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VOL22 ISSUE02 SOLUTIONS FOR STATE AND LOCAL GOVERNMENT IN THE INFORMATION AGE FEBRUARY 2009

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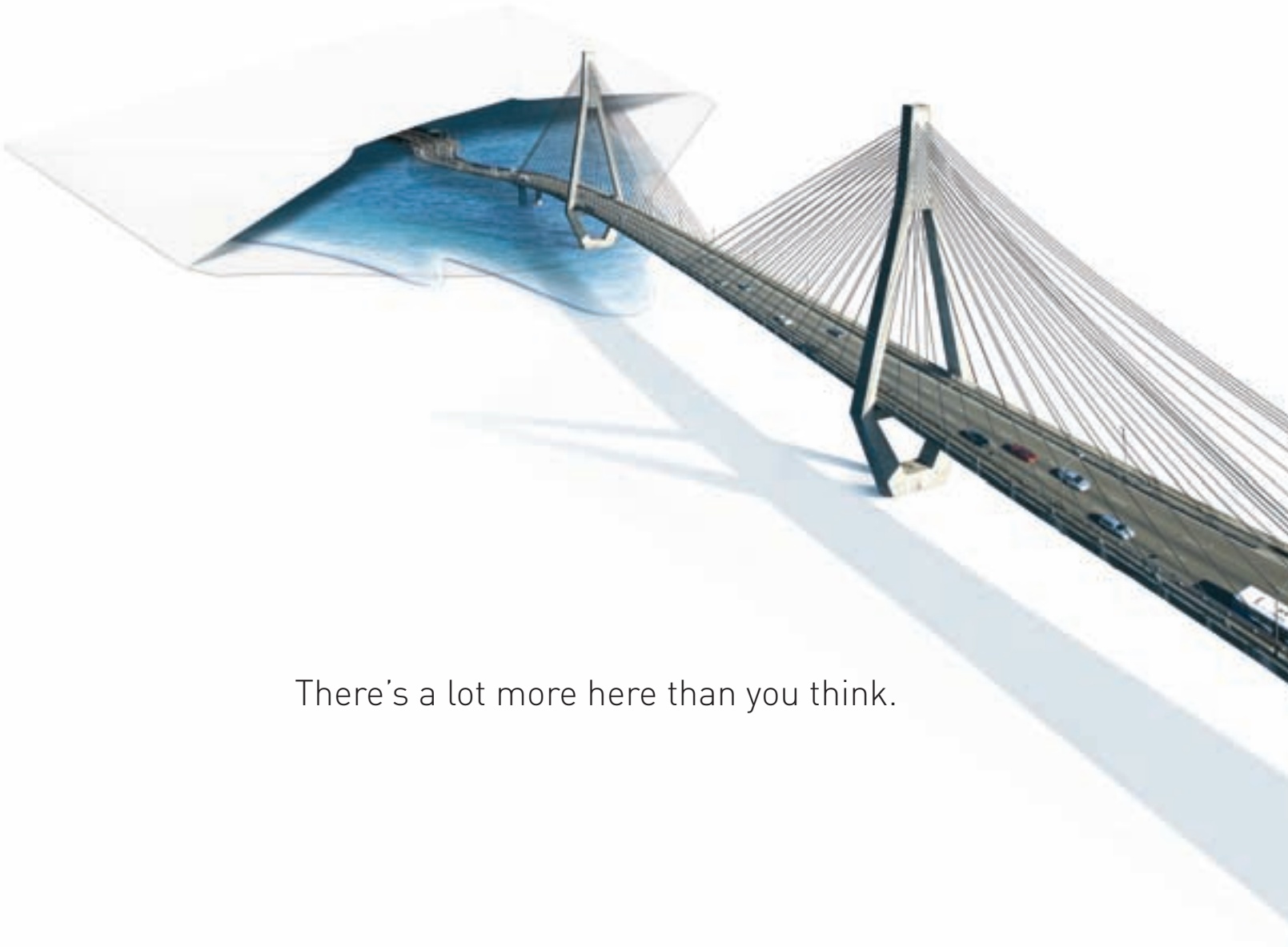

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VOL 23 ISSUE 02 SOLUTIONS FOR STATE AND LOCAL GOVERNMENT IN THE INFORMATION AGE FEBRUARY 2009

inside:

HOW GPS TRACKING SYSTEMS ARE LOSING TRACK OF SEXUAL OFFENDERS

MISSING PERSONS

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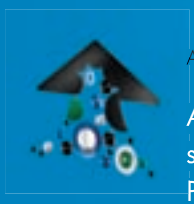
Technology for efficiency, for community, for prosperity.



