GOVERNMENT TECHNOLOGY®

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VOL21 ISSUE01 SOLUTIONS FOR STATE AND LOCAL GOVERNMENT IN THE INFORMATION AGE JANUARY 2008

inside:

FROM MAP TO KILLER APP

NEW LOCATION TOOLS BUST GIS OUT OF THE BACKROOM, TURNING ANYONE INTO A POWER USER.

plus:

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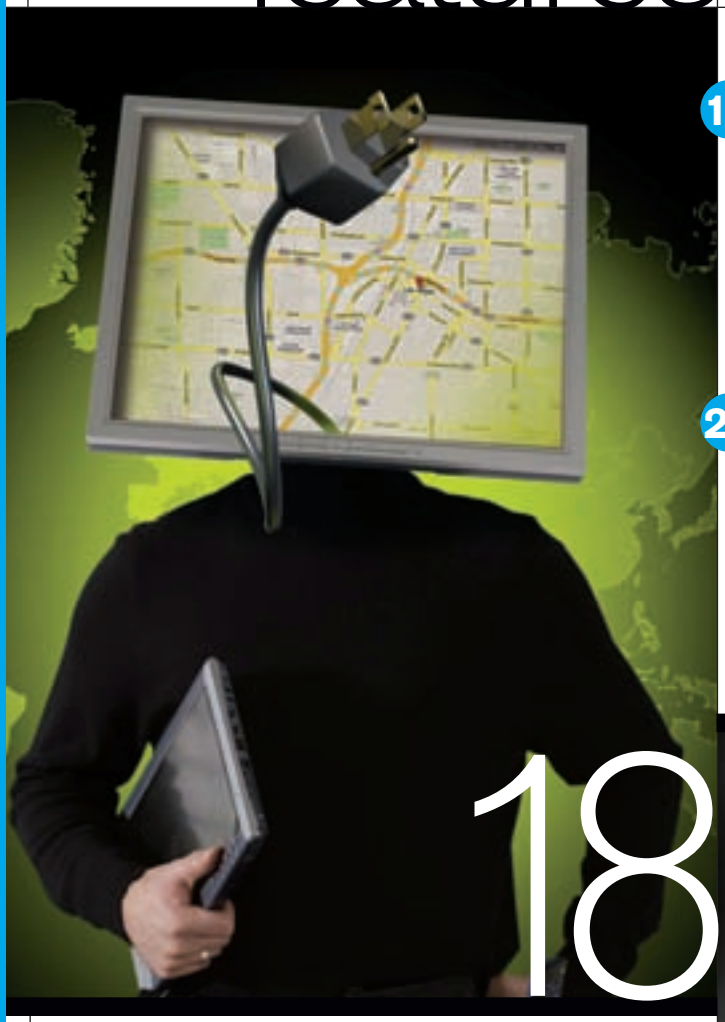

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High Expectations
Jurors request forensic evidence in cases that were once thought to be routine. Defense attorneys challenge the prosecution if forensic evidence is absent, even in cases where it's not applicable. The trend is a product of what jurors see on TV. Legal professionals call it the "CSI effect," and debate rages over its impact on the criminal justice system.

Big Picture...

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BULL

point of view

Turning 21

Raise Your Voice
Your opinions matter to us. Send comments about this issue to the editors <editorial@govtech.com>. Please list your telephone number for confirmation. Publication is solely at the discretion of the editors. *Government Technology* reserves the right to edit submissions for length.

Correction:
The article *No Greenwashing* in *Government Technology's* November 2007 issue misstated the cost of a solar project at Conley-Caraballo High School in Alameda County, Calif. The story said the project cost $840 million, adding the school would pay $440 million and the remainder would come from grant money, including a $264 million rebate from Pacific Gas & Electric (PG&E). The actual cost of the project was $840,000. The school paid a total of $440,000, and PG&E contributed $263,087.

With this issue, *Government Technology* begins its 21st year of publishing — and we've recently done a substantial amount of thinking about what this publication should be as it enters its third decade.

Our conclusion? Above all else, *Government Technology* must be job critical to you: the men and women responsible for choosing, implementing and operating the technology that makes modern government work. In late 2007, through extensive surveys, we asked what types of information you needed to be more effective and successful. Hundreds of you responded, and the issue you're reading is the product of that interaction.

Our cover story examines rampant "consumerization" of location data and how that trend impacts government, a power user of traditional GIS applications. Among other things, the article shows how agencies are using new Web-based tools to extract more value from location data by putting that information in new forms and delivering it to new classes of users.

We also investigate how emerging WiMAX technology could help reinvigorate the moribund municipal wireless industry. Our new monthly *Personal Computing* column breaks down the difference between social networks, blogs and discussion groups. And the *Work Force* department looks at California's effort to match retired state workers with state agencies needing temporary help.

If you're reading a paper copy, you'll notice something else, too. We've redesigned the publication into a fresh, contemporary size that's easier to carry and pass along.

> "Above all else, *Government Technology* **must be job critical** to you: the men and women responsible for choosing, implementing and operating the technology that makes **modern government work**."

Throughout this year, we'll feature 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.

For 20 years, *Government Technology* has been an indispensable source of practical information for government. As we enter our third decade, we intend to continue bringing you objective, job-critical information designed to advance both your career and your agency's mission. GT

STEVE TOWNS
EDITOR

Alternative Thinking About Reliability:

KEEP DOWNTIME WHERE IT BELONGS: OUTSIDE THE OFFICE.

The HP ProLiant DL380 G5 server comes with Systems Insight Manager (SIM) software. HP SIM has shown an average reduction in server downtime[1] of 77%, by monitoring your system and alerting you of potential server problems before they occur.

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1. IDC White Paper sponsored by HP, Gaining Business Value and ROI with HP Systems Insight Manager, Doc #206761, May 2007. 2. Prices shown are HP Direct prices; reseller and retail prices may vary. Prices shown are subject to change and do not include applicable state and local taxes or shipping to recipient's address. Offers cannot be combined with any other offer or discount and are good while supplies last. All featured offers available in U.S. only. Savings based on HP published list price of configure-to-order equivalent ($3207 - $958 instant savings= SmartBuy price $2249). 3. Financing available through Hewlett-Packard Financial Services Company (HPFS) to qualified commercial customers in the US and subject to credit approval and execution of standard HPFS documentation. Prices shown are based on a lease 48 months in term with a fair market value purchase option at the end of the term. Rates based on an original transaction size between $3,000 and $25,000. Other rates apply for other terms and transaction sizes. Financing available on transactions greater than $349 through January 31, 2008. HPFS reserves the right to change or cancel these programs at any time without notice.

big picture

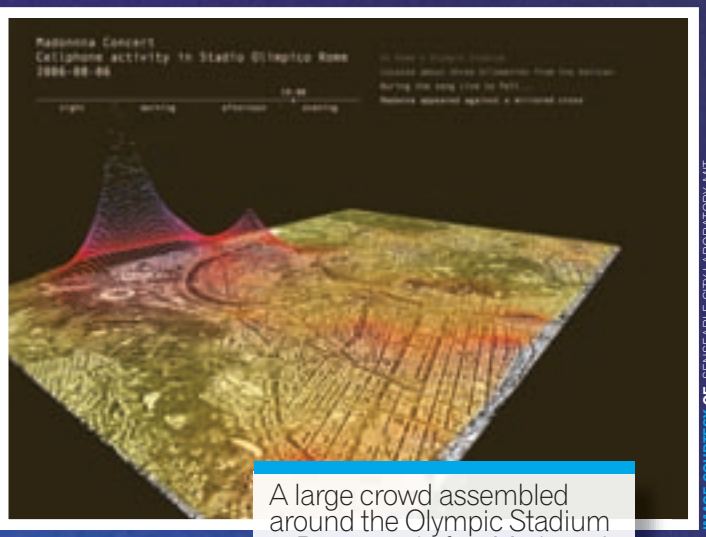

IMAGE COURTESY OF SENSEABLE CITY LABORATORY, MIT

A large crowd assembled around the Olympic Stadium in Rome just before Madonna's concert on Aug. 6, 2006, as shown by the average cell phone users' distribution on a satellite image of the city.

The MIT SENSEable City Lab's Real Time Rome project aggregates data from cell phones to better understand urban dynamics in real time. By collecting location data from cell phone users, and speed and location data from bus and taxi fleets, the project aims to help Roman commuters make better decisions about their environment. "Imagine being able to avoid traffic congestion or knowing where people are congregating on a Saturday afternoon," said project director Carlo Ratti, director of the SENSEable City Lab. "In a worst-case scenario, such real-time systems could also make it easier to evacuate a city in case of emergency."

FOR MORE INFORMATION ON REAL TIME ROME, VISIT **HTTP://SENSEABLE.MIT.EDU/REALTIMEROME**. — MIT

the last mile

BY CHAD VANDER VEEN
TECHNOLOGY AND POLITICS EDITOR

Standardizing the Candidates

OK, it's 2008. Now it makes sense to actually pay attention to the presidential candidates, but there's really no need. They're all terrible, and whatever you want changed won't be. Want us out of Iraq? Not happening. Universal health care? Forget it. Higher/lower/flat taxes? No, no, no. Although at press time, we can "choose" from 16 people, 15 of them are virtually indistinguishable — something this expanded campaign season has repeatedly proven.

"They're all **terrible**."

Clinton, Obama, Rudy, Edwards, Romney — does it really matter who wins? Social issues aside, will any of them increase government efficiency or reduce Washington's crippling bureaucracy? Who among them will accomplish what you're often called to achieve — do more with less? The answer, of course, is none.

Presidential politics ceased being about servicing the public and is solely about attaining and wielding power. It's often said that people get the government they deserve. For proof, look no further than Congress. Everyone hates Congress, regardless of which party is in control. Current polling puts Congress' job approval rating at 20 percent. Yet individually, Congress members routinely win high marks from constituents. Why? Because to get elected and stay in office, representatives must condemn pork barrel spending while promising the very same pork barrel spending. This virtually assures gridlock. And it may prove that representative democracy has a finite life span. Since this nation was founded, government has only increased in size. Never has it permanently shrunk. If this trend continues, which it will, the wheels of government will surely grind to a halt.

To worsen matters, those we elect to Congress and the Oval Office have no incentive to change things. Only by perpetuating this trend can they win re-election. To reduce the size of government would mean stopping the wasteful spending that wins votes in a representative's district. But if the bacon isn't brought home, someone else who will bring it will get the votes.

Naturally this ship of foolishness needs a captain — a person who can, individually, embody this abortion of democracy. Pick any social issue, and realize that all the lip service candidates give it is nothing more than a distraction to keep you from noticing that all any of them want is power. And thus, you realize why it makes no difference who wins. None of the candidates are average Americans. They all come from money — money that is used to buy power. And the Oval Office is the ultimate goal for those seeking to hold the reins.

Of course, occasionally, there's an outlier, which is why I said 15 of the 16 candidates are interchangeable. This time, Ron Paul is the mistake, the one who slipped through the cracks. Paul seems to truly want to improve government. Which is why he has no chance of winning. People indeed get the government they deserve, and, at least for now, it appears we'll get it.

Happy New Year. GT

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on the Scene

More Green for Less Green

SEATTLE — Former President Bill Clinton unveiled a plan to help cities acquire green technology at the U.S. Conference of Mayors (USCM) Climate Protection Summit in November 2007. Clinton announced that all USCM member cities will have access to a green technology purchasing consortium operated by his Clinton Climate Initiative.

The consortium offers lower prices on green technology products, potentially helping cities accelerate green-technology deployments. Clinton pitched the program as a chance for local governments to quickly shift market demand toward energy efficiency.

Instant Command Center

SACRAMENTO, CALIF. — California state officials got an up-close look at Cisco's Sentinel Incident Commander vehicle in November. Cisco offered tours of the high-tech mobile command center, which uses Internet protocol technology to rapidly establish command, control and communications capabilities at the scene of a disaster or other incident. The vehicle was developed jointly by Cisco and automotive manufacturer L-3 Wolf Coach.

PHOTO COURTESY OF DARPA

Gentlemen, Start Your Robots

VICTORVILLE, CALIF. — For two weeks in late October and early November, 35 teams from around the country competed for a $2 million purse in the third Defense Advanced Research Projects Agency (DARPA) Grand Challenge — an event that pits autonomous automobiles against nature, time and each other.

Carnegie Mellon's bot "Boss" won the event overall, receiving the $2 million; Stanford's "Junior" took second and a $1 million check; and Virginia Tech's "Odin" came in third, receiving $500,000. Six teams out of the original 35 finished the 60-mile final event.

The two previous races, in 2004 and 2005, were held on a desert course, with the goal for each bot simply to get from start to finish. This year, DARPA added urban challenges to the competition, such as traffic, four-way stops and other robots, making this year's event far more difficult.

Best of the Best

FOLSOM, CALIF. — Aurora, Colo., is the most technically advanced big city in the nation, according to the Folsom-based Center for Digital Government's seventh annual Digital Cities Survey. Aurora topped the 2007 survey in the 250,000 or more population category, followed by Virginia Beach, Va.

Lincoln, Neb., placed first in the 125,000 to 249,999 division, followed by Richmond, Va. In the 75,000 to 124,999 population division, Santa Monica, Calif., placed first with Roanoke, Va., placing second. Jupiter, Fla., and Lynchburg, Va., tied for first in the smallest city category, covering populations of 30,000 to 74,999.

Winners were honored at an awards ceremony in New Orleans in mid-November.

Govtech.com Hot List

govtech.com

Here are the 10 most popular stories on Govtech.com from Nov. 4, 2007 to Dec. 4, 2007.

1 **EM Grants Within Grasp** The U.S. Department of Commerce has awarded more than $960 million in Public Safety Interoperable Communications (PSIC) Grants to the states.
www.govtech.com/em/159711

2 **American ITIL** The British blockbuster finally finds an American audience.
www.govtech.com/gt/95672

3 **Public Trust of RFID** As RFID becomes more prevalent in society, how can the government reduce the public's uncertainties about this mystifying technology? www.govtech.com/gt/185756

4 **Reality Check** As millions of people flock to online alternate worlds, can government afford to be virtually non-existent? www.govtech.com/gt/125968

5 **Top U.S. Digital Cities** The winners are: Aurora, Colo.; Lincoln, Neb.; Santa Monica, Calif.; Jupiter, Fla. and Lynchburg, Va.
www.govtech.com/gt/184853

6 **'Typosquatting'** In getting to Web sites, neatness counts. If you type in the wrong Web address, you might be in for a surprise.
www.govtech.com/gt/208732

7 **PlanIT** New York City's PlanIT outlines nearly three-dozen technology initiatives designed to ensure wise IT investments.
www.govtech.com/gt/161567

8 **"Where's My Staff?"** NASCIO publication is designed to assist state CIOs and their staffs in preparing for and protecting IT infrastructure during a pandemic.
www.govtech.com/gt/175400

9 **Smarter Evacuations** Intelligent transportation systems evolve to address emergency management.
www.govtech.com/tt/150701

10 **Coffee-Can Murderer** A new technique in law enforcement — called forensic computer science — helps put a murderer behind bars.
www.govtech.com/gt/96104

CIO Sightings

BY WAYNE HANSON
EDITOR OF WEB PUBLISHING,
GOVERNMENT TECHNOLOGY

Takai Heads West

After five years as Michigan CIO, Teri Takai to lead IT for California.

In December, California Gov. Arnold Schwarzenegger announced the appointment of Teresa (Teri) M. Takai as the state's CIO. Takai, widely recognized as one of the nation's top government IT executives, served five years as Michigan CIO.

Schwarzenegger said Takai's hiring is part of an ongoing effort to rebuild essential state services.

"Two years ago, I introduced my Strategic Growth Plan to rebuild and improve California's crumbling infrastructure," Schwarzenegger said, "but our state's infrastructure isn't limited to the physical roads, bridges and levees that need repair. We also have to expand and improve California's technology to meet our future needs. Teri is the perfect person to do that. She has over 30 years of experience in this field and possesses the vision necessary to make our great state a leader in the effective use of information technology."

Takai — who enjoyed a close working relationship with her former boss, Michigan Gov. Jennifer Granholm — said Schwarzenegger's commitment to IT was a factor in her decision to accept the California position.

"Gov. Schwarzenegger has an aggressive plan to expand and improve California's technology, and he is dedicated to utilizing IT to support and transform California's government services," Takai said. "I look forward to the role I will play in making that happen."

She expects to build on the work of J. Clark Kelso, who has been California CIO since 2002. "It will be essential to build on that success and the work that's been started by Clark Kelso to ensure that all of California's IT organizations are moving forward in unison to meet the objectives of the governor," Takai said.

The Information Technology Association of America (ITAA) commended Schwarzenegger's appointment of Takai.

"Teri has a wealth of management and IT experience in both the public and private sectors, and has proven herself a true visionary in government IT," said ITAA President and CEO Phil Bond in a news release.

Takai begins the new position in January, pending confirmation by the California Senate.

Looking Back

Takai became director of the Michigan Department of Information Technology (MDIT) in 2003, at the midpoint of the state's ambitious IT centralization initiative. She led an effort that merged IT staff and resources throughout the state into a single technology department. Under Takai's leadership, Michigan topped the Center for Digital Government's *Digital States Survey* in 2004 and 2006.

