said.

For Bowen, the bottom line is that she’ll have to certify the results of elections in California in 2008. “When I certify elections,” she said, “I want to be able to say to voters, ‘I am certain that these are the results of the election that was just conducted in California.’” **GT**

CONTRIBUTING WRITER MERRILL DOUGLAS <MDOUGLAS@STNYRR.COM> IS BASED IN UPSTATE NEW YORK. SHE SPECIALIZES IN APPLICATIONS OF INFORMATION TECHNOLOGY.



Synopsis: A Jeep + a PlayStation 3 + Linux = potentially awesome robot.

Agency: Defense Advanced Research Projects Agency.

Contact: DARPA Grand Challenge, <grandchallenge@darpa.mil>.

Game On

state
local
federal

Would you believe that by combining Linux, a Sony PlayStation 3, some servers and an industrial air conditioner, you could make a robot? Bill Kehaly did, and thrice entered such a machine into the DARPA Grand Challenge, a race where dozens of robotic cars compete to navigate a racecourse without help from a human driver.

The story of Kehaly's involvement in the Grand Challenge begins in the vast expanse of the western Pacific Ocean where hundreds of small islands — Guam, Palau, the Marshall Islands and other small bits of paradise — make up the region known as Micronesia. It was here that Kehaly launched his latest in a string of entrepreneurial ventures — a Micronesian water bottling company.

Kehaly already had owned a San Francisco consulting firm, served as an adviser to Warner Bros., managed finances and logistics for eToys.com, and invented a digital, pen-based statistics charting system used by numerous Major League Baseball teams. In 2003, while in Micronesia helping get Milo Water off the ground, Kehaly read a newspaper article about something called the DARPA Grand Challenge.

DARPA, the Defense Advanced Research Projects Agency, is the real-life counterpart to the Q Branch from James Bond films. The agency builds and tests all manner of strange and amazing devices, many of which never leave DARPA labs. Some, however, make their way into the world as military hardware, and occasionally, into everyday use.

When Kehaly read a newspaper blurb about the race, something clicked.

"I had been thinking of ways to try to market [Milo Water]," he recalled. "When I read the article, I thought, 'If I found a team, I could dress up my old Jeep to look like a Milo bottle and then have this water bottle drive itself through the Mojave Desert.'"

Never afraid to take a risk, Kehaly ran with the idea and started searching for a team of engineers who could help him build a water



Axion Racing's autonomous car runs on Linux and a PlayStation 3.

PHOTO BY TERENCE BROWN

bottle on wheels that could pilot itself. At a DARPA autonomous racing conference, a team of University of San Diego alumni that had spent years building robots was looking for a leader. It just so happened Kehaly was there looking for a team.

Gentlemen, Start Your AI

The first DARPA Grand Challenge took place in 2004 amidst the rocks and sagebrush of the Mojave Desert. As an incentive for the racers, DARPA put up a \$1 million prize for the winner. The designated racecourse was to begin outside of Barstow, Calif., roughly parallel to Interstate 15, for 142 miles to Primm, Nev. For Kehaly and his team — newly dubbed Axion Racing — the race to transform the Jeep into an Autobot was on.

Right away, it became apparent that one of the original ideas, turning the Jeep into a water bottle, wouldn't be feasible. Instead, the Axion

team — many members of which had backgrounds in building fighting robots for reality TV shows, such as *Robot Wars* — gathered a heap of the necessary equipment to give the Jeep a brain of its own.

The vehicle was outfitted with four Dell servers running Linux and numerous cameras and detection systems to help it navigate the course's terrain, including an infrared camera, a 3-D LADAR (laser detecting and ranging) system — which can see grass, water, rocks, etc. — an RGB (red, green, blue) camera, which spots obstacles in the vehicles path and a Northrop Grumman INS (inertial navigator device)/GPS.

Four Intel Xeon processors served as the vehicle's brain, running everything from "sight" to the mechanical gas and brake system. If the Jeep applies the brake, the accelerator is automatically halted, whereas when the Jeep depresses the gas pedal, the brake is automatically released.

BY CHAD VANDER VEEN | TECHNOLOGY AND POLITICS EDITOR

When race day finally arrived, Axion was among 15 teams that qualified. On March 13, 2004, the Axion team steeled itself as their cobbled-together robot prepared to race nearly 150 miles to Nevada. The starter waved the flag, and the race was on.