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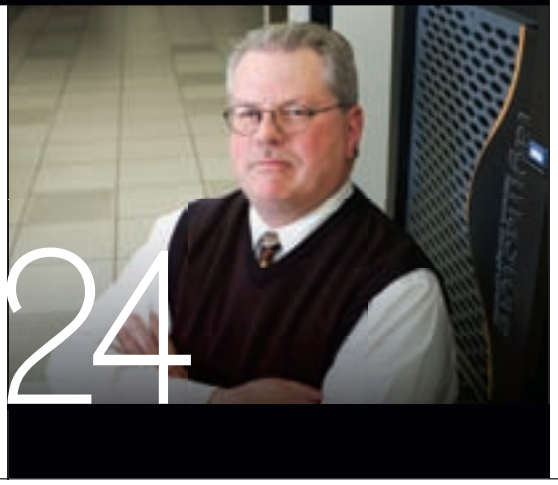

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next month:

Doers, Dreamers and Drivers
In March, *Government Technology* presents its annual Doers, Dreamers and Drivers issue, saluting 25 public-sector professionals for using technology to advance the art and science of governing. Check out next month's issue to see who we think are some of the best and brightest in public service.

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point of view

BY STEVE TOWNS
EDITOR

A Reason for Optimism?

It's February. The holidays are over and it's back to reality. The new year has arrived with a mix of apprehension and optimism.

On one hand, there's the dismal economy. The Fiscal Survey of the States — produced by the National Governors Association and the National Association of State Budget Officers — confirms what most of us already know: The financial pressures on government continue to grow.

More than half of states reported budget gaps as of December 2008, according to the report. Furthermore, deteriorating economic conditions are triggering greater demand for unemployment and Medicaid programs. The problem was driven home in early January when a handful of state unemployment systems were overwhelmed by jobless citizens seeking to apply for benefits.

My home state, California, faces an astounding projected budget gap of $40 billion over the next 18 months. Gov. Arnold Schwarzenegger, locked in a seemingly endless battle with state lawmakers on how to close the gap, announced in January that state offices would close two Fridays a month to save money. Meanwhile, about 900 city of Sacramento, Calif., employees will begin taking an unpaid day off each month as the city struggles with its own $40 million budget shortfall.

Things are tough, and they may get tougher.

Now for a little optimism: Among government IT professionals, there's a sense that the new presidential administration may be inclined to sink more money into IT infrastructure and reform federal funding rules that lead to massive inefficiency in how critical systems are deployed and maintained. Besides improving the stability and security of key technological resources, such a move could give governments more of the IT tools they need to cope with rising workloads and shrinking funds.

Colorado CIO Mike Locatis met with President Barack Obama's policy advisers during the Democratic National Convention in Denver last summer. He came away optimistic. "I think they have a very good understanding of some of the challenges we have with federal cost allocation," Locatis said, "and some of the issues associated with creating more of a public-sector ecosystem with federal, state and local governments and how the large technology component of that can be delivered better."

Strengthening the nation's **IT foundation** is critical to our immediate well-being.

Let's hope he's right, because strengthening the nation's IT foundation is critical to our immediate well-being and our long-term success. In the current economy, agencies will rely more and more on IT systems and infrastructure to cut the cost of government operations. But those IT systems are also vital to the nation's future success in a competitive global economy. Current funds must be used as effectively as possible, and new enterprise investments in critical IT infrastructure are needed to ensure that the nation has the capabilities it needs. GT

Raise Your Voice

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on the Scene

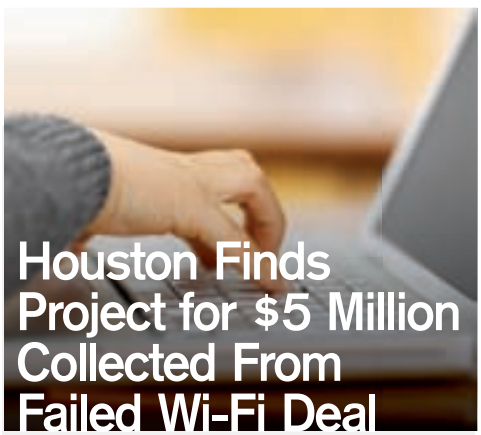
California May Create Chief Geographic Officer Position

SACRAMENTO, CALIF. — CIO Teri Takai told *Government Technology* she wanted to create a chief geographic officer position for California. Takai mentioned the news at Government Technology Conference's Best of California event in December 2008. Naturally the person would drive GIS strategies for the state.

"You do need an individual who is in the lead for the state," Takai said. "It helps when we do collaboration with the counties and other areas of local government. Certainly a chief geographic officer is something we have recommended and are looking at very closely."

She didn't say when or if the search for such an individual would start.

Takai was a guest speaker at Best of California. Others included Kentucky State Data Center Director Ron Crouch, who discussed demographic trends and the future needs of citizens from government IT. In his new role as executive officer of the California Office of Information Security and Privacy, former Colorado Chief Information Security Officer Mark Weatherford addressed the latest trends in security standards and solutions. — ANDY OPSAHL, FEATURES EDITOR



Houston Finds Project for $5 Million Collected From Failed Wi-Fi Deal

ORLANDO, FLA. — Janis Benton, deputy director of IT for Houston, was on hand at the Center For Digital Government's Digital Cities Survey award ceremony in Orlando. Benton discussed the $5 million Houston received when EarthLink abandoned plans to build the city a free municipal Wi-Fi network. Houston's contract stipulated the $5 million penalty in the event EarthLink failed to deliver the network. Houston is using the money to bring free Wi-Fi, PCs and technology training to community organizations in low-income areas.