Completing the consolidation effort ranks among Takai's most satisfying accomplishments.

"I am proud we have been able to use technology to improve the way citizens in Michigan interact with state government, while reducing the cost of technology for the services we provide," she said. "Finally, I am pleased with the success we have had in reaching out beyond the boundaries of state government by partnering with local government and private partners to bring improved services to the citizens."

Takai also expressed appreciation for Michigan government employees, who confronted numerous hurdles as the state struggled to rebuild its rust-belt economy. "In Michigan, we have faced difficult challenges and the most difficult state budget crisis in history," she said, "and the state work force stood tall and continued to deliver outstanding service to Michigan citizens and businesses."

Before entering state service, Takai spent 30 years at Ford Motor Co., where she led the development of the company's IT strategic plan. Takai also held technology positions at Electronic Data Systems Corp., and Federal-Mogul Corp.

Theis Named Michigan CIO

Kenneth D. Theis, deputy director of the MDIT, will replace Takai as Michigan CIO. Theis came to Michigan state government nine years ago from General Motors Corp.

"We are fortunate to have such a skilled and talented leader in Ken Theis," Granholm said in a statement. "Ken brings a wealth of experience to the table and will no doubt continue the great work that has already been accomplished by the department."

Granholm also praised Takai for her leadership at the MDIT.

"I thank Director Takai for her five years of dedicated service to the citizens of Michigan," Granholm said. "She will be long regarded for her pivotal role and leadership in helping reduce the cost of technology in Michigan government and streamlining technology services." GT

Four Questions for Melodie Mayberry-Stewart

CIO, NEW YORK STATE

PHOTO BY GARY GOLD

"When you're asked to be an agent of change, when you're asked to drive innovation, you have to have a good sense of what the trends are, what the horizons are, and what the emerging technologies are."

IN APRIL 2007, GOV. ELIOT SPITZER APPOINTED MELODIE MAYBERRY-STEWART CIO OF NEW YORK STATE. MAYBERRY-STEWART, FORMERLY CHIEF TECHNOLOGY OFFICER OF CLEVELAND, SUPERVISES THE NEW YORK OFFICE FOR TECHNOLOGY, AND COORDINATES INFORMATION SHARING AMONG STATE, LOCAL AND FEDERAL GOVERNMENTS.

1 **Now that you've been on the job for six months, where do you need to challenge the status quo?**

One major challenge is modernization of our systems. It's very important for me to get to know what the commissioners of the particular departments want to achieve. And then you start to look at how technology can contribute to them achieving their business goals. How can we integrate the sharing of information across agencies that have a lot of information they don't share between themselves? Why not have a single system that affords that to happen?

2 **Is part of your role to become a business partner with other state agencies?**

Exactly. Fortunately we have commissioners who understand the value of IT. But because we have not invested to the level we should, we now have some antiquated systems, some systems that aren't really meeting our needs. So our other challenge is speed to market. How quickly can we modernize these systems to get the value we need?

3 **What's the right mix of technical and managerial skills for today's CIOs?**

If you look at CIOs, they're probably 15 percent to 20 percent technical, and 80 percent is really business strategy and trying to optimize what the vendor community has to offer. So for me, that 15 percent or 20 percent is the balance I want to strike. But even at that, it's a significant investment. When you're asked to be an agent of change, when you're asked to drive innovation, you have to have a good sense of what the trends are, what the horizons are, and what the emerging technologies are. So you've got to stay close to it. You can't just walk away from it.

4 **How will New York state promote energy efficiency?**

When we look at procuring computers, we certainly can — in our own specifications to the vendor community — start driving for them to be energy-efficient. We also can look at the process we've put in place to dispose of computers. There's a possibility to recycle them in underserved communities. As we look at building major data centers, I think our requirements certainly have to be what I would consider best in class to put our vendors on notice that we want to have greener computing facilities. GT

BY **STEVE TOWNS, EDITOR**

WATCH GTtv'S INTERVIEW WITH MELODIE MAYBERRY-STEWART AT **WWW.GOVTECH.COM/GT/MULTIMEDIA**

spectrum

reports from the IT horizon

Missing in Action

Britain's tax and customs service lost banking and personal data of 25 million people — nearly half the country's population — when two computer disks went missing in the mail in November 2007.

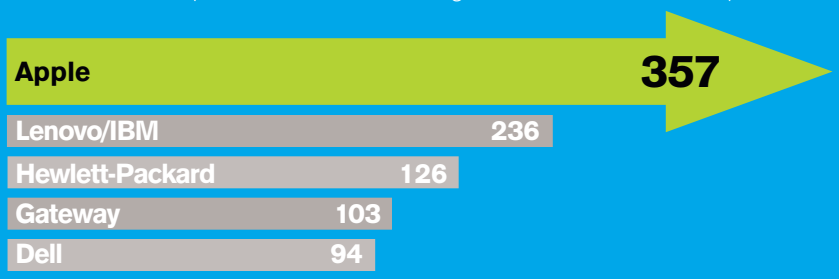
The disks were sent to a government audit office through an internal postal service and weren't tracked. They were missing for three weeks before the loss was reported. The disks contained details of more than 7 million families in Britain who claim a child benefit — the tax-free monthly payment available to everyone with children. The information on the disks included parents' and children's names, along with addresses, dates of birth, national insurance numbers and banking details.

— INTERNATIONAL HERALD TRIBUNE

PC Reliability

The RESCUECOM Computer Reliability Report tallied a "reliability score" for each PC vendor based on the calculated difference between overall U.S. market share over a three-year period and the percentage of calls requesting service received by RESCUECOM's call center.

Higher scores indicate that fewer calls for service were received for the specific computer vendor versus expected levels based upon market share estimates. The top five vendors, according to the second-annual report, are:



Scarecrow

Scientists at Monsanto and deVGen identified an innovative and precise approach to protect crops against insects. The enabling technology, called RNA interference, is a biological mechanism found in nature that regulates gene expression. The technology is expected to provide farmers with a new "in-the-seed" option to protect crop yields, and it presents another tool to support agriculture's mission of meeting the world's growing food, feed and fuel demands.

— *DeVGen.com*

Soft Copy

More consumers are logging on to the online equivalents of printed publications for their reading material, according to the University of Southern California's Annenberg School Center for the Digital Future. While the ratio of printed material read hasn't dropped dramatically — from three-fourths to 70 percent over the last six years — the portion of it read online has risen to 23 percent from 19 percent in the last year.

At Your Fingertips

Some consumers can now pay for gas with the touch of a fingertip.

At select Chicagoland stations, Shell Oil Co. has adopted Pay By Touch technology at its pumps and inside convenience stores. The technology verifies personal identity using biometrics, the measurement of unique physical and behavioral characteristics. In this case, a finger scan is used to pay for a fuel purchase from an existing financial account of the driver's choice: a Shell Card, Shell MasterCard or eCheck — a direct debit from the user's checking account.

— SHELL.COM

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

LOCATION,

BY CHAD VANDER VEEN | TECHNOLOGY AND POLITICS EDITOR

Not so long ago, only a select group of users could take advantage of GIS tools and applications. The general public barely knew what GIS was, let alone knew how to use it. Today, the Web allows GIS data to be distributed via ever-evolving avenues, from the practical — traditional GIS services made available online — to imaginative applications like Google Sky, a Web-based, 3-D map of the universe.

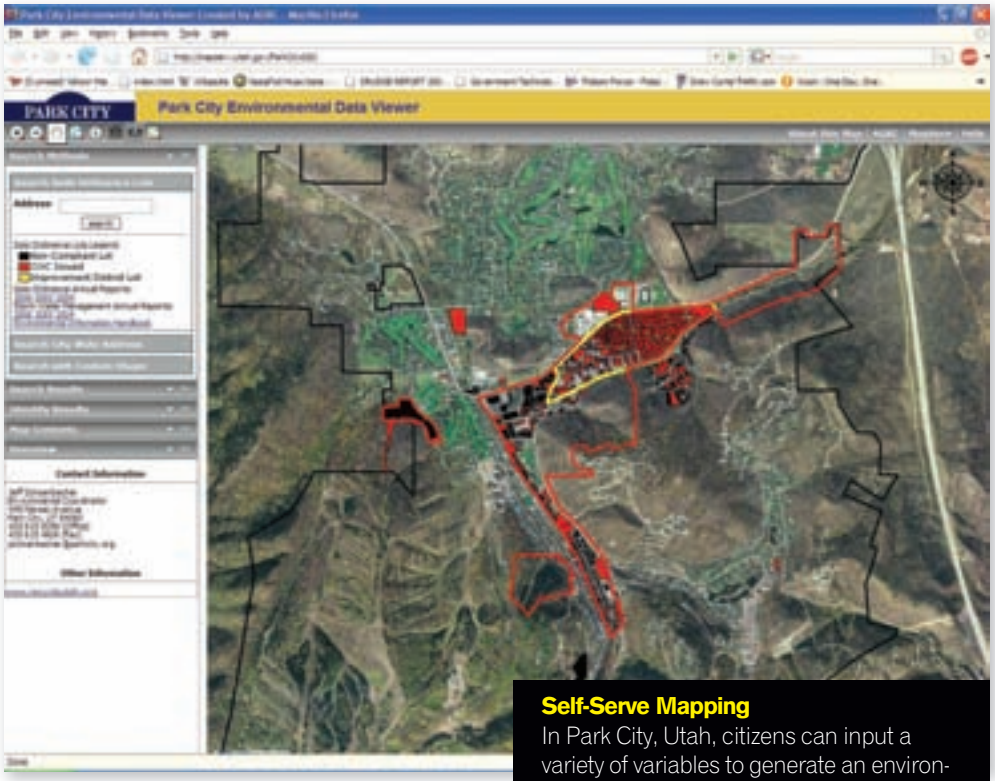
Citizens, businesses and governments are finding new ways to reap the benefits of this revolution in how location data is understood and depicted. Data once found exclusively in GIS circles is appearing in common, everyday tools.

Some people wonder if these emerging applications should be considered GIS at all. Has the combination of location data and the Internet created something altogether new? How can government use new mapping tools to not only enhance citizen service, but also improve internal efficiency? And how do traditional GIS applications match up against the new kids on the block? These are just a few of the questions that have arisen in what may well be **the golden age of GIS.**

WEB-BASED TOOLS AND USER-FRIENDLY INTERFACES BREAK GIS OUT OF THE BACKROOM.

LOCAT

LOCATION, LOCATION, LOCATION.



Self-Serve Mapping
In Park City, Utah, citizens can input a variety of variables to generate an environmental data map. This map shows lots in Park City that are either in compliance with local soil contamination ordinances, those that are not, and those that are progressing toward compliance.

More Than a Map

For years, GIS existed as a tool for only technically skilled users. This was largely because most people couldn't tell what the heck these maps were supposed to depict. Companies such as ESRI and CARIS produced powerful mapping software that has been used for everything from wildlife management to sales and marketing; generally these products appealed only to a small community of experts.

Furthermore, GIS software was standalone and ran on large, high-end systems that could process the thousands of data points and layers needed to produce, say, a map of a suburban housing tract being developed in a floodplain. It was incredibly useful for a select number of people — but nevertheless, GIS wasn't much more than a complicated-looking map on a computer.

For millions of people today, the Web is as vital a utility as electricity or water. As technology is wont to do, GIS has not only adapted to the changing marketplace; it has also expanded beyond its traditional realm. GIS applications have transformed into simpler, user-friendly tools with mass appeal and — most important — they live entirely on the Web. Today, location data powers all kinds of programs, including many in government.

"Over the last several years, we've seen a move toward Web enabling many of our traditional GIS technologies, which has taken us into some really different opportunities to apply applications, which I think has dramatically changed the landscape for us," explained John Olesak, vice president of Northrop Grumman's Geospatial Intelligence Operating Unit. Olesak has more than 30 years of GIS experience under his belt, including work with the National Geospatial-Intelligence Agency.

"So if you think back a number of years ago to the geographic information systems being a boutique-type of capability, you really had to be a computer scientist, photogrametrist or geodesist to really take advantage of it," he said.

"Now we can deliver those applications into the hands of many more users at a variety of different levels. All with the simplicity of the tool to help us in decision-making, whether that's personal or from a business or homeland security perspective."

You could throw a dart at the map of the United States and probably hit a city or state that's doing something clever with location data. Whether it's "true GIS" or some sort of new hybrid depends on the individual application and whether you care about the distinction. In Utah, for example, traditional GIS tools exist side-by-side with Google Earth. The state built mapping tools that do everything from helping anglers find the best fishing to pinpointing all of the state's mining sites.

Utah's state Web site is home to a huge library of maps created with both traditional GIS applications and tools from Google. In fact, Utah Deputy CIO Dave Fletcher said the state keeps all of its geographic information databases online, giving Utah citizens an impressive resource at their fingertips. One new Web site, mapserv.utah.gov, hosts interactive maps on the ArcGIS server.

"We're also starting to create Web services that can be used within other peoples' applications to provide geo-coded results," Fletcher said. "We've created some things, our geo-sites using Google Earth, where it's sort of targeted at the student population, where they can basically do virtual flyovers over a lot of our geologic sites throughout the state."

Utah's Mapserv site is a great place to start for anyone seeking examples of how traditional GIS tools and newer "GIS-lite" applications can be used to produce compelling, useful maps. Mapserv hosts a variety of maps, including sex offender addresses, sites designated for historic preservation — even fueling locations for government fleet vehicles.

According to Fletcher, the state is doing everything it can to improve the public's access to GIS and other related data because the state believes the data improves people's experience with government and also strengthens government operations. Furthermore, Fletcher said new manifestations of location data — such as Google Earth and WikiMapia — don't diminish the traditional GIS market, but instead foster more interest in it.

"I think it significantly expands interest in [GIS], and I think some of the other products are trying now to compete and enhance what they do — where before they were generally client-server applications," Fletcher said. "They've seen what people have

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been able to do with Google Earth and are providing new functionality, which people are taking advantage of.

"Some of our GIS purists don't necessarily like it, but that's the way of the future. People want to have access to those kind of tools whereas, before, it was more exclusive."

Dixie Developments

Utah isn't the only state making the most of Google Earth. In late November 2007, Alabama Gov. Bob Riley announced the launch of Virtual Alabama, a project initiated by the Alabama Department of Homeland Security in partnership with Google Earth. The first-of-its-kind project, which was two years in the making, incorporates imagery from all of Alabama's 67 counties, and allows local officials to securely share access to statewide geographic data using Google Earth.

Virtual Alabama means mission-critical GIS data is no longer accessible only by GIS experts. Instead, GIS data can be quickly and easily obtained by first responders, helping them do everything from planning an escape from a burning building to evacuating areas affected by a hazardous chemical spill.

According to state Homeland Security Director Jim Walker, people issues — not technology challenges — were the biggest hurdles to creating Virtual Alabama. The state had to find up-to-date imagery of each Alabama county, a process that took more than a year to accomplish, Walker said. Along the way, political infighting and proprietary issues bogged down the process. The key, Walker said, was explaining how Virtual Alabama would improve public safety and help protect the lives of first responders.

Executive Support
Alabama Gov. **Bob Riley** announces the launch of Virtual Alabama, the most complete GIS data set in the nation.

"I went to the sheriffs and said, 'Look, if you give me this imagery, we've learned that we can start layering and tailoring information on top of your imagery that can allow you to do a lot of things. For example, we can show gas lines, power lines, fire hydrants, stop signs, stop lights, the location of every registered sex offender in your county. If you click on a button, this is where a sex offender lives. [If] you draw a 1,000-foot circle around his house, and pull up all the schools, bus stops, day-care centers, etc., you know immediately if he is violating his parole.'

"We can 3-D model buildings and say, 'OK, you want to take down a meth lab or you want to have a surveillance or SWAT operation? Before you even go, you can do rehearsals, view line of sight, determine a way in, a way out, the best ways to enter, before you ever put an officer in harm's way. You can save lives.' Boy, they jumped all over that."

Virtual Alabama is unique for several reasons. First, the program succeeded where

Virtual Reality
The U.S. Space and Rocket Center, in Huntsville, Ala., aided in the development of Virtual Alabama. Here, the center is rendered in partial 3-D. Created using Google Earth, this image represents one type of imagery Virtual Alabama offers state officials. And, if you look closely, you can see a certain famous airplane has been brought to virtual life.

Virtual Montgomery
This virtual view of downtown Montgomery is an example of the imagery state and local officials can access in Virtual Alabama. The imagery can be used in a variety of ways, including emergency response training, asset tracking, evacuation routing and environmental assessment.

others failed by defeating the jurisdictional and proprietary issues that dog other projects. Walker credits Riley for delivering the necessary executive leadership and Norvin Goddard, a rocket scientist on loan to the state from the U.S. Space and Rocket Center in Huntsville, Ala., for creating an application that uses the power of GIS data and delivers it in a format that even nontechnical emergency personnel can use during a crisis. Walker, a former soldier and firefighter, also believes that the platform Google Earth provides was paramount in making Virtual Alabama a reality.

"We have all 67 counties loaded; it's the most comprehensive data set in the country," Walker said. "No other state has it. What's beautiful about this program is it reflects the best of government."