"We actually went negative miles," Kehaly recalled good-naturedly. "We ended up behind that starting line."

The race was a disaster. No team came anywhere near the finish line. A vehicle built by a team from Carnegie Mellon University traveled the greatest distance — a paltry seven

Axion searched for a better brain for Spirit, and in late 2006, it arrived in an unusual place — inside Sony's new gaming console, the PlayStation 3 (PS3). The Cell Processor, an extremely powerful new microprocessor developed jointly by Sony, IBM and Toshiba, powers the PS3. At about \$600 for a 60 GB model, the PS3 was a very high-end processor for not much money. Axion had found their new brain, now they needed an operating system.

"As luck would have it, I recently stumbled upon Yellow Dog Linux [YDL] and figured

In late October, Spirit seemed to perform well in the qualification event. The driverless Jeep was busy managing left turns through oncoming traffic, safely — and eerily — making the turns at the appropriate time. Some turns were close calls, but by and large, the robot appeared to be doing well. Unfortunately for the Axion team, however, DARPA judges eliminated the team from further competition. Axion, like 24 other teams, would not race in the main event — leaving just 11 teams to compete in November.

After the qualification event, Kehaly was understandably unhappy.

"I thought we did well," he said. "The judges thought otherwise." 

"We actually went **negative miles**.
We ended up **behind that starting line**."

Bill Kehaly, general manager, Axion

and a half miles. Many teams and observers said the course was largely to blame. The terrain was, they claim, exceedingly harsh in the first few miles. Regardless, the \$1 million prize went unclaimed. But DARPA would later announce another race for 2005, this time on a new course and \$2 million for the winner.

2005 and Now

The 2005 race was a huge success compared to the year before. Several teams actually finished the race — the winner was Stanley, a vehicle built by a team from Stanford University. Stanley completed the race in just less than seven hours. Axion's Jeep, named Spirit, made it 66 miles before becoming bogged down in a sandy stretch, ultimately finishing seventh. Kehaly was pleased with the performance but felt Spirit needed more intelligence.

DARPA did not schedule a race in 2006. However, the agency announced an urban race for November 2007. This time, the cars would race on the streets of Victorville, Calif., instead of in the desert surrounding the city.

we could convert one of our Dell servers into a hopped-up PS3 to do some processing," Kehaly said. "I checked with the team during our weekly conference call. My team is great at [artificial intelligence] and we bought a copy of YDL and installed it on a PS3."

YDL is an open source operating system designed by Terrasoft Solutions to run on IBM Cell systems like the PlayStation 3. Axion already had success with Linux in the past, so this PS3-YDL combination was a perfect fit. They fitted the PS3 on the Dell server rack already in Spirit and started preparing for November.

"I've been thinking about replacing our Dell servers with a cluster of PS3s," Kehaly said, amused that a gaming and movie machine might be the key to winning the race.

Giving credence to Kehaly's idea of moving to a PS3 cluster, recent reports from the gaming industry have shown the PlayStation 3 has a failure rate of 0.02 percent — in other words, an astoundingly reliable machine — perfect for the cramped, hot and dirty world inherent to auto racing.

Transfer Technology

You might wonder about the purpose of the Defense Advanced Research Projects Agency (DARPA) Grand Challenge. It's a good question to ask, given the time, money and manpower that goes into developing each robot. Tony Tether, director of DARPA, said the agency has two primary purposes for the autonomous vehicles. The first, he said, is to facilitate the development of military vehicles that can support troops on the battlefield. A supply vehicle that can drive itself through hostile environments would be tremendously advantageous considering the improvised explosive devices that soldiers in Iraq must constantly concern themselves with. Other military functions could include vehicles with mounted artillery that can position themselves without requiring a human driver.

Tether added that DARPA hopes the Grand Challenge will encourage Americans to engage in science and engineering. Flagging interest in such studies is a growing concern, and Tether believes agencies like DARPA should do their part to foster interest and excitement.

Civilian uses of autonomous vehicle technology are more numerous than might be immediately apparent. Aside from the dream of going to sleep while your car drives you to your destination, this technology is currently being used for things like lane tracking and automated highway systems. Many big rig trucks, for example, already employ lane departure systems that alert drivers if they appear to be driving erratically — a common situation for road-weary truckers.

Jay Gowdy — principal software engineer of Cognex and part of Team Mojavatton, one of the Grand Challenge participants — said autonomous vehicle technology will be used to help humans and machines work better together, with the machines taking over many of the routine, repetitive tasks that can eventually hamper a human's performance.