— ANDY OPSAHL, FEATURES EDITOR

Colorado CIO Urges New Funding Approach

DENVER — Colorado CIO Mike Locatis is urging the Obama administration to rethink how the federal government distributes money to state and local governments. Locatis and others want a coherent, enterprise funding strategy. They say the current funding approach is piecemeal and makes it difficult to maintain, upgrade and secure critical government IT systems.

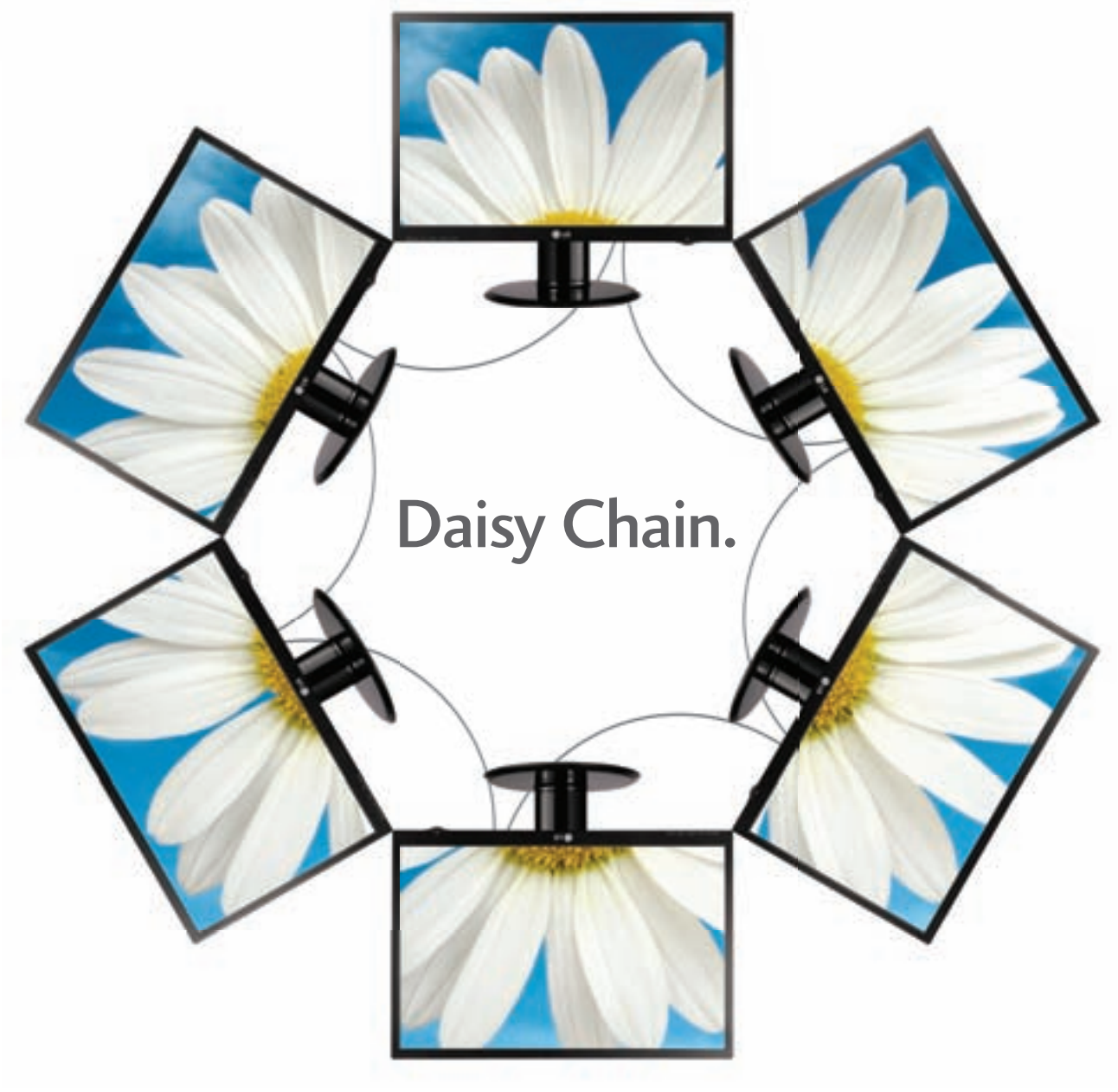
Locatis met with Obama senior policy advisers in August during the Democratic National Convention in Denver, and he came away encouraged. "I think they have a very good understanding of some of the challenges we have with federal cost allocation and some of the issues associated with creating more of a public-sector ecosystem with federal, state and local governments and how the large technology component of that can be delivered better," he said.