Virtual Alabama gives emergency personnel — county commissioners, sheriffs, police chiefs, firefighters and emergency managers — the ability to achieve things they wouldn't otherwise be able to do. For example, with the 3-D modeling capabilities built in to Google Earth, law enforcement agencies can visually render a suspected drug lab, allowing SWAT officers to determine lines of sight, and the best entry and exit points. Similarly firefighters racing to a burning structure can quickly determine the fastest route to the site and whether any hazardous materials may be stored there.

Virtual Alabama also provides tools that help emergency officials react to even the most uncommon scenarios, such as a toxic gas cloud that may threaten a population.

"You can do plume modeling on the fly," Walker explained. "Let's say a tanker truck overturns on the interstate and is spilling chlorine gas. We populate all these real-time data centers on Virtual Alabama. I can click a couple of buttons and see what the temperature is — the wind direction, wind speed, etc.

"You factor all this stuff into a little software program called Aloha that's embedded in Virtual Alabama, and it will give you a plume model and tell you — given the fact this is chlorine gas — it's going to go in this direction, these are the people most likely to die, these are going to be incapacitated."

The hardware, software and licensing fees required to build Virtual Alabama set the state back $150,000. Even at such a bargain price, Walker claims Virtual Alabama is the most complete data set in the country. He doesn't appear to be exaggerating.

In addition to the capabilities already described, Virtual Alabama also features the floor plans for all Alabama schools and can layer data describing the concentration of students on campus at any given time. If a school shooting, or the threat of one, is reported, responders can quickly determine how and where the student population is distributed on campus. And if a school has surveillance cameras, the video can be viewed in real time.

What's more, Walker said Virtual Alabama helps cross the digital divide that exists between wealthy counties and their more rural neighbors.

"We've got some pretty poor rural counties in Alabama. It levels the technological playing field. If you've got a computer, you can layer and tailor just like the wealthier parts of the state," Walker said "We're empowering people who've never been empowered before."

Viva Sheboygan

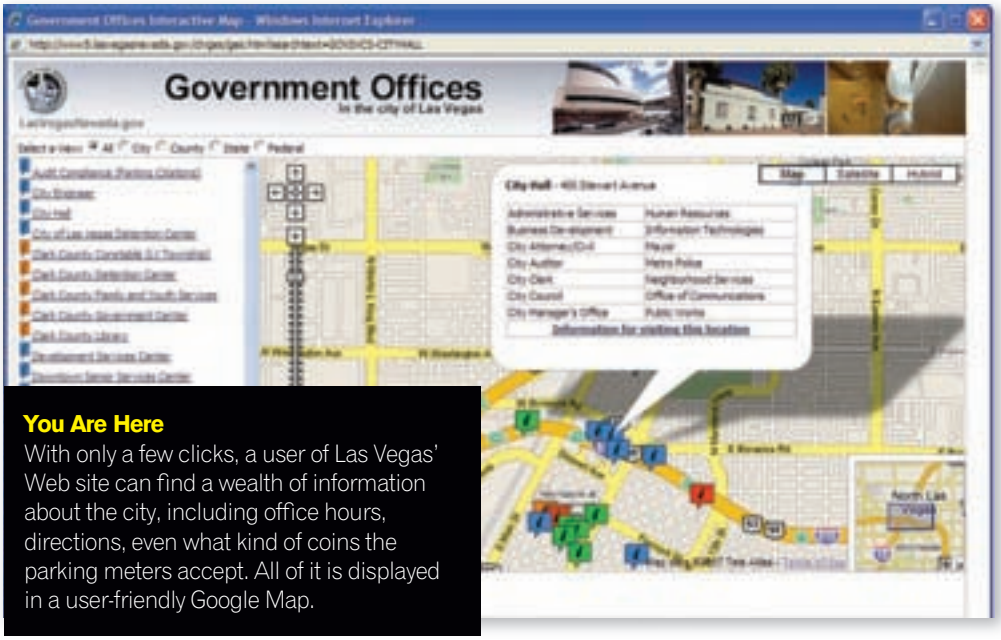
The evolution of GIS is making an impact around the world, though in many cases, you don't have to go anywhere to experience it. Las Vegas and Sheboygan, Wis., are each enhancing the business of government through the use of clever GIS applications.

In Las Vegas, e-government managers Greg Duncan and Anthony Willis are rolling out an array of citizen-facing services that seamlessly employ GIS technology without end-users ever noticing it. Their motivation to deliver tools that use location data stems from a realization that using GIS no longer means you need to have a wealth of expertise.

Inside Out
Using software from Autodesk, military officials can walk the streets of a virtual Baghdad or city planners can model subterranean facilities. They can go inside buildings and underneath them. The cityscapes can be rendered to incorporate features such as electrical wiring, mechanical systems, and water and sewage.

"Instead it can be something where you can answer spatially related questions through a Web browser," Duncan said. "And that's what we've been trying to do with some of the new services we're starting to launch on the city's Web site. The user of the system doesn't have to be a GIS analyst, but [he or she] can still answer spatial questions."

In Sin City, it's the visitors who are usually the ones at the casinos. Residents of Las Vegas



You Are Here
With only a few clicks, a user of Las Vegas' Web site can find a wealth of information about the city, including office hours, directions, even what kind of coins the parking meters accept. All of it is displayed in a user-friendly Google Map.

are just like anyone else. And as Las Vegas grows, people who live there may want to learn more about what their city offers. For example, arranging a special event at a city park used to mean finding the phone number for the parks and recreation department. Now, that service is available online at any time, with the data only a few mouse clicks away.

On the city's site, a user need only look on the left side of the screen and find the "I Want To …" menu. The menu boasts an array of different services that can be accessed easily. One of the choices is "find." Selecting it brings up more options, such as "missing pets," "emergency services" and "parks and facilities." By choosing parks and facilities, a user can search parks by features or address. Currently there are 31 features a user can select to narrow a search — everything from baseball fields to bocce ball to fishing ponds. Once options are selected, the matching parks are displayed, each with a link to Google Maps. All this can be done in a few seconds.

The city also offers an online 311-type service that lets residents and visitors report problems or non emergency incidents. While this might not seem particularly innovative on the surface, what many people don't realize is that a large portion of the famed Las Vegas Strip isn't actually in the city of Las Vegas, but in an unincorporated part of Clark County. With the system the city has built, someone who finds graffiti outside Caesars Palace or suffers a dog bite near The Venetian can simply input the approximate location, and the system will direct the person to the appropriate agency.

"Say someone rolls into a pothole outside the Bellagio in the middle of Las Vegas Blvd.," said Willis. "Many tourists would likely say, 'Hey, city of Las Vegas, you're responsible for this.' But actually it's Clark County. Now, the new way, you just tell what type of problem it is and where it exists, and this utility will link you to the right spot. No map involved, but it's fully GIS as the backbone of this application."

In Sheboygan, Wis., city officials are taking advantage of next-generation GIS to enhance internal operations by providing emergency responders a better look at what they're dealing with. The city wanted a way to give public safety the upper hand when disaster strikes. Tom Horness, the city's GIS specialist, found that software from Autodesk, a company specializing in CAD and 3-D imagery, offered tantalizing possibilities.

Sheboygan officials discovered that by using Autodesk tools, they could render their entire downtown in lifelike 3-D. Even more impressive: The software lets city personnel see inside of buildings and under streets.

"For the city of Sheboygan, they realized they needed to be able to create a fully integrated environment that would enable their first responders, who are inherently nontechnical, to navigate the inside and outside of all the buildings within their city," said Juliana Slye, Autodesk director of government. "To be honest with you, a firefighter is not going to open up a GIS application. They'll start pointing and clicking. They really need something that is just one or two snaps away from giving them all the information."

First, Sheboygan's GIS manager set up a small "pilot project area" by designing just a few buildings and inputting basic footprint data.

"Then they married that footprint data, which is much more of an engineering data, to things like digital personal mapping data and aerial photography," Slye said. "They began to build this really smart digital environment that allowed them to really provide all this precision information in a Web-based interface that any firefighter could quickly navigate."

The Autodesk software takes CAD drawings, blueprints, schematics and GIS data, blends it together and spits out a highly detailed, 3-D rendered environment. For this article, Autodesk provided a virtual tour of what its software is doing for military officials in Iraq. The tour centered on a street in Baghdad, complete with moving cars, pedestrians and structures. One particular building afforded both exterior and interior views. From inside the structure, you can look out the windows and determine where, for example, possible sniper shots might enter.

The software also allows officials to strip away all the structures if they wish, exposing the sewer and electrical infrastructure. In fact, nearly anything designed in CAD and placed on a map can be generated virtually. Autodesk and others are creating virtual worlds that are practical and incorporate real-world data that can be layered just like traditional GIS. Only now,

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the end result is more than the sum of its parts. Most of the data rendered in these virtual structures — the plumbing, the walls, the number of steel girders, the thickness of the drywall in the building — already exists in digital format in the state offices. It's up to agency officials to make the decision to take advantage of it.

"We call it 'democratizing' the design data, breaking it out of the engineering department, and putting it in the hands of the business leader," Slye said. "One of the things we've seen is a really strong synergy now between the nontechnical decision-makers inside of government agencies and the engineering department getting closer together, and closer alignment between what's being created and what's really needed."

Google Earth, Autodesk and a host of other platforms offer possibilities limited only by the imagination. But do these applications threaten the demise of traditional GIS?

Old School Renewal?

It might seem like these new, user-friendly manifestations of GIS data would spell the end for ESRI, CARIS and other traditional GIS solutions providers. But according to those using new-school applications, the opposite is true.

At deCarta, a company specializing in providing geospatial data and imagery to Google, Ask, Rand McNally, Zillow and others, Business Development Vice President Mike Agron said the new GIS opens the door for traditional GIS applications by creating new opportunities to use the data they create.

"The promise of GIS is huge — the promise of location-based information, the promise of location intelligence," Agron said. "I think the broader implications are that location is only going to become more and more important in our decision-making process. It's only going to become more pervasive in everything we do. The likes of the Web, and the power of the Web, are going to make that show."

Web-based GIS platforms signal a revolution in how government uses GIS data to improve citizen services and strengthen internal operations. And a role for traditional, more powerful GIS systems is likely to materialize as it has in Las Vegas, where ESRI tools like ArcGIS do the back-end work, and Google Earth delivers the data in a user-friendly format.

Chikai Ohazama, product manager for Google Earth, said the relationship between old and new need not be adversarial. He said both can coexist and prosper if each is put to proper use.

"ArcGIS is really good at doing analysis of geographical data," he said. "You're trying to do watershed-sort of calculations or all different kinds of models to analyze the data you have. Google Earth, its forte, is more like taking the information that's used, already analyzed, and presenting that to the public so anybody can look at it and see how it impacts them, or see what it means."

Ohazama refers to Google Earth as "GIS for the masses." It's an apt description, given how many people now can utilize location data for a thousand different purposes. All industries and technologies evolve, and the stalwarts eventually are usurped by the upstarts.

But the GIS industry may be different. Now, more than at any time in history, people have incredibly powerful and relevant ways to interact with the world they live in. Whether that world is real, or only a virtual representation, GIS has grown to be far more than a mere electronic map.

Perhaps most important is the fact that — as Chuck Herring, communications director at satellite imagery provider Digital Globe, said — this new generation of GIS is doing what every technology should eventually do: move from an exclusive world of a few experts to an expansive existence where all can reap its benefits to improve lives.

"I think that really the [GIS] revolution has been able to put the basic level of technology in many more people's hands so they can understand how they could utilize it," he said "Once they start using that, they realize the types of services they actually need." GT

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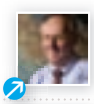

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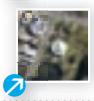

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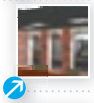

WATCH AN ANIMATED DEMONSTRATION OF AUTODESK'S URBAN VISUALIZATION SOFTWARE.

WATCH GTTV'S REPORT ON MICROSOFT VIRTUAL EARTH.

On the Map: Southern California Wildfires

The wildfires that ravaged Southern California in late 2007 developed into an opportunity for people to communicate using GIS data and maps. Numerous residents and media outlets throughout Los Angeles and San Diego took advantage of Google Maps' personalization tools to quickly build maps that featured a wealth of valuable information. The tool makes it easy for users to create custom points and areas of interest, which can be updated almost instantly. Users can also easily add photos and video.

As the fires raged, maps began populating the Web showing residents where the fires were at any given time, where evacuation shelters were located, which roads were open and which were closed — there were even maps displaying shelters offering refuge for large animals like horses.

Government facilities, education institutions, news outlets and average citizens used the power of GIS to exchange and share information about the disaster while it was happening, helping to illustrate just how important a role GIS mapping has come to play in our lives.

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BY TOD NEWCOMBE | EDITOR, *PUBLIC CIO*

TENNESSEE'S PHIL BREDESEN COUNTS COMPUTER PROGRAMMING AS ONE OF HIS SKILLS. MODERNIZING GOVERNMENT WITH TECHNOLOGY IS ANOTHER.

NASHVILLE, TENN., MIGHT BE THE NATION'S COUNTRY MUSIC CAPITAL, but it's all business in the statehouse, where Gov. Phil Bredesen has resided since 2002. Bredesen draws on his experience as a computer programmer and health-care executive as he leads the nation's 16th most-populous state

Bredesen said his goal is to modernize how state operations run — and that includes information technology. "My priorities have been twofold," he told *Government Technology* magazine. "I want to leave behind better internal systems than the ones I found when I became governor. Second, I want to keep exploring how we use IT to deliver services to the outside world. That's a little more complex than putting up another Web page."

Re-elected in 2006 in a landslide victory, Bredesen has made education a priority, boosting teachers' pay and expanding the state's pre-kindergarten program, while also trying to raise high-school graduation rates. Other priorities for Bredesen — who was Nashville's mayor from 1991 to 1999 — include increasing the number of jobs in the state, enhancing government transparency and improving health care.

While the governor sticks to the big picture when it comes to IT, he's quite comfortable with the subject matter. After working as a computer programmer, Bredesen launched his own IT firm between stints as mayor and governor. In 1980, he founded HealthAmerica Corp., a health-care management firm.

He recognizes both the potential and challenge that comes with trying to use IT to deliver something as complex as government services. As a former businessman, he understands the value that technology brings to improving the business process; at the same time, he realizes there's a cost to IT and it must be viewed as a tool — not a panacea.

PHOTOS BY BOB SCHATZ

Governing IT at Three Levels

Bredesen sees three primary roles for IT in his state: simplifying state operations, improving service delivery and boosting economic development.

For instance, Tennessee used IT to reduce complexity and improve the performance of its Medicaid system. "We offer a huge array of services. Those are all areas where IT cannot only save the state money, but also allows us to better serve the public," he said.

Education Makeover

As mayor of Nashville, Phil Bredesen added more than 440 new teachers, built 32 new schools and renovated 43 others. He also implemented a back-to-basics curriculum to teach students learning fundamentals.

When Bredesen became governor in 2002, the state's Medicaid program, known as TennCare, was in deep financial trouble. To help turn it around, the governor used IT to improve core business functions. The state completely overhauled TennCare's management information system, allowing it to take advantage of new programs and service delivery methods. As a result, TennCare turned the corner. What once was complex, hard to run and a magnet for bad press is now a "much quieter, more invisible piece" of government operations, according to Bredesen.

Another example of IT's potential to streamline complex operations is Tennessee's enterprise resource planning (ERP) initiative, nicknamed Project Edison. The $150 million implementation will simplify everything from state purchasing and human resources to financials and accounting. "Project Edison is also an opportunity for us to relook at other processes and workflows in the state, and will ultimately lead us to make changes in the law itself to recognize the different world of 2008 from when a lot of this stuff was first put together," explained Bredesen.

In addition, the governor is using the state's Web portal — ranked best in its class in 2005 by the Center for Digital Government — to bring more state functions online. Services available on Tennessee.gov range from hunting and fishing licenses to insurance applications for the state's new health-care program for the uninsured. What's important, according to Bredesen, is keeping the site current. "The Web site is a dynamic thing we have to keep up to date. When new things happen, we have to make sure we can incorporate them."

Bye-Bye Stovepipes

Tennessee state government currently relies on stovepiped databases, but Project Edison will use a common database that allows the system to share information between business functions within an agency and across agencies statewide.

Removing Barriers

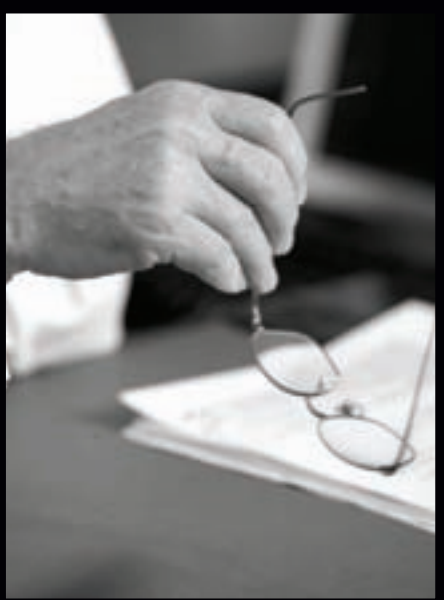
Broadband Internet access will be a vital ingredient in Tennessee's economic growth, Bredesen said. "We want to make sure the technology infrastructure is present in the state in the form of broadband. IT at that level allows us to recruit technologically oriented companies."