"How can we partner up a machine that is very good at doing the same boring thing over and over again with a human who decides what boring thing for that machine to work on?" he said.

And the Winner is ...

A robot vehicle created by **Tartan Racing** of Pittsburgh crosses the finish line to win the 2007 DARPA Urban Challenge. Visit www.govtech.com for GTv's report on the 2007 race held in Victorville, Calif.



PHOTO COURTESY OF DARPA

two cents

our take on the latest technology

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Miriam Jones
<mjones@govtech.com>

Next month ...
The **AcerPower 2000**
is a reliable machine in
a small and easy-to-
maneuver package.

I can't lie ... I don't love the Acer TravelMate 8210.

It's touted as good for travel, but the truth is, its weight of 6.6 pounds and size of 14.33x10.66x1.49 inches is, to me, cumbersome aboard planes, perhaps because I'm accustomed to a smaller machine.

The TravelMate comes with a nine-cell lithium ion battery that provides up to 3.5 hours of life depending on usage. It takes the battery 2 hours to recharge if the system's off, or 2.5 hours with the system on. There's also an optional six-cell battery, which provides another 2 hours of battery life.

Some good news: With an Intel Core 2 Duo mobile processor T7400, which includes 4 MB L2 cache, 2.17 GHz, 800 MHz FSB and 2 GB of RAM, the machine was plenty fast for the work I do, even with thousands of large photo and music files on the hard drive, which is 160 GB. Machines with 80 GB and 120 GB are also available. The disc drive also has enhanced Acer Disk Anti-Shock Protection.

I had no problems connecting to wireless access points in airports or hotels, which has sometimes been troublesome with other machines I've tested.

The TravelMate was a decent desktop replacement unit, and also doubled quite nicely as a TV. With the rise in various networks showing their sitcoms online, I've become a TV a la carte viewer, and I sometimes viewed them on the TravelMate's 15.4-inch TFT LCD screen, which has a 1680x1050-pixel resolution and can display up to 16.7 million colors. The video is powered by

ATI's Mobility Radeon X1600 video/graphics card, and 256 MB are dedicated video RAM.

Now the bad: When working in Word or Outlook, the cursor moves to a random place on the page rather than where I left off typing. This is very frustrating for a person who writes, edits and e-mails 99 percent of the day.

Another smaller issue is when using the arrow keys to scroll up and down, the machine makes a strange buzzing noise.

Most troublesome was the amount of heat the TravelMate emitted. At times, it got so hot I couldn't have it on my lap. And the fan is on the right-hand side of the unit, so use of an external mouse is miserably hot after about 10 minutes.

I especially noticed the heat problem when watching a 45-minute program on the TravelMate; at one point, the unit got so hot, it powered off mid-show. Not cool (no pun intended).

Bottom line: I wouldn't pay for this machine. I don't love hot, red thighs after 30 minutes of working, or a machine powering-off mid-anything. **GT**

specs

- Intel Core 2 Duo processor T7400 (4 MB L2 cache, 2.17 GHz, 800 MHz FSB and 2 GB of RAM)
- Modular Super-Multi drive (DVD+R, DVD-R, DVD-RAM)
- 802.11a/b/g WLAN, gigabit LAN, V.92 modem
- 15.4" WSXGA+ (1680x1050) TFT display
- ATI® Mobility™ Radeon® X1600 graphics
- 4 USB 2.0 ports
- 1 FireWire port
- 1 PCMCIA (or PC Card) slot
- 1 Serial port
- 1 VGA port
- 1 DVI-D port
- 1 S-Video port
- Acer OrbiCam camera

rating:  **price:** \$2,600



BY JESSICA JONES | ASSOCIATE EDITOR

GTC SOUTHWEST

WHERE 21ST-CENTURY GOVERNMENT MEETS 21ST-CENTURY IT
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WORLD CLASS KEYNOTES!