— STEVE TOWNS, EDITOR

Govtech.com Hot List

Here are the 10 most popular stories on Govtech.com from Dec. 8, 2008 to Jan. 8, 2009.

1. **Site Reveals Salaries of New York State Employees** Conservative think tank launches Web site with comprehensive state financial data. www.govtech.com/gt/articles/383701
2. **"Empty" Disk Helps Convict Coffee-Can Murderer** Forensic computer science helps put a murderer behind bars. www.govtech.com/gt/96104
3. **Enterprise Architecture Demystified** What is enterprise architecture and who is it intended to benefit? www.govtech.com/gt/418008
4. **Top 10 Secrets of Earned Value Management** A principles-oriented methodology for planning and executing projects. www.govtech.com/gt/393091
5. **Technology May Play Key Role in Obama Infrastructure Plan** Next-gen networks, broadband and cyber-security could get more attention for the new administration. www.govtech.com/gt/articles/576115
6. **Law Enforcement Looks to Video Surveillance Networks** Technological advances spur growth of large video networks. www.govtech.com/gt/570504
7. **How King County, Wash., Met the Four Elements of Records Management** Litigation risk and citizen pressure prompt agencies to rethink policies. www.govtech.com/gt/articles/573931
8. **Governments use Twitter for Emergency Alerts, Traffic Notices** Agencies help move free microblogging service beyond social media novelty. www.govtech.com/gt/579338
9. **Transparency vs. Privacy and Security** What does the push for transparency mean to agency heads and IT managers? www.govtech.com/gt/576906
10. **Sacramento Investigates Plasma Gasification** City considers plan to turn solid waste into useful materials. www.govtech.com/gt/articles/579307



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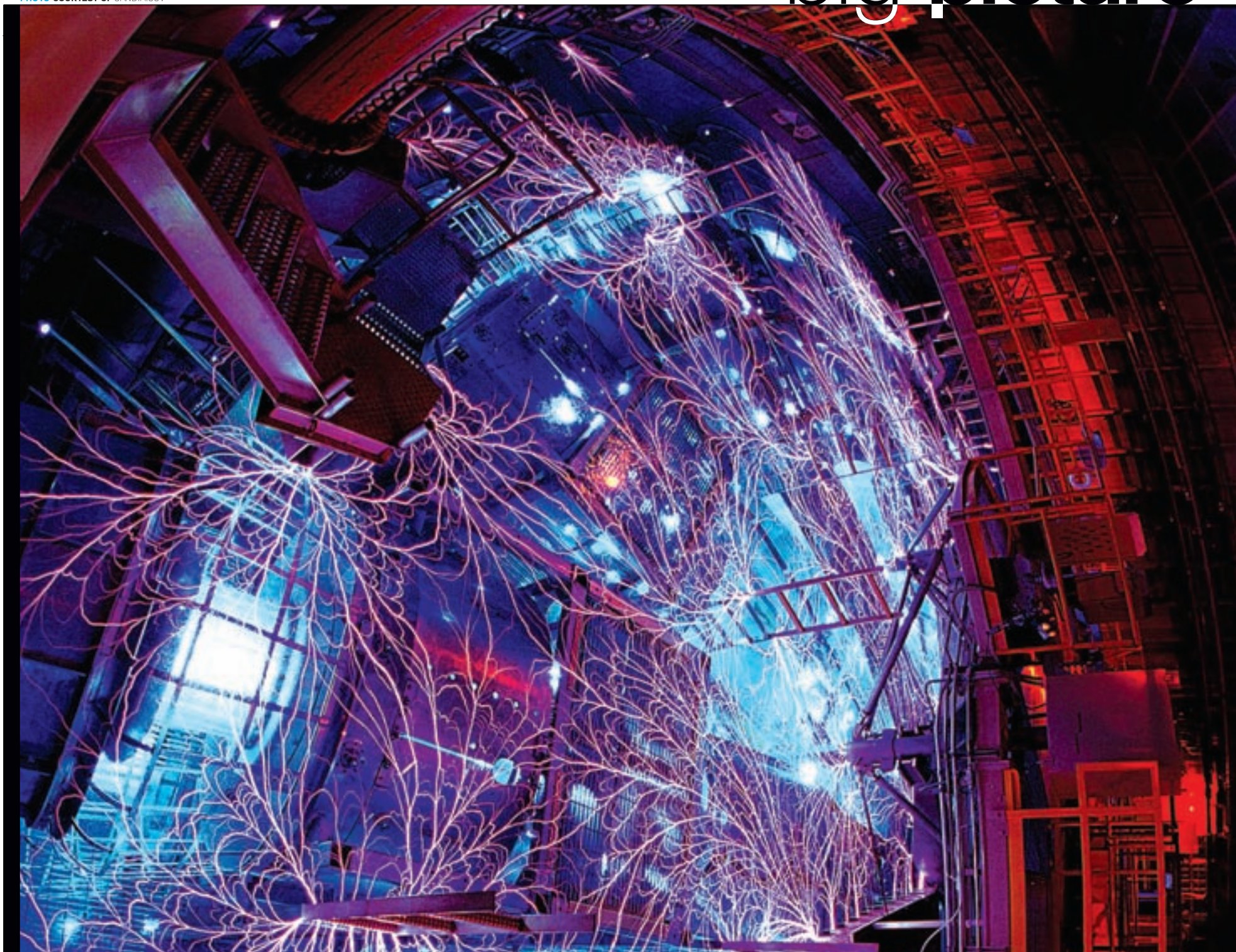