But government should have a limited role in pushing broadband infrastructure in the state, according to the governor. First and foremost, neither the state nor localities should be in the broadband provider business, he said. "When I was mayor of Nashville, I never had an interest in [providing] citywide wireless. I don't think we could do that particularly well, and we would always be behind the times."

Instead, government should concentrate on removing legal barriers that hinder broadband growth, and provide targeted subsidies or tax incentives to encourage private-sector growth.

The challenge is encouraging the private sector to build broadband in all segments of society, eliminating the disparity between Internet-rich suburbs and the broadband-poor inner cities and rural areas, including schools. Bredesen spoke philosophically about the old divide between communities that had four-lane roads and those that did not. Now, it's all about reaching communities with broadband — the informational roads of today.

When it comes to broadband and education, Bredesen said the state's public higher-education system is well wired. But the state needs to make more progress at the high-school level, especially in the form of distance-learning programs that let schools offer specialized classes for smaller groups of students. "That way, school districts don't have to figure out how to hire a teacher who's an expert in a subject that only interests 14 students," he said. With broadband, those teaching skills can be shared more readily.



Mixed Feelings

Like a growing number of state and local governments, Tennessee is consolidating its many data centers, e-mail servers and storage

networks. Beginning in 2006, the state Office for Information Resources embarked on a massive IT consolidation initiative that has virtualized more than 117 servers thus far, with another 128 to go. The IT agency is deploying Oracle's grid computing concept, which allows for server clusters and the use of lower-cost processors. In addition, the state implemented a storage area network for enterprise storage.

Unlike some government CEOs, Bredesen has mixed feelings about using outsourcing to solve the persistent need for new and up-to-date technology. For instance, Tennessee opted not to outsource IT operations as part of its consolidation initiative because of its experience with TennCare.

"One of our biggest IT systems is our Medicaid program, which is outsourced," he pointed out. Technically the contract is up for bid every five years, but as Bredesen said, the contract and the company running the Medicaid system are both so large, nobody else bids on the contract; the advantage of competition is lost. The benefit of outsourcing, though, is that it lets the state inject expertise that it otherwise might not have into a program.

"Even though my background is as a businessman, I don't view privatization as a panacea. It's one of the tools in the box that has its pluses and minuses," Bredesen explained.

Tennessee's Technology Toolkit

Five technologies make up Tennessee's enterprise architecture:

Server consolidation and virtualization: More than 200 servers will be virtualized to reduce staffing and resources needed to support distributed applications.

Messaging service: The state expects to save $24 million in six years with its new messaging service.

Enterprise Content Management: The state has developed enterprise content management capabilities to process and store government data.

Grid computing: The state uses Oracle's grid computing concept to take advantage of improved technologies, such as lower-cost processors, network storage, enhanced operating systems and server communications connections. Tennessee also has improved system reliability by using Oracle's Real Application Clusters.

Enterprise Shared Storage: The state has implemented a high-availability storage network.

SOURCE: TENNESSEE OFFICE FOR INFORMATION RESOURCES

Cast in Stone

Bredesen said his IT policy for the state is grounded in the fundamentals. "We need to get our systems up to date, make sure we have a modern system to run social services, for example," he said. "It's not sexy, but you have to get [the basics] right, and the results will show up in our ability to provide better services."

Beyond simply making the technology work is the bigger issue of changing business processes so the state can maximize the benefit of new technology.

"There are things that are cast in stone here that, if I were a CEO of a company, I could change quickly," said Bredesen, adding that laws that made perfect sense 40 or 50 years ago no longer apply to the world that exists today. "One of the big challenges is how do you use IT in a more sophisticated way than just automating not very effective processes? I've found that to be the biggest challenge."

The need to update laws and regulations that are out-of-step with the transformative powers of technology isn't confined to statehouses. It's a challenge that stretches to Congress, said Bredesen. "Anytime you have a complex system, such as our social programs, with all sorts of silos of information, and funding mechanisms that go along with those silos — it really stifles your ability to transform."

Given his IT background, the governor's views on technology are distinctly practical and business-minded. When asked what he would like his IT legacy for the state to be, Bredesen spoke simply: "What I'm trying to do is bring government a little more into the modern era. A piece of that is IT. I'd like to leave a system that is more modern." GT

Technology in Education

In December 2007, students at Jackson, Tenn.'s Liberty Technology Magnet High School — one of eight schools allowed to participate — watched a legislative hearing in Nashville from the school library via computer video stream, and asked questions of Gov. Phil Bredesen via e-mail.

Back to the Drawing Board

Can WiMAX save municipal wireless?

Over the past several years, hundreds of U.S. cities launched municipal wireless initiatives, as widespread wireless Internet access became the latest must-have for local officials bent on keeping their communities economically competitive. But that activity cooled significantly in the latter half of 2007.

The chill stems from several factors. The implosion of the "free" business model that attracted wide interest in municipal Wi-Fi has left many cities unsure of how to pursue wireless Internet access on a community-wide scale. Furthermore, shortcomings with the wireless technologies used to deliver municipal networks created other unforeseen challenges.

The business-model problems are well documented. Many projects called for commercial network providers to foot the bill for citywide Wi-Fi networks in exchange for mounting wireless antennas on public light poles and other assets. Closing the digital divide was a driver for many of these undertakings, which pinned hopes of network use on the public's appetite for low-cost wireless Internet. For the most part, the networks struggled to attract enough subscribers to make them profitable.

These difficulties were on clear display in 2007 as EarthLink — a major player in the municipal wireless market — cut nearly half its work force after losing millions of dollars on the initiatives. EarthLink CEO Rolla Huff announced the company would back away from further municipal wireless projects until it found a viable business model.

On the technology side, municipal wireless initiatives often ran into higher-than-expected equipment costs, as the task of blanketing large urban areas with Wi-Fi coverage proved harder than anticipated. Cities and their private partners found that hundreds — if not thousands — of Wi-Fi access points were needed to provide adequate coverage.

Where does that leave cities, many of which still want municipal wireless networks?

Cities and commercial wireless providers will hash out better business models. But

ANDY OPSAHL | FEATURES EDITOR | ILLUSTRATION BY TOM McKEITH

the lull in new development could offer local governments time to evaluate alternative technologies for simplifying the process of delivering widespread wireless coverage.

A Better Way?

WiMAX, which can produce a wireless cloud connectivity to an entire city using just a few base stations, is emerging as a viable alternative. WiMAX networks require access points roughly every two square miles for urban areas, and one every six square miles for rural areas. By contrast, Wi-Fi networks require anywhere from 24 to 40 access points per square mile for urban areas, said to Riz Khaliq, IBM global business executive for government. Depending on terrain, cities often need a few extra WiMAX antennas attached to buildings to complete the cloud. But that is simpler than installing hundreds of tiny Wi-Fi nodes all over town.

Coming Soon
For the most part, WiMAX-equipped computer hardware has yet to reach the market. But Intel plans to release a plethora of mobile devices with embedded WiMAX capabilities in 2008.

Depending on user proximity, WiMAX can offer stronger signals and faster service than Wi-Fi, but few local governments have implemented it. One reason is computer hardware with embedded WiMAX capabilities largely has not yet reached the market. By comparison, virtually all laptops and other mobile devices feature Wi-Fi capability.

But Wi-Fi's lock on hardware compatibility may end within the next few years: Intel has committed to release a plethora of mobile devices with embedded WiMAX compatibilities by 2008. Sprint continues its commitment to spread WiMAX networks across the United States despite its failed attempt to do so in partnership with Internet service provider Clearwire. Nokia and Cisco have also signaled strong interest in WiMAX through their investments, Khaliq said.

Citywide WiMAX
Brownsville, Texas, chose WiMAX over Wi-Fi to build its citywide network. The project was scheduled to be operational this month.

"Cisco's recent purchase of Navini, [a WiMAX equipment provider], is a big example of where WiMAX is becoming, essentially, industry standard," he said. "In the longer term, that's going to commoditize the network, which is going to improve the value and the reasons for these governments to make sure their government has the cloud over their station."

Some assert that local governments should stick to Wi-Fi because their hardware infrastructures are already Wi-Fi compliant. Many cities and counties can't afford to replace all of their hardware at once or retrofit it with WiMAX conversion cards to use the network, said Craig Settles, an Oakland, Calif.-based analyst specializing in municipal wireless.

"The near-universal availability of Wi-Fi means these cards are already built into end-user devices with no extra costs, as opposed to adding $150 cards for each user," Settles said. "If you have several hundred or a couple thousand people, this isn't cheap. And if departments buy these cards on their own, there's no guarantee of uniformity, which means higher device management costs. What's more, WiMAX cards may not be compatible with hardware cities already have, so either you don't equip everyone, or you buy new computing devices."

Others suggest a combination of Wi-Fi and WiMAX, in which WiMAX functions as a backhaul. In that scenario, a government would produce WiMAX signals, but install Wi-Fi nodes at the end of them. This way, as WiMAX-compliant hardware becomes available, end-users can switch to a straight WiMAX connection when they desire. The hybrid model also offers a Wi-Fi network future redundancy. In the event a given Wi-Fi access point failed, the user could quickly switch to a WiMAX connection.

Settles supports the WiMAX backhaul option. "WiMAX has backhaul value — usefulness where there is fairly flat terrain and a great option when you don't have light poles or have homes that are spaced hundreds of yards from each other," he said.

As local governments go back to the drawing board for municipal wireless plans, a look at the status of WiMAX may show the nationwide municipal Wi-Fi setback to be a gift in disguise. Once a government builds a technological infrastructure, it is typically stuck with it for several years past its prime. Before governments continue marching toward municipal Wi-Fi, could a shift toward WiMAX keep local governments moving in a cutting-edge direction?

> "We're not building a toy here. This is not for home use. **This is in government.** **It needs to be secure.** It needs to be consistent. It needs to be up 365 days a year and can't be down if you've got public safety on it."
>
> **Gail Bruciak,** *management information systems director, Brownsville, Texas*

The Long View in Brownsville

Brownsville, Texas, plans to have its citywide WiMAX network fully functional by January 2008. The city opted for WiMAX, not wanting to deploy and maintain hundreds of Wi-Fi access points, according to Gail Bruciak, management information systems

director of Brownsville. The city will spend roughly $2 million for the network.

"At the very beginning, we started looking at Wi-Fi mesh networks, talked to different entities and it became a question of how many units we wanted to maintain," Bruciak said. "Did we want to maintain 1,000 or 2,000? We didn't want to shoot ourselves in the foot. Who was going to manage all those access points?"

She said the city wasn't interested in saddling its IT work force with that sort of maintenance demand. Three base stations will blanket Brownsville's flat terrain with WiMAX coverage. Rather than waiting for WiMAX-embedded products to hit the market, Brownsville is retrofitting its mobile devices with WiMAX antennas and conversion cards as part of the project's start-up costs. The city will purchase 100 PCMCIA antenna units for $250 each and 150 CPE WiMAX conversion cards at $195 each.

The city's MIS leadership believes that WiMAX is the future of municipal wireless networks. "We are all sitting here waiting for the Institute of Electrical and Electronics Engineers (IEEE) to get themselves together and come up with the standards that everybody's going to use," Bruciak said. "However, I think everybody's headed toward WiMAX."

Some WiMAX critics point to the technology's higher cost, noting that most Wi-Fi equipment is sold at major commercial electronics stores. Bruciak rejects the lure of Wi-Fi's cheaper hardware.

"I've had some people say, 'Well, you can go get Wi-Fi equipment at Best Buy or Circuit City.' We're not building a toy here. This is not for home use. This is a government," Bruciak said. "It needs to be secure. It needs to be consistent. It needs to be up 365 days a year and can't be down if you've got public safety on it. It's not as simplistic as people would like it to be."

WiMAX proponents contend the technology can save governments more money in the long term because they won't pay IT staff to maintain countless Wi-Fi nodes across town. As for the deployment, Bruciak said it has gone relatively smoothly. Land-use regulations and weather were the only obstacles the project faced.

Once the network is fully functional, Brownsville will deploy mobile applications for government workers in the field. Among the planned deployments are new tools for building and health code inspectors. New World Systems will provide the mobile applications using a .NET platform, allowing end-users to work in the familiar Microsoft Windows environment. These applications will interface with the city's GIS and financial systems. Users will access the application via a Citrix front-end.

The network also will provide broadband connectivity to workstations at firehouses, police stations and other government buildings.

Another Early Adopter

Manchester, Conn., deployed Wi-Fi at one of its heavily frequented sections in 2002, but bypassed the citywide municipal Wi-Fi option in favor of WiMAX.

Reader Survey: WiMAX

In December, *Government Technology* surveyed a portion of our state and local government readers on their awareness of and interest in WiMAX technology. We received 171 responses — 60 percent from state government, 24 percent from city government and 13 percent from county government (3 percent answered "other").

Here's what they had to say:

1. How familiar are you with WiMAX?

Very knowledgeable	4%
Somewhat knowledgeable	26%
Heard of it, but don't know much about it	35%
Never heard of it	**36%**

2. Has your jurisdiction considered a WiMAX deployment?

Not considered	21%
Interested, but no planning has begun	23%
Planned, but not deployed	5%
Deployed	1%
Don't know	**50%**

3. What would be the primary use for your WiMAX network?

Public safety	33%
Public access	24%
Fixed Internet access for government buildings	7%
Field access for government employees	**36%**

4. Why is your jurisdiction considering WiMAX over other wireless technologies?

Security	33%
Cost	35%
Simplicity of deployment	30%
A good addition to jurisdiction's existing fiber infrastructure	28%
We're still considering a number of wireless options	**61%**

5. What is the reason WiMAX is not under consideration?

We are not interested in deploying any wireless infrastructure at this time	**41%**
We are waiting for the market to mature	24%
We don't want to own/maintain the infrastructure	31%
We don't want to be an early adopter/technology untested	28%

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Synopsis: Waukesha, Wis., implements green technologies, going ahead of the curve on practices that will likely become standard in the Midwest.

Agency: Waukesha Department of Public Works.

Technologies: Energy-efficient data centers, LED lights, solar energy.

Contact: Larry Nelson, mayor, Waukesha, Wis., mayor@ci.waukesha.wi.us.

Waukesha Goes Green

Wisconsin city's green project saves not only the environment, but money as well.

A domino effect of local government green initiatives is sweeping the nation. The U.S. Conference of Mayors (USCM) recently announced that more than 700 mayors have signed the USCM's Climate Protection Agreement, committing to pursue numerous green measures.

In Waukesha, Wis., however, a major green rollout was implemented before the pressure to conform started, and many local governments soon plan to do many of the things Waukesha has already completed.

Waukesha Mayor Larry Nelson attended his first USCM event in 2006, when the organization first asked mayors to sign the climate protection agreement.

Nelson said he wanted to hold back until he could show an actual Waukesha green initiative. He confidently signed onto the agreement this year.

"In talking to different mayors, I got the impression that some were really doing a lot," he said, "but some were kind of paying lip service."

The city tapped Johnson Controls, which specializes in building efficiency and power solutions, to do an energy efficiency audit of Waukesha. The result was a massive greening project that changed the way the city lights buildings and traffic signals, uses water and cools its IT data center.

The project cost $1.6 million, and $400,000 came from a federal grant to replace all traffic lights with light-emitting diode (LED) technology. The city expects to save $2 million over the next 10 years for its trouble. And if the projected savings prove false, Johnson Controls will reimburse the city for its investment.

Light with Less Energy

Roughly 20 percent of man-made greenhouse gases comes from lighting, making energy-efficient light bulbs an obvious solution for city governments. The mayor's team attached "daylight harvesting" devices to the fluorescent lights in several buildings to gauge existing natural light and adjust how much artificial light the bulbs emit. Light energy usage drops 80 percent during peak sunshine time using these devices.

The city deployed these sensors only in buildings with plentiful access to natural light.

"We put the light sensors in the police department, library, wastewater treatment plant, — which is many facilities within a plant — and City Hall," said Katie Jelacic, spokeswoman for the Waukesha Department of Public Works.

She said the project put Waukesha ahead of most cities in the Midwest. The city was the first in its county to implement a major green initiative.

"Sustainable energy will eventually become a required code, at least around the Midwest. They're right on the cutting edge, and I assume we will be using [light sensors] exclusively in our buildings," Jelacic said.

Also, skylights are becoming a standard inclusion in new government and private- sector buildings, often mandated by government, said Kip Hirschbach, CEO of Axis Technologies, Waukesha's daylight harvesting provider. Naturally Axis Technologies' business is surging because of it, he said.

The city also slashed energy usage at traffic lights by converting them to LED technology. LED traffic lights last 10 years, compared with

BY ANDY OPSAHL | FEATURES EDITOR

two years for traditional bulbs. This enabled the city to drastically reduce traffic light maintenance, which clogs busy streets.

Jelacic said the LED conversion would cut the cost of running a single intersection from $1,200 to $450 per year.

Other Efficiencies

Data centers are typically a massive power drain for governments, making green data centers critical power savers. Waukesha deployed a more energy-efficient cooling system in its data center, which, at roughly 680 square feet, is larger than the facilities in most nearby cities, said Bret Mantey, IT director of Waukesha.