RARE AUSTIN
APPEARANCES

David Pogue

Wednesday, January 30
9:00 – 10:15 am

The New York Times Personal-Technology
Columnist, CBS News Tech Correspondent,
host of the Discovery TV Series
It's All Geek to Me and Best-Selling Author

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Frank Abagnale

Thursday, January 31
9:00 – 10:00 am

Former check con artist, forger,
impostor and real-life inspiration for the
Academy Award nominated film,
Catch Me if you Can, starring
Tom Hanks and Leonardo DeCaprio

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product news

Comfort Call

Polycom's HDX 4000 desktop video-conferencing system sports 1280x720 resolution at 30 frames per second; an integrated 20-inch 16:9 display that doubles as a PC monitor; a built-in high-definition camera with pan-tilt-zoom capability; integrated dual HDX microphones, high-fidelity speakers and subwoofers; a standards-based HDX video-conferencing codec; and a stand with integrated keypad that lets users dial or answer video calls just like a telephone.

[<www.polycom.com>](http://www.polycom.com)

Keep Movin'

The **Dell** Precision M6300 mobile workstation contains a hard drive of up to 200 GB at 7,200 rpm and up to 4 GB of dual-channel DDR2 SDRAM memory. Starting at 8.5 pounds, the notebook has a wide-aspect 17-inch 1920x1200 WXGA+ or 1440x900 resolution WUXGA antiglare display. It's available with 64-bit Intel Core 2 Duo or Extreme Edition processors up to the X7900 (2.8 GHz) combined with NVIDIA Quadro FX1600M OpenGL discrete graphics. [<www.dell.com>](http://www.dell.com)

Peak Performance

The **Glacier Computer** Everest rugged computer features a 600 MHz, 1.0 GHz or 1.4 GHz Intel Pentium processor and up to 1 GB DRAM. The device holds a 40 GB, 2.5-inch hard drive with shock damper. Users can choose either a 10.4-inch TFT SVGA 800x600 LCD or 12.1-inch TFT SVGA 800x600 LCD. 802.11a,b,g wireless, internal Bluetooth or internal WAN are optional, as is a waterproof, dustproof keyboard.

[<www.glaciercomputer.com>](http://www.glaciercomputer.com)

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S A C R A M E N T O C O N V E N T I O N C E N T E R

An Inscrutable Hunch

With Al Gore's climate change trifecta — the Nobel Peace Prize, an Oscar for *An Inconvenient Truth* and the Live Earth concerts — 2007 may be best remembered as a tipping point in environmental consciousness, complete with attendant attention to the greening of IT and government's own carbon footprint. It is an obvious choice and perhaps too easy by half for this page's sometimes inscrutable choices for a year in review. Longtime readers will know that this retrospective is now a five-year-old tradition inspired by the old *Saturday Night Live* sketch about Father Guido Sarducci's *5 Minute University*, which promised to teach only those few things that will still matter five years after the fact.

Here's the rest of the 2007 list:

MyPublicSpaceBook: A Two-Way Street in Service Delivery

In five years, nobody will be talking or writing about Web 2.0. Not only will the version number have been eclipsed, but like everything "e"-related from an earlier time, the chatter stops when everybody is actually doing it. In the interim, John Miri of the

change the service delivery cost structure while catalyzing collaboration by blending the formerly discrete dot-gov, dot-com and dot-org domains.

Response and Recovery: A Little Help From My Friends

Since all emergencies are local, local governments have properly continued preparing for the next big thing without relying on the federal government as part of the initial response (while craftily shoeorning the things they want into any available federal funding source). But it's worth noting, as I did in August, that Web 2.0 is proving its value in putting people with people in significant ways — and that some public agencies are determining how to contribute meaningfully in these communities that aren't of their own making.

Falling Down: The Infrastructure Dilemma

Seventy-one thousand bridges aren't the only public infrastructures in trouble. Heavy loads force the electrical grid to brown and black, and our beloved Internet is four decades old. Public investments commensurate with national priorities are past due — but there's no latter-day Ike in sight.

It's worth noting, as I did in August, that Web 2.0 is proving its value in putting people with people in significant ways.

Texas Department of Information Resources reminds us that what makes "2" important isn't the technology itself, but that it presumes two active parties to every transaction — promising to forever change the relationship between governments and citizens.

SaaS and GaaS: Funny Names, Important Ideas

These two sets of awkward initials for Software and Government as a Service also will go to the dustbin of history, however the underlying models of both promise to

All this suggests that the hard slog of government modernization continues even as public revenue prospects are expected to tighten again as the decade ends. It portends another period characterized by disruption and the dark horse potential of transformation that such moments make possible. Perhaps Russian Foreign Minister Sergei Lavrov captured the zeitgeist of this time when asked whether he expected a breakthrough in the face of considerable obstacles. He quipped, "Breaks definitely. Through or down, I don't know." [GT](#)

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