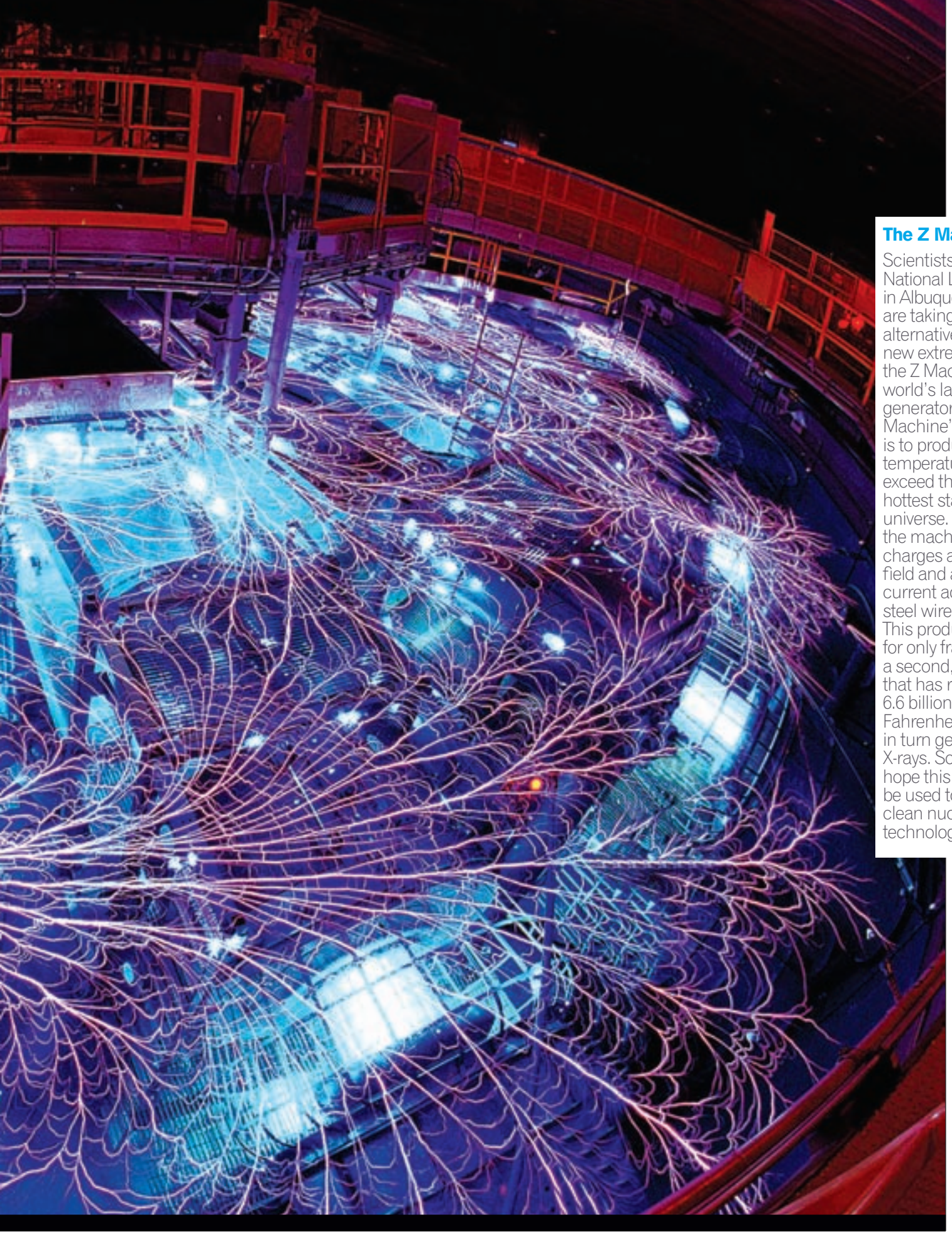

The Z Machine

Scientists at Sandia National Laboratories in Albuquerque, N.M., are taking the idea of alternative energy to new extremes using the Z Machine — the world's largest X-ray generator. The Z Machine's purpose is to produce temperatures that exceed those of the hottest stars in the universe. To do this, the machine discharges a magnetic field and an electrical current across a steel wire mesh. This produces, albeit for only fractions of a second, plasma that has reached 6.6 billion degrees Fahrenheit, which in turn generates X-rays. Scientists hope this energy can be used to develop clean nuclear fusion technology.