"It compares to the county data center closely, but not as large as, say, Milwaukee. All other cities in the county are a broom closet in comparison," Mantey said.

California now requires "daylight harvesting" devices — which attach to fluorescent lights to gauge existing natural light and adjust how much artificial light the bulbs emit — in all new government buildings, said Kip Hirschbach, CEO of Axis Technologies.

The city uses blade servers and server virtualization software to reduce the number of servers it powers in the data center.

The city also implemented new water usage efficiency measures, such as low-flush toilets. The change produced a 77 percent drop in Waukesha City Hall's energy bill alone, Jelacic said. City Hall's water bill averaged $1,650 before Waukesha's green initiative, and now it averages about $300. In addition, City Hall used 323,000 gallons of water per month before the initiative and now uses 74,000 gallons. Heating ventilation and air conditioning offered another conservation opportunity: Waukesha switched to energy-efficient boilers in four buildings.

Beyond Government

Green technology is one of the rare areas where some governments try to influence the private sector to adopt a technology, rather than the opposite. Some local government officials implement major solar panel deployments in part to raise the solar energy's market profile. Nelson is planning a marketing campaign to prospective Waukesha businesses encouraging them to embrace green architecture. He said Wal-Mart already took the lead on green architecture.

"We just made preliminary approval for the first Super Wal-Mart that's going to have more than 100 skylights in it," Nelson said. "I have two pages on what Wal-Mart is doing to make their building more green and sustainable. This is something Wal-Mart's top leadership decided two or three years ago.

"They were going to change the way they did business. They realized they could save a ton of money."

He said the city's planning commission is still establishing the types of green architecture it would mandate, but it had already mandated some construction features.

"We have a 55-acre infill development that's going to have a Target store as its anchor. Part of the approval for their preliminary plan was to have a connection to a bike and hiking trail with a little park area in the upper northwest corner of the development," Nelson said. "We're having more green space and trees than the normal amount of parking — where you'd have massive parking and very little green space."

Green and Trendy

Local governments, Hirschbach said, are far ahead of state governments at going green.

"A lot of cities, especially in California, are embracing green technology to solve their energy woes," he said.

And bottom lines in government and the private sector are what finally mobilized green technology beyond fringe users, Nelson said.

"It's not like 10 years ago when people were saying these environmental measures would hurt business and economic development. The opposite is the case. There is recognition that these green sustainable practices are good for business, local governments, homeowners and taxpayers," Nelson said. "I think we're at the cutting edge of what's going on here." GT

Q&A: Larry Nelson

In early November 2007, more than 100 mayors gathered in Seattle for the U.S. Conference of Mayors Climate Protection Summit, featuring former Vice President Al Gore. The event marked Waukesha, Wis., Mayor Larry Nelson's second visit to the conference. He said he noticed a major increase in green motivation among his fellow mayors, compared to the 2006 event.

Q: Did you encounter any obstacles to your green initiative?

A: The energy efficiency contract was very non-controversial, because it was a win-win where it satisfied saving taxpayers money and also doing things that will help to the environment.

Q: Is the green issue trendy due to increased environmental concern, or because of the financial convenience?

A: Though it's true businesses might not be doing it for altruistic reasons, it's good business. It's financially making sense. I think it's very significant because 10 years ago, there was the argument that if you did environmental practices, that was bad for business. That argument seems out the window.

Q: Why are local governments ahead of states and the federal government on this issue?

A: One great thing about being a mayor is that you only have to convince a majority of your common council to get something done. That's much easier than getting a whole state legislature or a majority of Congress to get things done. Unfortunately at the state and national levels, there has been a lot of animosity and finger-pointing instead of looking for solutions.

Q: Do you see a change in mayors' attitudes compared to the 2006 conference?

A: I think so. We're at the end of 2007. It has gone from 100 mayors to more than 700 mayors signing on [to the U.S. Conference of Mayors Climate Protection Agreement]. There is momentum and enthusiasm building. We just heard a satellite speech from former Vice President Gore. I think his being awarded the Nobel Peace Prize is very significant because for most people that's recognized not as a political award, but one for doing something good for humankind.

Collaring Dangerous Dogs

Virginia's new online registry discloses the location of vicious pets.

Synopsis: A new online registry in Virginia, modeled after the state's sex offender registry, logs dangerous dogs.

Agency: Virginia Department of Agriculture.

Technology: Web database.

Contact: Elaine J. Lidholm, director, Office of Communication and Promotions, Virginia Department of Agriculture and Consumer Services, 804/786-7686.

One angry outburst from family pets in Virginia can lead to serious consequences — a lesson some pet owners are learning the hard way.

Responding to a growing number of citizen complaints about vicious dogs, the state launched an online registry — which works similarly to the Sex Offenders Registry — to provide pictures, addresses and information about dangerous animals.

This meant policymakers had to reach a consensus on how to protect people from injury while tapping the necessary technology to disseminate information effectively. The Dangerous Dogs Web site went live in July 2007 after the Virginia General Assembly approved legislation mandating the registration of threatening pets and dissemination of that information to the community.

Public Response

Elaine Lidholm, director of the Virginia Department of Agriculture and Consumer Services (VDACS) Office of Communication and Promotions, said public opinion of the new service is divided — with some calling the online registry too harsh, and others contending it's not harsh enough.

"For the entire month of July and into the first two weeks of August, the stream [of comments] was never ending," Lidholm said. The agency didn't track the amount of correspondence collected, but she said the VDACS and the State Veterinarian's Office received daily e-mail or phone calls regarding the registry.

"The 'too far' camp is using words like 'McCarthyism,' 'invasion of privacy' and 'over-stepping our bounds,'" she said. "The 'not far enough' group wants more information and details about the acts committed by the dogs, would like to see more strictures put on the owners, or thinks the law is too lenient in what constitutes a dangerous dog."

Citizens also complained that the list ignored certain regions — something Lidholm attributes to the newness of the site.

"We have had a lot of comments from people complaining that their localities aren't listed yet," she said, "But that is changing as more come online. We've had a few people who simply wrote to say 'Thank you.' One that stands out is a couple who likes to bicycle through Virginia and use the registry to see if there are any dangerous dogs on one of their proposed biking routes."

Developing a Dog Tracker

Creating the registry was an arduous process for the VDACS and the Office of the State Veterinarian, which developed a system and criteria for classifying dogs as candidates for the list. In Virginia, 133 jurisdictions received questionnaires from the two state agencies to determine what features to include and how to ensure fairness.

BY TAMARA WARTA | CONTRIBUTING WRITER

"The 'too far' camp is using words like **'McCarthyism,' 'invasion of privacy'** and **'over-stepping our bounds.'"**

Elaine Lidholm, *director, Office of Communication and Promotions, Virginia Department of Agriculture and Consumer Services*

Any resident of a participating community can file a complaint, but citizens don't upload data directly. After an extensive meeting between the VDACS and the attorney general, it was determined that local animal control sites and other officials representing animal safety would filter any and all information to be posted onto the site.

This tactic is designed to ensure that dogs aren't placed on the list due to a neighborhood feud or some other personal vendetta. By requiring the dogs to be declared dangerous by a local official or court, the state hopes to reduce unnecessary blacklisting and angry feedback from residents.

Eighteen states including Virginia have a "one bite law," which protects a dog's owner from being liable for the dog's first biting incident. If it's determined, however, that the owner was negligent or violated the leash law then the owner is held accountable.

Dogs can be officially declared dangerous after just one biting incident. Placement on the registry is determined by a number of factors, such as past owner history, known temperament of dog, breed characteristics and number of complaints filed. Temperament history, however, holds the most importance.

Security technology in the form of a tightly monitored Web site ensures only truly menacing dogs appear on the registry. A PIN is supplied to county workers representing each jurisdiction, and the site is also password protected.

People for the Ethical Treatment of Animals (PETA), which is based in Norfolk, Va., worked closely with the VDACS on the registry.

PETA Spokeswoman Laura Brown said the registry may encourage responsible ownership practices. Requiring pet owners to take more responsibility for their dogs will help reduce the number of dog attacks each year, she said. It also may promote spaying and neutering to control the pet population, and inspire families to consider more thoroughly the life changes caused by bringing an animal into the home.

The registry, however, created at least one unintended consequence. Fearing that their pets might wind up on the registry, some citizens have responded by chaining their dogs, which can trigger the very type of undesirable behavior the registry is meant to prevent.

"Sadly we are seeing an increasing number of chained dog attacks on people, with mainly children being the victims," Brown said. "Chained dogs are deprived of all that is natural to them and are driven mad by confinement."

In fact, Lidholm said many dogs wind up on the registry because of neglect, which results in natural, aggressive instincts coming out strongly in the personality of an otherwise loving family pet.

Blacklisted

Once an animal lands on the registry, it's very difficult to get off. Owners must purchase a $100,000 insurance policy; place signs in the windows of their home and attach special tags to the dog's collar.

"The 'not far enough' group wants more information and details about the acts committed by the dogs, would like to see more strictures put on the owners or thinks the law is too lenient in **what constitutes a dangerous dog**."

Elaine Lidholm, *director, Office of Communication and Promotions, Virginia Department of Agriculture and Consumer Services*

Owners of pets on the registry must update their residence information and other data annually. Dogs are removed from the registry when they die or their owners move out of state.

However, it seems leaving Virginia won't get owners of dangerous dogs off the hook for long. Other governments — such as various counties in Florida, Pennsylvania and California — are following suit. GT

Fast Stats

According to the 2007-2008 National Pet Owners survey, 63 percent or 71.1 million U.S. households own a pet — 44.8 million households own dogs, but a total of 74.8 million dogs are owned as pets in the U.S.

Every year, nearly 4.7 million people are bitten by dogs and about 800,000, half of them children, seek medical attention, according to the Centers for Disease Control and Prevention.

Some insurance companies do not provide homeowner's insurance to patrons who have blacklisted breeds, such as pit bulls, chows, Siberian huskies, Doberman pinschers, rottweilers, Akitas, Alaskan malamutes, American Staffordshire terriers, German shepherds, Great Danes and wolf hybrids.

Synopsis: A look at the eC3 report on government and Web 2.0.

Jurisdictions: DMV, Virginia.

Technology: Web 2.0.

Contact: Kinney Poynter, administrative agent, eC3, 859/276-1147.

Public Sector Goes Web 2.0

More than 200 people have visited a Second Life recruiting kiosk for Missouri state government IT jobs since the site was established in late 2007.

A new report urges government to get in the game.

Do Second Life and Google AdSense represent a fundamental shift in how we conduct our online lives? Does Wikipedia really signal that the age of Web 2.0 is upon us? Or is it all just modern vaporware — interesting applications that have little practical value?

Depending whom you believe, Web 2.0 is the launch pad for a brave new online world, or another in a long line of made-up phrases describing what some choose to perceive.

While questions about its veracity persist, the Web 2.0 phenomenon continues to command serious attention from analysts and insiders across all sectors, including government. In an attempt to better grasp how government ought to operate in a Web 2.0 world, the National Electronic Commerce Coordinating Council (eC3), a consortium of leaders from both the public and private sectors, recently held its 2007 symposium, Government in the Age of YouTube. Participants included high-level government officials, private-sector technology executives, and public opinion and thought leaders.

In December 2007, eC3 released an executive summary of the symposium — created with input from symposium participants — which notes that barriers to participation in government's Web-based, citizen-facing applications will begin to diminish any appeal a government site may possess.

2.0 Be or Not 2.0 Be

The phrase "Web 2.0" was coined in 2004 at the O'Reilly Media Conference, and since then, has been assigned myriad definitions.

Some say Web 2.0 is a new generation of Web sites that foster user collaboration, creativity and connectivity — sites such as MySpace, Flickr, Wikipedia and YouTube. Others contend Web 2.0 is little more than the natural progression of Web technology. There is also a contingent that condemns Web 2.0 as nothing but a clever marketing ploy that has already suckered a good number of people.

The difficulty in trying to define Web 2.0 is evident in a document written by O'Reilly Media's Tim O'Reilly. *What Is Web 2.0* spans five pages and tries to separate fact from fiction. O'Reilly believes Web 2.0 is embodied by applications that deliver richer user experiences and harness collective intelligence — two things most government Web sites don't do well.

Sites like Flickr and Amazon — which permits users to create tag clouds to categorize photos and thrives on user reviews, respectively — foster a loyal user community. Their success goes a long way toward dismissing the skeptics' claim that Web 2.0 is a flash in the pan.

Operating under the supposition Web 2.0 is indeed a reality, the eC3 symposium asked fundamental questions: How can government use Web 2.0 technologies? And how will Web 2.0 affect government? The consensus seems to be Web 2.0 can help government enhance its existing relationship with citizens by creating new avenues of interaction.

"This whole suite of tools is far more participatory in its nature," said Iowa CIO John Gillispie, president of the National Association of State Chief Information Officers (NASCIO). "So clearly, getting more participation by citizens with their government is an objective that is very worthwhile."

Symposium participants found that virtually all of government's Web-based, citizen-facing applications tend to fall short in terms of participation. According to the summary, "Most 'government 1.0' applications, such as licensing, e-voting, online tax filing and search tools, are based on straightforward

BY CHAD VANDER VEEN | TECHNOLOGY AND POLITICS EDITOR

transactions that are bounded. That is, an online form, structured by a government entity, replaces an analogous, traditionally paper-based process."

In the symposium summary, it's argued that barriers to participation will begin to diminish any appeal a government site may possess. One such barrier, said symposium participant John Komensky, senior fellow at the IBM Center for the Business of Government, is often manifested by government CIOs, many of whom are befuddled by the nexus of traditional 1.0 security requirements and the 2.0 desire for openness.

"CIOs in a lot of government agencies talk about security and privacy and all this stuff, and people are saying, 'We've got to get information out to our citizens,' and they're just going out and doing it," Komensky said. "So in a way, some of these Web 2.0 technologies are end-running things like citizen records access. Not because people want to end-run laws, but because they want to get stuff out to citizens, and their agency or state CIOs are blocking them from using the technologies everybody else is using."

Komensky added that elected officials in government tend to have a better understanding of Web 2.0's value because, in many cases, they needed to take advantage of 2.0 tools to connect with constituents.

Government has been perceived as a slow adopter, and in the case of Web 2.0, the reality is no different. In fact, trendsetters like Tara Hunt, symposium participant and co-founder of Internet consultancy Citizen Agency, would argue that even having an event called Government in the Age of YouTube proves government is already behind the curve. Hunt said she believes the Web 2.0 era dictates government must work toward openness by facilitating collaboration with citizens. This will require government to share some control of content.

"The more information you put out there, the more opportunities you give for citizen engagement," Hunt wrote for a presentation on Government 2.0. "You really must loosen the grips of control. Nobody wants to collaborate with a control freak."

Hunt's outlook on Web 2.0 has made her a sought-after speaker: She's appeared at several government conferences, including NASCIO's Annual Meeting. Her provocative presentations — most are available online

> "… getting **more participation** by citizens with their government is an objective that is **very worthwhile**."
>
> **John Gillispie,** *Iowa CIO*

— seem to strike a chord with audiences who relate to her liberal use of pop culture and Web-related references. Speaking at the Government Information Systems conference in New Zealand, Hunt told the crowd, "We need to change the way we approach service, viewing the public not as a recipient, but as more of a partner."

Web 2.0 is the next great opportunity for government to make inroads into citizens' lives, according to Hunt and other advocates. The public, they note, wants their experiences with government to be like those they engage in with leading private-sector sites — sites that encourage and thrive on user-generated content.

Early (or Late?) Adopters

One such example can be found in Virginia, said Paul W. Taylor, senior fellow for the Center for Digital Government, knowledge-management and research division of e.Republic Inc. The state is developing TurboVet — an application modeled after Turbo Tax, the online tax filing software.

"They're taking some Web 2.0 stuff and a TurboTax-like approach to help veterans figure out which services offered across various levels of government are available to them, or for which they're eligible," Taylor said. "Then they combine that with a peer-to-peer — veterans helping veterans to figure out how to navigate bureaucracy or what other services are available.

"It's an incremental bite and it solves a problem. They didn't create Facebook for Veterans. They created something that solves a particular problem veterans have."

Virginia is not alone in its move toward creating richer user experiences in government. Kamensky said he believes efforts in the federal government and in agencies such as the California Department of Motor Vehicles (DMV) also represent an increased acceptance of Web 2.0 philosophies. One of the hallmarks, Kamensky said, is when government begins to take advantage of applications that exist outside the public sector.

"Look at the California DMV. They're putting up training videos on how to avoid accidents on YouTube. The idea is to direct people there. Governments are starting to use this stuff. They're not using government-owned technology; they're going outside."

This doesn't mean government itself can't develop its own Web 2.0 applications. One of the core principles of Web 2.0 is the Web now exists beyond traditional definitions and established boundaries. It can be considered akin to the long-time vision of government to effectively interoperate among separate agencies. Only in this case, the silo needing elimination isn't between agencies, but between an agency and the citizens who engage it.

Web 2.0 may also help government face one of its most critical issues — the coming wave of retirements and the challenge of recruiting new workers. According to the eC3 summary, "government agencies are facing a wave of retirements as the baby boomers reach a certain age. Answering this human resources challenge means new approaches to recruitment, education and promotion. While this may not require some reincarnation in Second Life, it will require giving younger generations some virtual place simply to carry along the technological practices and habits on which they are learning to rely."