Four Questions

Bill Hobgood

RICHMOND, VA., DEPARTMENT OF INFORMATION TECHNOLOGY, PUBLIC SAFETY TEAM PROJECT MANAGER

PHOTO BY DAVID STOVER PHOTOGRAPHY

"We want to make sure these 911 call-takers are charged with a manageable level of calls and have more time to spend on the true emergencies."

THE ASSOCIATION OF PUBLIC-SAFETY COMMUNICATIONS OFFICIALS IS CONSIDERING ADOPTING A TECHNOLOGY STANDARD, ESTABLISHED IN RICHMOND, VA., THAT LETS ALARM COMPANIES AUTOMATICALLY TRANSMIT ALERTS TO LOCAL 911 CENTERS. ALARM COMPANIES TYPICALLY CALL 911 CENTERS WHEN AN ALARM IS TRIGGERED. RICHMOND'S PUBLIC SAFETY DATA INTEROPERABILITY PROJECT — INVOLVING ONE ALARM COMPANY AND TWO 911 CENTERS — ELIMINATED 5,000 CALLS DURING A TWO-YEAR PILOT. RICHMOND IS MAKING THE STANDARD A LAW FOR ITS 911 CENTERS. **BILL HOBGOOD**, PUBLIC SAFETY TEAM PROJECT MANAGER OF THE RICHMOND DEPARTMENT OF IT, EXPLAINS THE PROJECT.

1

How does this standard directly benefit first responders?

One benefit is to eliminate [in the U.S.] up to 32 million telephone calls from alarm companies to 911 public safety answering points (PSAP). Another benefit is eliminating two to three minutes of processing time that it traditionally takes for a call taker to take the information from the alarm company operator. That means police, fire and emergency medical services (EMS) will arrive at an emergency two and a half to three minutes faster. That will increase the likelihood of police apprehension. It increases the chances that fires will be extinguished faster. Of course, a bunch of lives will be saved from an EMS standpoint.

2

How will alarm companies using various computer systems tap into the 911- center system?

The standard is XML-based. A complete package has been laid out for all of them. The software providers have provided software for the alarm companies. For vendors that are providing computer-aided dispatch systems for the PSAPs, the document is being laid out to help them accomplish this. If it becomes an adopted standard, they shouldn't have any problem.

3

What alarm company participated in the pilot?

Vector Security. It just so happens that its chief operating officer [Pamela Petrow] is also on the executive board for the Central Station Alarm Association, which represents hundreds of alarm companies across the nation.

4

Will this standard enable 911 centers to operate with fewer employees?

We're not proposing any reduction in 911-center staff. The problem today is there's a *de facto* standard for call centers nationwide that all calls must be answered in 10 seconds or less. 911 centers are not meeting that because the volume of calls is increasing, yet their staff level has remained the same. They can't afford additional people, or they're having so much employee turnover that they're just keeping their heads above water. We want to make sure these 911 call-takers are charged with a manageable level of calls and have more time to spend on the true emergencies. GT

BY **ANDY OPSAHL, FEATURES EDITOR**

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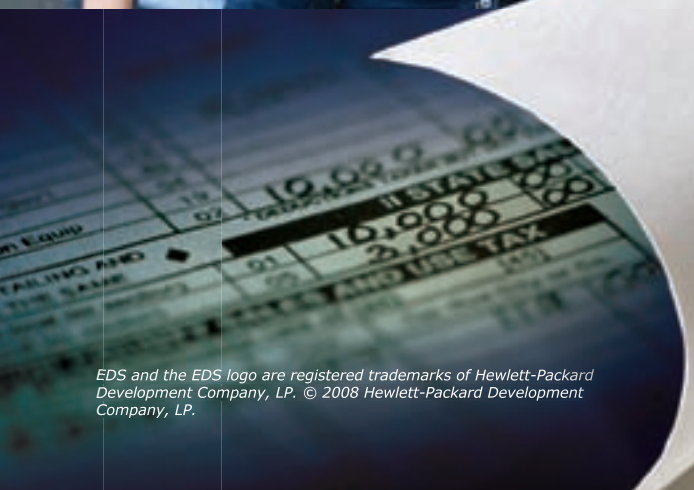
Behind technology serving citizens is the same great team with a new name.



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Behind success there's EDS an HP company

TAL

BY JIM McKAY

GPS monitoring — embraced as a simple technological solution for tracking the whereabouts of convicted sex offenders — is proving to be something less than a silver bullet for state and local public safety agencies.

Convinced that GPS monitoring was the answer to the sex offender problem, judges and lawmakers began mandating the technology for high-profile parolees. Beginning in 2005, the technology was widely deployed as means to ensure that offenders complied with the terms of their release, such as staying a safe distance from schools or a victim's home.

Monitoring systems typically consist of a GPS receiver/portable tracking device, radio frequency transmitter, stationary charging unit, cellular telephone and computer software to review GPS data. The devices allow officials to track the parolees' whereabouts — when everything works properly and when the offender cooperates.

PROM

MISES

Problems with GPS monitoring of sex offenders beg a more thoughtful approach.

But there are problems with the way the technology is used and monitored. False alarms number in the thousands in some jurisdictions, straining manpower and casting doubt on the viability of GPS as a tracking tool for high-profile felons.

In California, the percentage of transient parolees, those who've been declared homeless, has increased by 900 percent since a law was passed that included GPS as part of the solution. Now, officials say, they're guessing about where the offenders are because more have become transient and the GPS monitoring can be unreliable, especially when the offenders lack real housing where they can charge the devices.

> "A lot of people think if you're on GPS somebody is sitting at a computer and they know your **whereabouts** all the time."
>
> **Bill Carbone**, *executive director, Connecticut Supreme Court Services*

And in Connecticut, officials are pushing for a state-run monitoring facility to keep track of offenders being monitored by GPS after numerous false alarms involving several subjects, including one whose case prompted action.

In Arizona, a 2007 legislative study found more than 35,000 false alerts by 140 subjects wearing the GPS-monitoring devices.

Though public safety officials typically agree that GPS is a valuable tool, they say it's not a replacement for personal contact with the subject, his coworkers, family and friends that keeps the offender honest.

Released, Arrested, Released

Connecticut's move for a proposed monitoring facility resulted from a recent re-arrest of a sex offender.

After serving 24 years in prison for multiple sexual assaults, David Pollitt was released and put on probation in September 2007. Pollitt was confined to his sister's residence and required to wear a GPS anklet that tracked his whereabouts. In September 2008, Pollitt was re-arrested after allegedly violating conditions of his parole by leaving the property.

However, Pollitt and his lawyer contended that the GPS unit provided a false alert. In fact, they contend that during the one-year period after Pollitt's release, the unit sent more than 40 false alarms.

Pro Tech Monitoring Inc., a subcontractor for G4S Justice Services, eventually wrote a letter to the court that said it couldn't say conclusively that Pollitt had left the property, according to Pollitt's lawyer, John Kaloidis. Two days after Pollitt's arrest, the warrant was withdrawn.

"A tech went to the home where my client is and said there was a problem with the device," Kaloidis said. "[The signal] bounces off cell phone towers, and there are certain points it can bounce off. It didn't find the street where my client was and bounced him to the next street over."

Pro Tech didn't return phone calls and e-mails to discuss the case.

There were also other problems with the tracking device and its monitoring that added up to the false alerts.

Once, Pollitt was plotted on GPS to have been more than 400 feet from his residence at 12:59 p.m. Just seconds later, he was plotted at the residence, according to a report by the Court Support Services Division of the Connecticut Judicial Branch.

"It would happen in the middle of the night when he was sleeping," Kaloidis said. "The family had to put the phone near his bed because they were tired of being awakened by probation officers saying, 'Dave, where the hell are you?'"

The **Jessica Lunsford Act** is a proposed federal law that would mandate states to have stricter restrictions for convicted sex offenders. Most states have now adopted the law.

The tracking device assigned to Pollitt is a two-piece unit consisting of a transmitter (a battery-operated GPS device worn on the ankle) that emits a radio signal to a portable-tracking device (PTD), a small box that's worn on the offender's waist. The PTD receives radio signals and position information from the GPS device through satellites. The PTD transmits location information to a monitoring station in real time through a cell phone.

Pollitt's unit was programmed to sound an alarm if he ventured outside the vicinity — a Pro Tech representative marks the property's perimeter into the PTD to program the area in which the parolee is required to remain.

The subject is responsible for wearing the PTD on his belt and for keeping batteries in the transmitter. A dead battery or putting the PTD in a pants pocket would send an alert. Bill Carbone, executive director of the Connecticut Supreme Court Services, said those issues could have caused some of the alarms. "But I don't think you can just point to the one area where he wasn't wearing the unit in the place where you get the best service. This happened a lot of times."

Kaloidis said the devices might not have been programmed correctly. "I think when they went to the house they didn't properly calibrate the machine," Kaloidis said. "The four corners of the property weren't marked."

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"We were concerned, and still are, that **GPS monitoring** is viewed as a panacea and will prevent future crime. It isn't, and it won't."

Don Pierce, *executive director, Washington Association of Sheriffs and Police Chiefs*

Then there was what Carbone characterized as impermissible actions by Pro Tech staff. "I would call it unacceptable that we would get a verbal then a written response [confirming that Pollitt had left the property], then two days later have the company reverse it," he said.

A Connecticut Court Support Services report acknowledged a general misconception about GPS and sex offender supervision, and frustration for law enforcement officials who must deal with voluminous false alerts.