As *Government Technology* has reported, Second Life is now home to the first state recruitment island, thanks to pioneering efforts of Missouri CIO Dan Ross. Even if Ross' experiment in the virtual world doesn't pan out, it only cost him $4 and a few hours. And it's this sort of nontraditional thinking that the eC3 symposium addressed.

Web 2.0 is shaping up to be an opportunity for government to revolutionize its position in citizens' lives, according to the summary, which emphasized that it's in government's interest to give real consideration to Web 2.0 tools: "… Nobody can ignore the potential that Web 2.0 represents. If it is a tipping point, then all the 2.0 tools — civic networking, blogs, wikis, simulations, testbeds, etc. — are key to reaching the stakeholders to every function of government." GT

Synopsis: A new database makes it easy for retirees to re-enter government service, and helps state agencies find vital part-time talent.

Agency: California Franchise Tax Board.

Technology: A SQL database running on the Microsoft platform, written primarily in .NET.

Contact: Andrew Armani, andrew.armani@scsa.ca.gov, 916/653-4090.

California's 'Boomerang' database lists retirees willing to lend part-time expertise.

ANDREW ARMANI, STATE DIRECTOR, eSERVICES

PHOTO BY CHRIS PFEIFER

Bounce Back

California's retired state government employees have a new way to re-enter the work force, one that could make it easier for government offices to fill part-time vacancies left by the baby boomer turnover sweeping through the public sector.

A new database, known as Boomerang, allows retirees to list their expertise and interests, while simultaneously letting California state agencies search for promising talent.

"With the baby boomers retiring in large numbers, we are going to have a big gap between who is leaving and who we can bring in," said Andrew Armani, state director of eServices. "So Boomerang will be a piece of what we are trying to do to remedy that problem."

Boomerang's Debut

The system went live for registrants on Sept. 5, 2006, and within two weeks had seen nearly 120 retirees sign up. A limited number of departments got access to the database this fall as a trial run, Armani said, and full access for all departments is expected in January.

While those first 120 retirees came in strictly through word of mouth, program organizers have a number of efforts planned to promote Boomerang among the state's 400,000 to 500,000 retirees in the coming months. They are working with the state controller's office to publicize the program on pay stubs, in the hope of reaching some who may be planning to retire soon. A Boomerang newsletter will go out to present and future retirees, and planners also are coordinating with CalPERS, the state's public employee retirement system.

"CalPERS is where people go before they retire, to plan their retirement," Armani said. "They have classes there, and we have asked CalPERS to take time in those classes to refer to this database."

As for spreading the word among state departments, Armani is not overly concerned.

BY ADAM STONE | CONTRIBUTING WRITER

"Even though we are still in phase one, I am already getting calls from departments asking when this is going to open up for them to come in."

The State and Consumer Services Agency will be the first to go live on the system, along with its 16 subsidiary agencies, including the Department of General Services, Department of Consumer Affairs, the State Personnel Board and the Franchise Tax Board.

Every hour, 330 baby boomers turn 60, according to the 2006 U.S. Census. The Partnership for Public Service predicts the federal government will lose **more than 550,000 workers** during the next five years.

Meeting a Need

At the Franchise Tax Board, CIO Cathy Cleek said the database is a necessary step toward meeting California's HR needs.

"We need to find talented people to work in the state," she said, "and if we can get retired people who want to go back into the work force part-time, I think that is fantastic."

As government moves to fill those needs, HR experts say public-sector technology initiatives like Boomerang mirror what has been going on for some time in the private sector.

"You pick your profession: They all maintain job pages, job banks. So having one that is just focused on these government workers seems like a good idea," said Charles Ingersoll, senior client partner and head of the government practice of global recruiting firm Korn/Ferry International.

Recent studies suggest that such efforts are becoming increasingly common in the public sector.

The International Public Management Association for Human Resources studied such efforts in the public sector. In its most recent surveys, the organization found that 57 percent of responding organizations utilize some type of automated applicant tracking application, system or solution.

Twenty percent use a homegrown IT solution or system for applicant tracking.

For those organizations without an existing automated applicant-tracking application, 40 percent plan to implement one in the near future.

As in the Boomerang program, the Internet plays a significant part in technology-based recruiting. Seventy-six percent of respondents said applicants could contact human resources, ask questions or request information via the Internet. Fifty-one percent take applications online.

Overall, 44 percent of responding organizations said they use some type of Web-based recruiting tool.

Simple Solution

As a piece of technology, Boomerang is deliberately simple, to the point of being stripped down. Virtually all registrant information can be filled in with a mouse click or a pull-down menu: last agency worked for, skills and experience.

"We decided to have as few fields for questions as possible. You don't want to come in as a retiree and give this big old explanation of what you are doing. That's why we ask them just to go through this list and check the box for what you want to do," Armani said.

No confidential information is collected: no Social Security number, no driver's license.

Registrants can also input their preferred work schedule — those returning to government service can work up to nine months in the course of a year, with that time being broken up in any number of ways, to be decided between worker and supervisor.

For departments, the lean registration information makes it easy to quickly sort potential candidates. "Then when they find someone with certain skills, it will be up to them to go through the data collection and to refine their skills," Armani said.

Backing it all up is the workhorse of database technology: The Franchise Tax Board developed the SQL database that is the core of Boomerang's technology. The database runs on the Microsoft platform, written primarily in .NET.

While this may seem bare bones compared to applications running in the private sector, it still is a good first step, said Rebecca Wettemann, vice president of research at Nucleus, an industry analyst firm that evaluates technology implementations from a return on investment perspective.

Based on past observations, she predicted that once Boomerang is fully operational, managers will begin looking for ways to enhance its functionality.

"We are going to see a lot more sophistication, a lot more development," she said. "I would be surprised if they continued with such a limited sort of site."

Meanwhile, with the system still in its earliest days, counties and cities already have been calling to ask whether they might borrow the Boomerang code. Armani says he isn't surprised, considering the financial logic that underlies the whole affair.

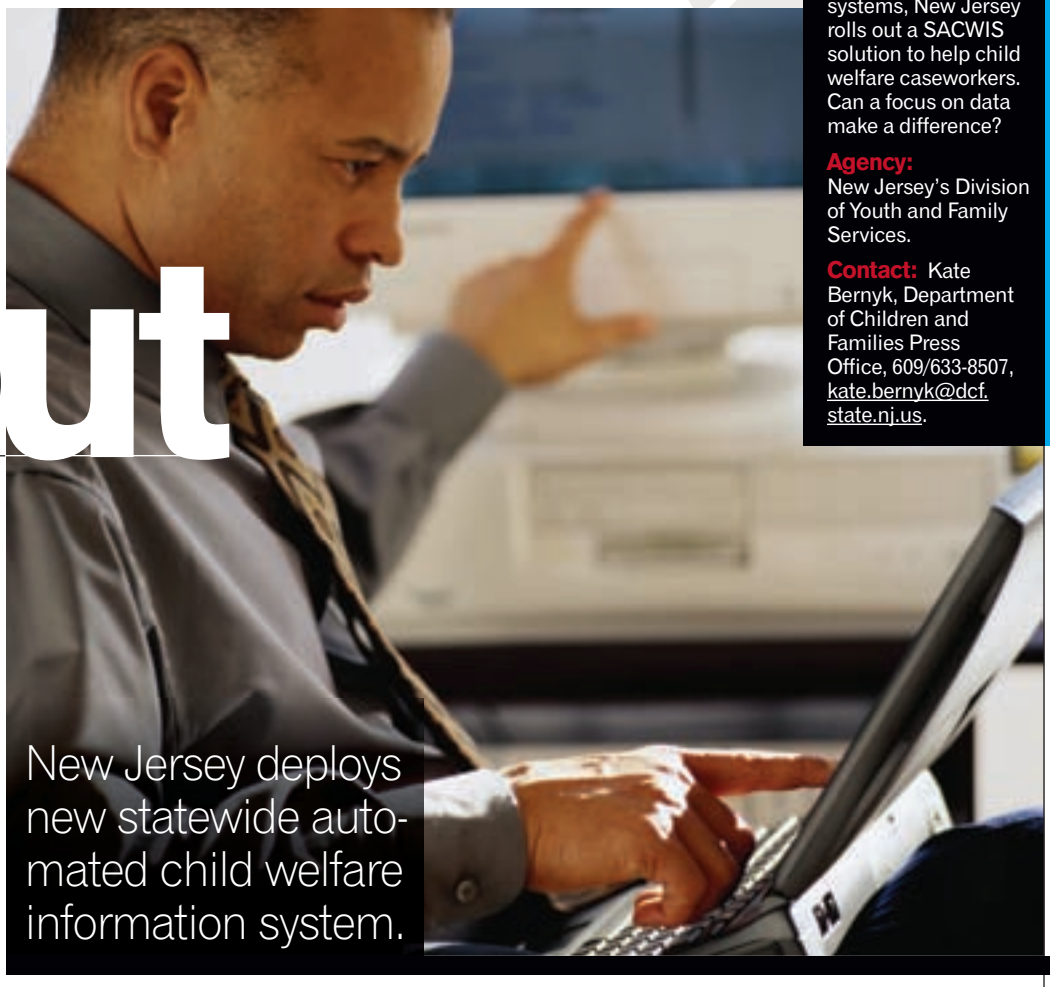
"The state doesn't have to pay benefits to these folks, because they already receive benefits," he said. "At the same time, these retirees can come in and supplement their own income, on their own schedule." GT

SACWIS Rollout

Synopsis: After years of struggling with inefficient legacy systems, New Jersey rolls out a SACWIS solution to help child welfare caseworkers. Can a focus on data make a difference?

Agency: New Jersey's Division of Youth and Family Services.

Contact: Kate Bernyk, Department of Children and Families Press Office, 609/633-8507, kate.bernyk@dcf.state.nj.us.



New Jersey deploys new statewide automated child welfare information system.

A June 2003 *Government Technology* article revealed how inadequate data systems contributed to severe problems at New Jersey's Division of Youth and Family Services (DYFS), which is responsible for foster care and adoption programs.

A 1999 lawsuit filed by advocacy group Children's Rights Inc. had shone an unwelcome spotlight on several shortcomings of the legacy systems employed by DYFS. Among other limitations, caseworkers had difficulty using the software, which lacked a user-friendly graphical interface, and the system required clerical staff for data inputs and updates.

Another difficulty was the piecemeal approach to technology. DYFS used 40 PC applications to bolster deficiencies in four mainframe systems. As the *Government Technology* article noted, "The lack of a unified system allows crucial information to slip through electronic gaps too easily. When that happens, children's lives are put in jeopardy."

In 2003, with the lawsuit still unsettled and the media spotlight focused on horror stories about lax oversight of the foster care system, New Jersey began the arduous task of selecting and implementing a modern statewide automated child welfare information system (SACWIS) by issuing an RFP.

Flash forward to the summer of 2007. Although the lawsuit filed in 1999 was settled in 2003 and the settlement agreement modified in 2006, many challenges remain, including implementing a new case practice model, and improving the network of health-care units and services for kids under state supervision. But New Jersey has taken several important steps toward rectifying the situation, not the least of which was the August 2007 rollout of the state's SACWIS software to its caseworkers.

Automation and Integration

Dubbed NJ SPIRIT (New Jersey Statewide Protective Investigation Reporting and Information Tool), the $70 million project — 50 percent of development costs were funded by the federal government while the state Legislature appropriated funds for the rest — was released in stages, starting with a centralized state call center in November 2005. Previously calls went to more than 40 locations around the state, with a lack of consistency in coding referrals.

"Citizens weren't clear who they should call to report a child at risk," said John Ducoff, director of the Office of Legal and Regulatory Oversight and acting CIO for the Department of Children and Families, the Cabinet-level agency created in 2006 to address child welfare issues. The department is composed of all agencies related to child welfare, including DYFS.

The new statewide call center uses a central registry that allows employees to receive and document calls, and send information out to field workers to investigate.

Ducoff, project manager for the SACWIS rollout, worked with Montreal-based software vendor CGI Group Inc. on design, development and testing. Although the state is pleased with the software, he said there were times when executives had concerns that the project was falling behind schedule. "CGI stepped up with additional resources toward the end to meet our goals," he said.

After a three-month pilot in spring 2007 and the training of more than 5,000 staff members, Ducoff described the August 2007 rollout as a milestone for the agency. "This type of system is a huge change," he said. "It's a new Web-based application that we're introducing to people who have been using an old mainframe system for 28 to 29 years."

Matt Hogan, vice president of the state and local solutions group at CGI, said the SACWIS software eliminates the tedious parts of case

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management. "We had one state exec who actually counted and noted her caseworkers were writing down a family's name 20 to 25 times in different paper-based forms, and that is not uncommon," he said. "With the Web-based software, that kind of form-based work is left behind."

Although CGI can build on the SACWIS projects it's done in other states, each system must be customized individual needs. One implementation challenge, Hogan said, is writing interfaces to other state data systems. For instance, federal foster care eligibility guidelines require collecting data from state welfare systems.

Caseworkers Get New Tools

NJ SPIRIT merges case management and data collection tools to help Department of Children and Families executives more easily produce reports on the aggregate condition of the child welfare system.

A caseworker placing children in foster homes can pull up on her NJ SPIRIT screen a list of which foster homes are available in her geographic region. In addition to seeing the number of beds currently available, the caseworker can also get descriptions of characteristics of children and families to do better matching.

The system also automates tasks, such as requesting a child be transferred from one foster home to another, that used to require filing paper forms with several different offices.

> "It will be up to the managers to **make good use** of the **data**."
>
> **Judith Meltzer,** *deputy director, Center for the Study of Social Policy*

executives better manage their resources. "The advantage of the new system is that it is built to collect and track more data," he said. "The potential is huge to help us manage the agency better."

As an example, the system allows caseworkers to document unmet needs, Ducoff said. "In other words, if they tried to offer a service to a client and it wasn't available, they can document that in the system. The theory is that this will help us understand where to build more capacity."

Ducoff said the creation of a Cabinet-level agency to deal with child welfare and the appointment of Kevin Ryan, the former head of the state Department of Human Services, as its first commissioner has elevated the focus on child welfare issues.

Ryan himself sees better data systems as key to the agency's turnaround. Although the state tried to make incremental improvements to its data systems while the SACWIS project was unfolding, progress was limited. Testifying before a state legislative committee in February 2006, Ryan described many of the agency's ongoing shortcomings, and he called its legacy data systems "terrible."

"I recently received several conflicting reports on the same data request for caseloads," he said. "We cannot identify and address our problems if we don't have good data systems."

> "The advantage of the new system is that it is built to collect and track more data. The **potential is huge** to help us manage the agency better."
>
> **John Ducoff,** *director, New Jersey Office of Legal and Regulatory Oversight*

Another advantage of the new system is better connectivity between the state attorney general's office and DYFS. Attorneys now have much broader access to DYFS records. "When one has a court date, he can access the system directly and see every case note," Ducoff said. "Previously he would have had to call our staff and ask them to make a paper copy of a file."

Although it's too early to assess the impact of the new software on the day-to-day experience of caseworkers, Ducoff is convinced that the system will not only do a better job of supporting their work, it will also help agency

Making Use of the Data

New Jersey's well documented difficulties are not unique. About a dozen states are in some form of litigation about the inadequacies of their child welfare programs, and a major problem of almost every state is that their data is not very good, said Judith Meltzer, deputy director of the Washington, D.C.-based Center for the Study of Social Policy.

Meltzer, who serves as the court-appointed monitor of the 2006 revised settlement between Children's Rights and New Jersey, calls the SACWIS implementation a "tremendous challenge" for New Jersey.

"First, it has to be customized and designed to match the business processes of the state," she explained. That requires standardizing those business processes, which can be different from region to region or office to office. Older data has to be put into a format for use by the new system. Making the transition is another issue for a work force that is either new and has to be trained, or old and resistant to change, she said.

"The last challenge, which is where they are now, is working out the bugs, making sure you have online help available, and figuring out where you pull data from to help managers make decisions," she added. "That is really the dessert. They still have a ways to go, but they have passed several important hurdles."

Meltzer said she believes it will take more than a year of use before agency executives realize the impact the software can have. "Then it will be up to the managers to make good use of the data," she said.

Although she believes the state still has a lot to prove, Meltzer is encouraged by the direction the agency has taken. "It's not fixed yet, but I am supportive of their leadership and the urgency they are showing," she said. The litigation has been a long and torturous process, she added, but ever since the creation of the Department of Children and Families, state officials "have lived up to all their commitments, have brought in the type of strong leadership and management they need, and they have focused on data."

Ducoff and Meltzer agree that any improvements the state eventually makes will be more because of people than technology. "I see this IT system can be a valuable tool," Ducoff said, "but it's not driving change in our case management practices. Our work is people engaging with kids and families and building a system that responds to their needs. The technology is only a tool that supports those efforts." GT

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Synopsis: Social service managers in Washington state use an off-the-shelf mapping program to court volunteer foster families.

Agency: Division of Children and Family Services.

Technologies: Microsoft Streets & Trips.

Contact: Brian Cox, Family to Family coordinator, Washington state's Division of Children and Family Services, cobr300@dshs.wa.gov, 509/454-6926.

Simple Strategy

Washington's Division of Children and Family Services deploys simple mapping software to attract potential foster parents.

Can a simple map change a child's life for the better?

Brian Cox thinks so. As a coordinator for Washington state's Division of Children and Family Services, he's using off-the-shelf mapping software to draw volunteers into the foster care system by showing them the number of children forced to leave their neighborhoods each year in search of foster homes.

"When people see these maps, they are extremely excited, extremely receptive," Cox said. "They want to know what they can do."

Each year in the United States, some 800,000 children spend time in foster care, yet the number of available homes continues to decline, according to *The Market for Foster Care: An Empirical Study of the Impact of Foster Care Subsidies*, published in March 2007. The study also notes that between 1984 and 1990, the number of nonrelative foster families declined from 147,000 to 100,000.

Volunteer foster parents are in short supply for several reasons. People don't want to take on the burden of a child from a troubled home. They're nervous about the expense (though the state does provide a stipend) and they're concerned about disruptions to their own home lives.

As a result, the system has many more kids to place in homes than foster parents willing to volunteer. An estimated 10,000 children each year are removed from their own homes because of child abuse and neglect and put into the custody of Washington's Division of Children and Family Services. Yet the state licenses only 5,326 foster homes, Cox said.

The state is under legal obligation to close the gap. As the result of a class-action lawsuit, the 2004 Braam settlement agreement obligated the state to make improvements to its foster care system.

Part of the problem may be geographic. As with so many social ills, the needs of foster kids always seem to be "over there," in another part of town and not in ours. Nor do people understand the degree to which foster kids are pulled from their native neighborhoods — away from school and friends — just because the nearest volunteer family is three towns away.

That's where inexpensive, off-the-shelf software can help, Cox said.

Mapping the Situation

In late 2005, Cox began experimenting with Microsoft Streets & Trips (MST), a commercially available mapping application that sells for about $150 a copy. His idea was to produce a graphic illustration of movements within the foster care system: where kids came from and where they were ending up. People who saw an exodus of kids from their own neighborhoods would presumably step up to halt the flow.

Early returns suggest the theory may prove useful. In a cluster of small neighborhoods known as the Barge-Lincoln Elementary School boundary area, the number of foster homes rose from four to 12 during a five-month trial of MST.

Though the sample is small, this is still a 200 percent increase in just five months. The difference between having four and 12 foster homes available in a small community (a few neighborhoods totaling 100,000 people) is, in fact, pretty dramatic. That's at least eight more kids, maybe more, who can stay local, just in the one neighborhood.

Gathering information to populate the maps isn't too difficult. State social service coordinators already gather a wealth of data on foster kids and store it in Microsoft Excel.

BY ADAM STONE | CONTRIBUTING WRITER

"Every single entry by every social worker statewide, all of that will be represented in the system — every child they have entered," Cox said.

MST has a built-in interface with Microsoft's Excel database software, "So if we have addresses [in Excel] for all the children abused and neglected, we can migrate all of those names and map them almost instantly in Streets and Trips," Cox said.

To make the most of the Excel-MST connection, IT managers rely on pivot tables, a powerful yet often overlooked function in Excel. Pivot tables summarize long lists of data without requiring the user to write formulas or copy cells. The tool allows a user to sift data by age, location, ethnicity and other variables easily.

In this way, IT staffers are turning out new data sets every 10 days, which social service workers at ground level can then apply to MST to generate maps as needed. Right now, nearly 30 of the state's 43 social service agencies are running MST. The system continues to roll out statewide, Cox said.

This isn't the first time mapping applications have been used to improve efficiencies within a social service program.

Take the example of food stamps in Mississippi. In 2005, the Mississippi Department of Human Services announced it would implement a GIS program to curtail fraud, the idea being to track the distances customers traveled in order to use their EBTcards.

In California, the Department of Social Services teamed with the nonprofit Stuart Foundation to chart data about children in the state's Child Welfare System. The database calculates outcome measures, including such line-items as maltreatment in foster care homes and time to reunification with family.

The system also generates maps indicating the distances between removals and placements of foster kids throughout the state. To do this, it relies on an in-house GIS along with other technologies.

Those familiar with such efforts say there are pros and cons, the cons being mostly cost. GIS packages can easily run millions of dollars, said Daniel Webster, a research specialist in the Child Welfare Research Center at the University of California, Berkeley.

In addition to the cost, GIS systems are often complex, requiring a certain level of technical sophistication. "So there are finance and technical barriers that keep a lot of people from using it," Webster said.

Washington's use of MST, on the other hand, delivers readily accessible technology: an application that is both affordable and easy to use for the program coordinators who generate maps at the local level.

"A lot of the more sophisticated packages will have more powerful features, more powerful analysis tools, but they don't need that type of special analysis capability [in the foster care system]. They just need to be able to make maps," Webster said.

Perhaps equally important is that the off-the-shelf program was designed with the visual element in mind. MST meets the user at the graphical level, with all the charts and data left to run behind the scenes. "People don't go into human services because they are comfortable with anything that has to do with tables and numbers," Webster said.

It's just the opposite, in fact. "They come in because they want to help people," he said. "They don't want to deal with math or statistics."

Facts on the Ground

Now people can see graphic evidence of kids leaving their neighborhoods as they travel through the foster care system. Will the locals therefore volunteer their homes as foster way stations? Those who work at the community level say it could very well happen.

Some say the system could serve to focus caseworkers' attention on the geographic aspect of placement. While geographic data has been available before, "It's not the kind of thing where I can just get it in five minutes," said Jill Kinney, a regional coordinator in Washington's Family to Family program, a local child-welfare initiative.

Foster care needs "tend to cluster, and they don't always cluster where the staff would predict," she said. By highlighting problem areas, MST maps could help caseworkers pinpoint their efforts and work more efficiently.

At the community level, social service organizers say they have been impressed by what they've seen of MST, especially in its ability to make geographic issues come alive.

The Southeast Yakima Community Center serves a black community adjacent to a Hispanic community. Director Ester Huey says she sees it all the time: local kids placed into foster homes in distant towns.

"But until I saw that map, I didn't realize the breadth of the problem," she said. "You can talk to people about an issue, concern or problem, and they just don't seem to grasp it the way they do when they have a graphic in front of them."

Huey suggested MST maps could generate a new understanding, and perhaps a new willingness to help.

"When you can see that a child was taken from this particular home and placed 30 or 40 miles away, when you see all these children streaming out of the community, then you begin to understand how they become high-risk children, because the separation for them is total," she said. "We want to develop foster homes in this town, to keep those children in an area where they are familiar with their church, their school, their neighbors."

Some are concerned about the mapping idea, suggesting the visual element might prove too stark for some observers.

"It might cause some problems," said Karen Jorgenson, executive director of the National Foster Parent Association, based in Gig Harbor, Wash."If people saw that everyone was coming from one neighborhood, it could put them off at first. It might say to them: 'Hey, this is in your neighborhood,' and perhaps make them defensive rather than eager."

On balance, though, Jorgenson is optimistic about the mapping program. "We have been trying very diligently over the past several years to keep kids in their neighborhoods, to make sure they don't have to change schools," she said. "This sounds like something that would be very useful."

Cox, meanwhile, thinks these maps could change the face of social service.

For years, he says, the public has relied on paid professionals to take care of abused and neglected children. By putting geographic facts on the table, the social service world has a chance to convert the public at-large into active participants in the endeavor to care for those in need.

"We want to give them regular data on the children that come from their own communities, because the children belong to them. They belong to that community," he said. GT

On Course

The **V7** NAV740 GPS portable navigation device has a touchscreen enabled with turn-by-turn voice instruction, including text-to-speech. It weighs 6.65 ounces, measures 4.92x3.28x0.79 inches and has a 4.3-inch 480x272 high-resolution TFT-LCD. The device's battery lasts up to five hours, or 3.5 hours with GPS navigation on. It contains 64 MB RAM, a 400 MHz CPU and a built-in multimedia player that supports most audio, video and digital picture formats.
www.V7-world.com

Keep in Touch

Sprint and **HTC Corp.** announced Touch, a touchscreen wireless phone with a nearly 3-inch display. It offers e-mail, Web browsing and multimedia content, and a MicroSD card slot that supports up to 4 GB — but a 512 MB card comes with the device. Additional features include a 2.0-megapixel camera/camcorder with up to 5X zoom, advanced stereo Bluetooth and voice-activated dialing. The phone measures 4x2.4x0.6 inches and weighs 4 ounces.
www.sprint.com/touch

Carry On

The **Targus** EcoSmart convertible messenger/backpack consists of PVC-free material, plastics used on the case are recyclable and all metal hardware is nickel-free. The case includes a padded notebook sleeve with scratch-resistant, quilted lining; a security strap; key hook; pen loops; and accessory pockets. It fits a 15.4-inch laptop computer, and includes pockets for a water bottle and MP3 player. The backpack includes a tuck-away shoulder strap and a removable shoulder strap.
www.targus.com

On the Record

Royal Philips Electronics' Digital Pocket Memo 9370 records voice files onto an exchangeable 256 MB SD card that users can e-mail or download via USB to a PC for transcription. The recorder includes a backlit LCD, a travel pouch, alkaline batteries, a USB cable, as well as SpeechExec Dictate software. Users can track work in progress, and give urgent jobs priority status for faster transcription. **www.philips.com**

BY REID GOLDSBOROUGH

Social Networks vs. Blogs vs. Discussion Groups

What's the best way to share views with others online about topics of interest? No matter the topic, there are several ways to connect with people who have similar interests.

The three main Internet-based media for such dialoging are social networks, blogs and discussion groups.

Discussion groups came on the scene first, and in many ways, they're still the best way to tap into the minds of others. There are, in turn, three main types of discussion boards: e-mail based, Usenet and Web-based.

The largest e-mail based discussion group network is Yahoo Groups. You can search for, peruse and join groups from the Yahoo Groups Web site, and participate in the discussions from Yahoo's Web interface. The strength of e-mail groups is the speed and convenience of using your favorite e-mail program, while the biggest downside is that they're sometimes clunky when sharing photos to illustrate a point.

Usenet groups share many of the same pluses and minuses of e-mail groups, though there are important differences. The largest aggregator of Usenet groups is Google through its Google Groups Web interface, which you can use to participate, or you also can use most e-mail programs. But specialty Usenet programs such as Agent provide more tools.

The biggest difference between e-mail and Usenet discussion groups is that the former are typically moderated while the latter aren't. Moderation reduces the frequency of abusive arguing, called "flaming," that's common in unmoderated online groups. But it can also hinder the free exchange of ideas if moderators promote or protect the organization or

industry they work for — or otherwise stifle discussion with too heavy a hand.

Many Web sites have discussion groups associated with them, and this can be a good way to talk about specific issues the site is involved with. The main advantage to most Web-based discussion groups is the ease with which photos can be shared. Instead of uploading them to a separate Web space and then linking to them, you can include photos within the message you post to the group. Another advantage is that, unlike e-mail or Usenet groups, you can typically edit posts after publishing them, correcting mistakes, either silly or serious.

In 2001, blogs burst on the scene. These diary-style entries provide a voice for the writer, giving control over the subject matter and degree of interactivity — this is the blog's main advantage.

But it's also the main disadvantage.

Blogs are primarily a talking-to, rather than dialoging, medium. They're often a way for people to hold forth. Unlike other types of online communication, the ethic is more akin to "Come to me and hear me speak" rather than "Let's hash this out together." Blogging also exacerbates the problem of splintering, or Balkanization, of online communication about any given topic.

Among the most notable examples of blogs are the numerous ones set up by soldiers serving in the Iraq War. Politicians are also now blogging in greater numbers, with blogs providing them another outlet to reach voters and constituents. Journalists, too, have turned to blogs to offer readers more in-depth punditry.

Social networks, where people with similar interests communicate and convene electronically, are the newest way to talk online. This method reached critical mass in 2005 with the popularity of MySpace, a service that describes itself as a way to meet your friends' friends. Other popular general-interest social networks are Bebo and Facebook.

Business social networks have also sprouted online, ranging from those for chiropractors to real estate agents. Participants share not only ideas, but also referrals. These, like all social networks, share with all types of online discussion media the key benefit of easy group communication over distance. GT

Communication Toolbox
Yahoo Groups: groups.yahoo.com
Google Groups: groups.google.com
Agent Usenet: www.forteinc.com/agent

REID GOLDSBOROUGH IS A SYNDICATED COLUMNIST AND AUTHOR OF THE BOOK *STRAIGHT TALK ABOUT THE INFORMATION SUPERHIGHWAY.* HE CAN BE REACHED AT REIDGOLD@COMCAST.NET OR **WWW.REIDGOLDSBOROUGH.COM**.

CONTINUED FROM PAGE 35

Project leaders wanted to avoid installing a Wi-Fi access point for roughly every 150 feet of range, which a citywide Wi-Fi network would have required.

"You need an awful lot of Wi-Fi nodes to cover a city that's 6 miles by 6 miles," said Jack McCoy, CIO of Manchester. "We tracked other technologies, and the WiMAX technology, as it was specified from the IEEE, seemed like it had more promise."

Manchester had an unpleasant experience with WiMAX in 2002 when it tried to use it to connect wireless Web surveillance cameras in a large city parking lot. The city could only find one vendor with a relevant WiMAX product that complied with both 802.11 and 802.16 wireless standards.

"We had six respondents," McCoy said. "Three were not compliant and didn't even pretend to be. One was questionable, two had claims of compliance, but when you actually looked at it at the time, there was only really one that was compliant with the WiMAX standard."

Manchester hired the vendor and invested in a limited "point-to-point" WiMAX infrastructure for the parking lot. Technical obstacles plagued the process. "The vendor was just simply too new in the game at the time to keep it working at the production level we needed," McCoy said.

Manchester couldn't afford to pay the vendor to maintain the application, forcing that job into the hands of the city's IT staff. This made technical obstacles even more difficult to solve. The city did get the system to run video back and forth, but the video quality didn't satisfy end-users. The solution stopped running altogether when the vendor issued an update patch.

"It would be like having your Microsoft Windows operating system stop after the first security patch, and then not being able to get it going again," McCoy said.

The city removed the network and hired another vendor to use its own proprietary wireless equipment to run the cameras, which continue functioning and have aided several law enforcement efforts, according to McCoy.

With more products and market experience in WiMAX now available, Manchester is ready to attempt another WiMAX project. McCoy is especially interested in WiMAX because Manchester already has a fiber-optic network connecting all government buildings. This means the city has a ready-made infrastructure for deploying citywide WiMAX antennas. Those antennas could pass WiMAX signals back and forth to the antennas on other government buildings, completing the connectivity cloud. WiMAX signals reaching those antennas could also provide broadband to the government workers in the buildings themselves, via the fiber connected to the antennas.

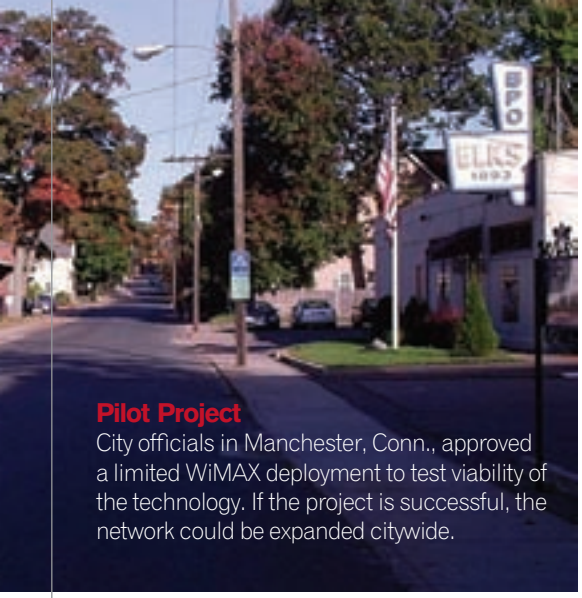
Manchester's first step is to connect a retired firehouse to WiMAX using the fiber antenna at a nearby school. The firehouse functions as a technology resource center for citizens. The WiMAX equipment will perform a simple point-to-point function to connect equipment at the firehouse to broadband. Only people in the vicinity of the firehouse will have WiMAX access.

"We haven't bid it yet, but we have the funding and the elected officials who have given us the 'go' on it," McCoy said. "This time I think we're going to try to find two vendors — one on one side of the link, and the other on the other side of the link. They need to be vendors who can interoperate compatibly over the 802.11 and 802.16 standards. That will be another test, and hopefully that will remain in production."

If the small, $20,400 project is successful, McCoy hopes to expand the network citywide. Various mobile applications for keeping field workers out of offices and on the move would follow.

Lesson Learned

Any government wanting to operate WiMAX in only parts of its geography must make sure the network interoperates with



Pilot Project
City officials in Manchester, Conn., approved a limited WiMAX deployment to test viability of the technology. If the project is successful, the network could be expanded citywide.

existing communications systems on other radio frequencies, which Fresno, Calif., learned the hard way.

The city had roughly $750,000 to spend, so it attempted to build a WiMAX cloud to cover an area that 65 percent of vehicle traffic traveled. Project leaders implemented the network to enable police cars exclusively to connect and download necessary data every time they drove through the cloud. They would lose connectivity when they left the cloud and regain connectivity when they re-entered it.

Problems arose when the WiMAX network, which operated on the 900 MHz spectrum, interfered with the city's 800 MHz police radios. The arrangement worked fine when officers were in the WiMAX cloud, allowing them to exchange data and video via the 900 MHz network and to maintain voice communications via the 800 MHz system. But when officers left the cloud, they lost both WiMAX and 800 MHz radio connectivity.

"The WiMAX dependency prevented the cars from switching back over to the slow [800 MHz] speed link to maintain contact with our dispatch system," said Conrad Nerdahl, management information systems manager for the Fresno Police Department. "These officers told us, 'You know, when we're in the zone, it's working great. When we get out of the zone, we're flying blind.'"

Nerdahl added that the WiMAX network functioned properly as a backhaul connecting all of the fiber-ready towers in Fresno to one another. However, that wasn't very useful to the 800 MHz applications outside of that network that couldn't function as a result. This is one area where Wi-Fi appears to beat WiMAX. Wi-Fi networks can coexist with other communications systems on other radio signals, allowing police to download data at strategically placed hotspots.

Fresno's only option was to expand the WiMAX network citywide and run all communications applications over it, eliminating use of the 800 MHz spectrum. Nerdahl said that would have transformed the WiMAX network into at least a $2.5 million project. Fresno didn't have the money, so the WiMAX network sits unused for now.

"We only had $750,000 to fill up the project," Nerdahl said. "We pretty much chewed up all that money in the hardware costs."

Nerdahl still wants to eventually build a WiMAX network for transmitting data to officers as well as voice content. The city owning its own WiMAX network would also offer it a better chance at redundancy during an emergency, he said.

"What happens if the phone company all of a sudden decides to turn its systems off? We'd need to provide our own connectivity," Nerdahl said. "We've looked at the existing WiMAX project we have in place, and that's why we have not totally abandoned it yet. While we move forward with the cellular option to at least keep us moving forward, we're looking at WiMAX as a disaster backup system."

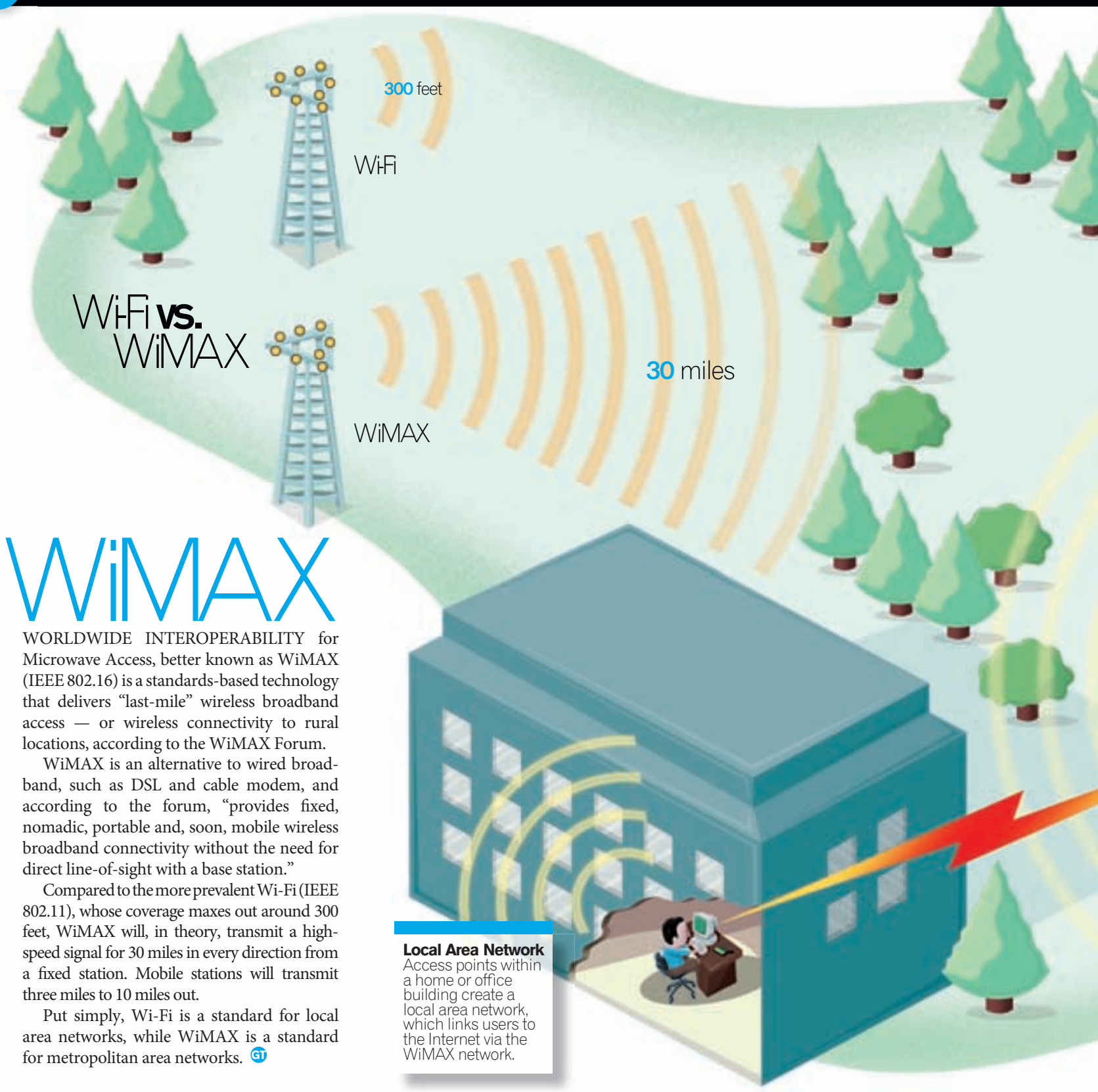
He said he hopes to collect enough grant money to make WiMAX a reality in Fresno.

Follow the Leader

WiMAX deployment activity remains modest in the United States, but momentum is building. Local governments typically like to play "follow the leader," which means results in Brownsville and Manchester will be critical. If they're successful, a government stampede in the WiMAX direction could easily follow due to the simple deployment and maintenance of WiMAX. GT

how it works

Turning technology inside out



WiMAX

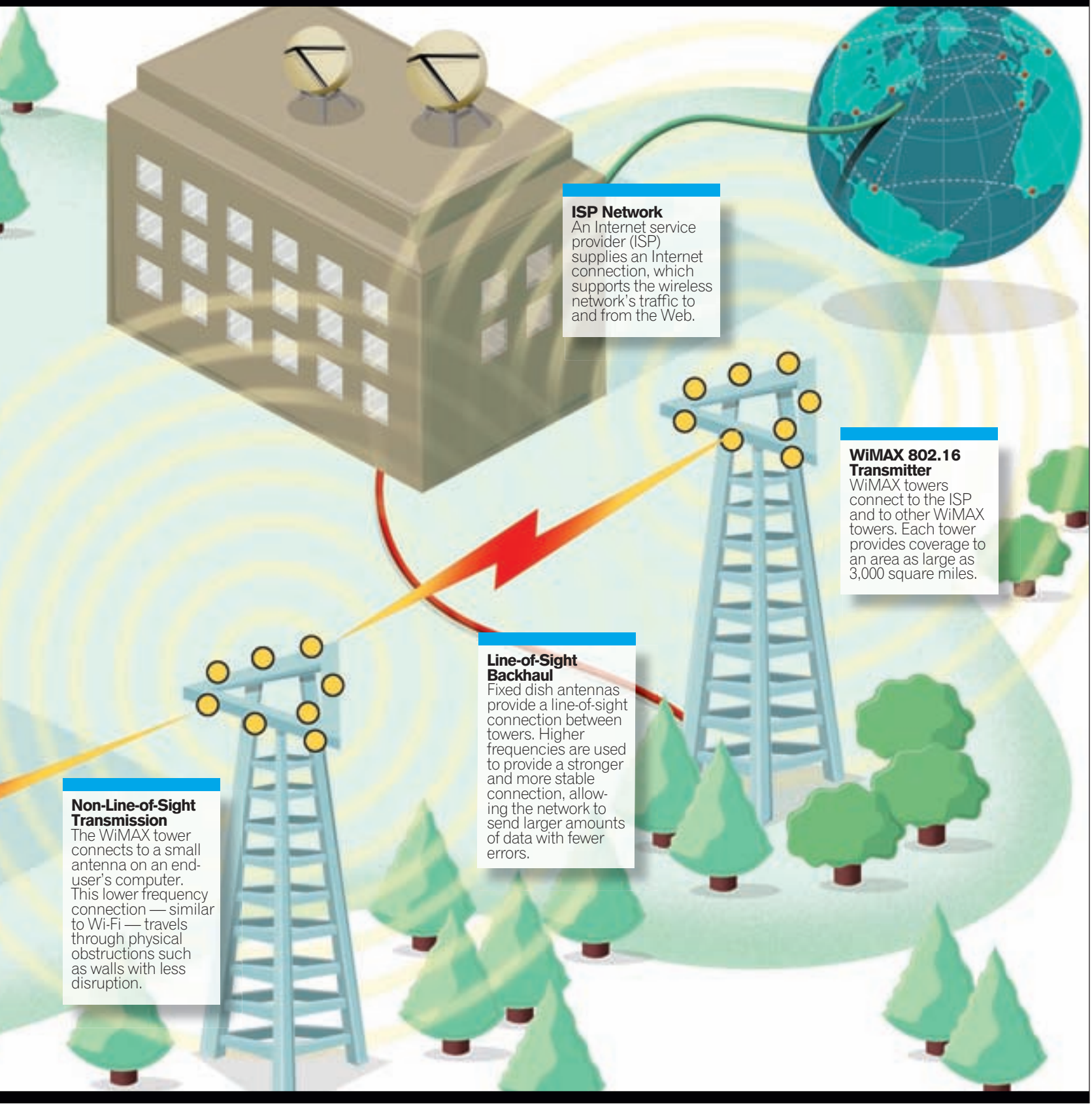
WORLDWIDE INTEROPERABILITY for Microwave Access, better known as WiMAX (IEEE 802.16) is a standards-based technology that delivers "last-mile" wireless broadband access — or wireless connectivity to rural locations, according to the WiMAX Forum.

WiMAX is an alternative to wired broadband, such as DSL and cable modem, and according to the forum, "provides fixed, nomadic, portable and, soon, mobile wireless broadband connectivity without the need for direct line-of-sight with a base station."

Compared to the more prevalent Wi-Fi (IEEE 802.11), whose coverage maxes out around 300 feet, WiMAX will, in theory, transmit a high-speed signal for 30 miles in every direction from a fixed station. Mobile stations will transmit three miles to 10 miles out.

Put simply, Wi-Fi is a standard for local area networks, while WiMAX is a standard for metropolitan area networks. GT

BY JESSICA JONES | ASSOCIATE EDITOR | ILLUSTRATION BY TOM McKEITH



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GTSI

Using information technology to create public value

corporate profile

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, multiphased 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

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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.

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BY PAUL W. TAYLOR
CHIEF STRATEGY OFFICER
CENTER FOR DIGITAL GOVERNMENT

Socialize This

2007 went out with signs that the first wave of social networking excitement reached what Wall Street would call a market top.

To recap, Microsoft paid $240 million for a 1.6 percent equity stake in Facebook that included an exclusive ad deal. The move effectively boosted Facebook's market valuation to $15 billion and made News Corp.'s $580 million purchase of MySpace in 2005 look like a bargain. Google responded by announcing OpenSocial, a social networking platform that lets third-party developers create widgets to use personal data and profile connections across social networking sites (inadvertently fueling calls for the FTC to create a Do Not Track registry).

The invitation was open to all comers — including Google's own Orkut, LinkedIn, Ning, Nexo, Plaxo and Twango, and even MySpace (which, while still leading in traffic and membership, struggled with its own platform strategy and was surpassed in the battle for buzz).

Perhaps you've already made up your mind about social networking, either by opening accounts on these services or restricting — or carefully monitoring — your kids' online socializing. To its credit, the National Electronic Commerce Coordinating Council held a symposium to explore what social networking means to the act of governing. The result is a new report, *Government in the Age of YouTube: Implications of Internet Social Networks to Government*, which is cautiously optimistic in content and cautious in tone. (See page 40 for more on the report.)

As social networking ascended to the "peak of inflated expectations"— Gartner's language for another flavor of a market top — what has been largely overlooked is that social networking DNA contradicts the long-established "network effect," which posits that a network's value rises with the number of users. Social networks actually lose value when they grow too large — the promised intimacy succumbs to spam-level volumes of "friend requests."

The Economist observed that the real value of these networks and the "social graphs" they create is in the gate-keeping function. "This suggests that the future of social networking will not be one big social graph, but instead myriad small communities on the Internet to replicate the millions that exist offline."

Many of the new, less popular but fast-growing companies with funny names offer to do just that — create user communities around communities of interest. As I've noted before, Virginia uses social graphs to increase its service delivery capacity by tapping people who need particular services to help one another.

In the uncertain times that follow a market top, financial advisers often remind clients to take a deep breath, revisit their strategy and rebalance their portfolio as needed. That's good counsel at the dawn of a new year because it helps recognize that (a) government may not be an early adopter, but it's not as late as many thought in implementing these practices; and (b) here at the beginning of the fifth decade of the open government movement, social networking and Web 2.0 collaboration are what people increasingly expect transparency to look and act like. GT

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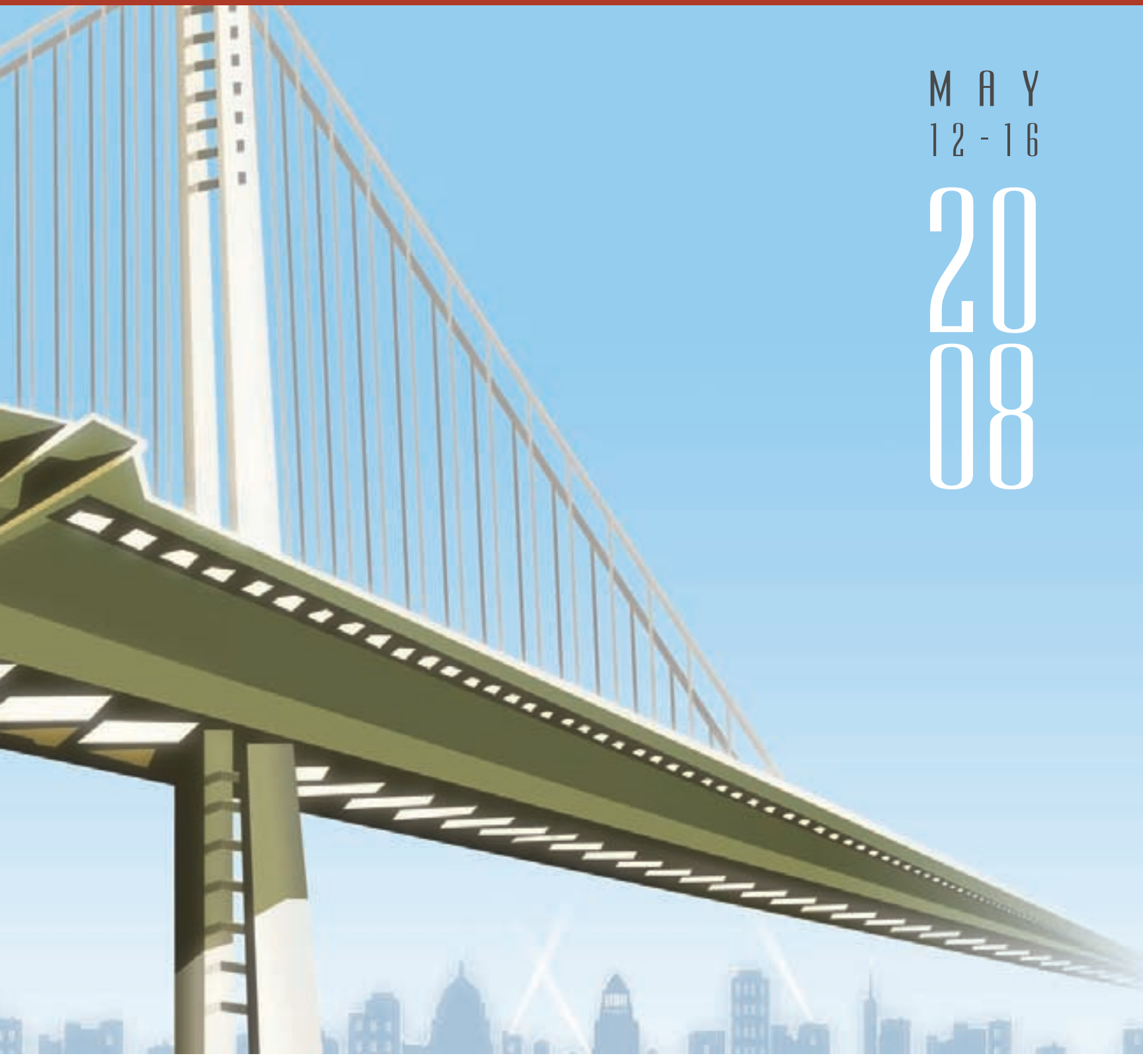

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