The report acknowledged that probation officers' work hours don't extend into the nighttime and weekends, and probation officers must respond to alerts while off duty. If the officer is out of cellular range or not near a computer, he or she may be unable to review the tracking data.

The report recommends assigning a secondary officer to high-profile cases to cover for the primary officer when he or she is unavailable. It also recommended a monitoring center to screen GPS and electronic-monitoring data and alerts at all times.

"We are determined to have some sort of call center in Connecticut that will monitor the offenders, receive the initial alert and serve as a screen prior to the officer knowing about the alert so they aren't bothered on a 24-hour basis," Carbone said, acknowledging the obvious waste of manpower spent tracking false alerts.

Understanding Its Limitations

All sources interviewed for this story said GPS is a legitimate tool for law enforcement, but its limitations must be understood, and it must be used correctly. "It's got to be centered in the context of all the other information available to the officer, including the reports from treatment, family and so forth," Carbone said.

Policymakers should understand that having a GPS device on subjects doesn't mean they're monitored all the time. "A lot of people think if you're on GPS somebody is sitting at a computer and they know your whereabouts all the time," Carbone said. "They're not aware of the influence of weather and other interferences with the system and the cell tower issues."

The Connecticut Court Support Services report noted that in an ideal environment, GPS can be very accurate, but in difficult topography or in bad weather, tracking errors and signal loss can disrupt accuracy and consistency.

California relies heavily on GPS monitoring, despite the false alarms and failures, since a new law was put into effect that tries to keep sex offenders away from schools.

Jessica's Law prohibits convicted sex offenders from residing within 2,000 feet of a school or park. In November 2008, an appeals court ruled that the law amounts to additional punishment, although the law was left in effect for the time being.

Critics contend that the law is making sex offenders harder to track because some, either intentionally or not, are becoming homeless.

And the trouble with homeless sex offenders is there may be nowhere to recharge the unit's batteries. "GPS units need to be plugged into a wall," said Robert Coombs, director of public affairs for the California Sex Offender Management Board. "So it is a real problem that these guys have gone transient, and unless we let them into our public libraries or Starbucks or any other place where they can plug in, we're not going to be able to maintain this problem."

Before the 2008 law passed, 88 registered sex offenders were homeless. That number has risen to more than 1,000 since then, and it's because the law focuses on GPS, Coombs said.

Officials say the offenders are being tracked with the GPS, but critics say that's not enough. "Those of us who work with victims and offenders know that just because you know where a guy is, doesn't mean you know what he is doing," Coombs said. And that's assuming the devices are working correctly, and they sometimes don't, he said.

More than **6,000 sex offenders** on parole in California wear a GPS monitor, according to California Department of Corrections and Rehabilitation.

"This is actually the melding of two technologies," Coombs said. "One is GPS, which is essentially getting that signal from satellites, and the other is cellular technology, which is then transferring that data to the nearest cell phone

tower. The weaknesses of those two technologies are compounded by bringing the two together."

Coombs said parolees can venture out of the satellites' range by entering buildings or a dense urban location. "Places like schools, hospitals, government buildings," he said. "You walk into the Capitol building here in Sacramento (Calif.) and you lose satellite reception."

Coombs said there have been instances in California where an offender was on a train or bus heading to a mandated treatment facility and his satellite reception was lost.

Additionally the offender is counted on to charge the device's batteries and make sure he's wearing it on his belt and not in his pocket. "These are folks who we've already identified as having trouble following rules or schedules," Coombs said. "They may intentionally fail, because by not charging it, they know they're not being tracked. 'If I don't charge this thing for two hours, there's no evidence of where I've been.'"

It's a Fad

Sources said policymakers have made promises about the technology that won't hold up. "In our business, they invent these things, they advertise and the attorney sells the judge, 'Rather than put my client in jail, put him on the GPS,'" said Mike Goss, deputy chief of the Maricopa County, Ariz., Adult Probation Department. "It's a snazzy thing; it's become sort of a fad."

In Washington state, there has been resistance to GPS monitoring. In 2006, the Washington Association of Sheriffs and Police Chiefs opposed proposed legislation — which passed — to expand the use of GPS because of experiences with faulty readings when offenders move inside steel buildings, tunnels or outside when it's snowing, according to Don Pierce, the association's executive director.

"We believed, and still believe, that GPS monitoring should be used when it's appropriate and not simply across the board," Pierce said. "We were concerned, and still are, that GPS monitoring is viewed as a panacea and will prevent future crime. It isn't, and it won't."

The belief that GPS monitoring could replace any other types of supervision, such as visits from the probation officer, conversations with family, counselors and so on, is a dangerous one. "It's best used as a corroboration tool," Coombs said. "When you have a routine parole meeting and the guy says, 'Well, I haven't been in a certain location,' [such as an exclusion zone] you can verify that."

These devices work in conjunction with each other to give an offender's location, so probation officers know when offenders have strayed from set geographic boundaries.

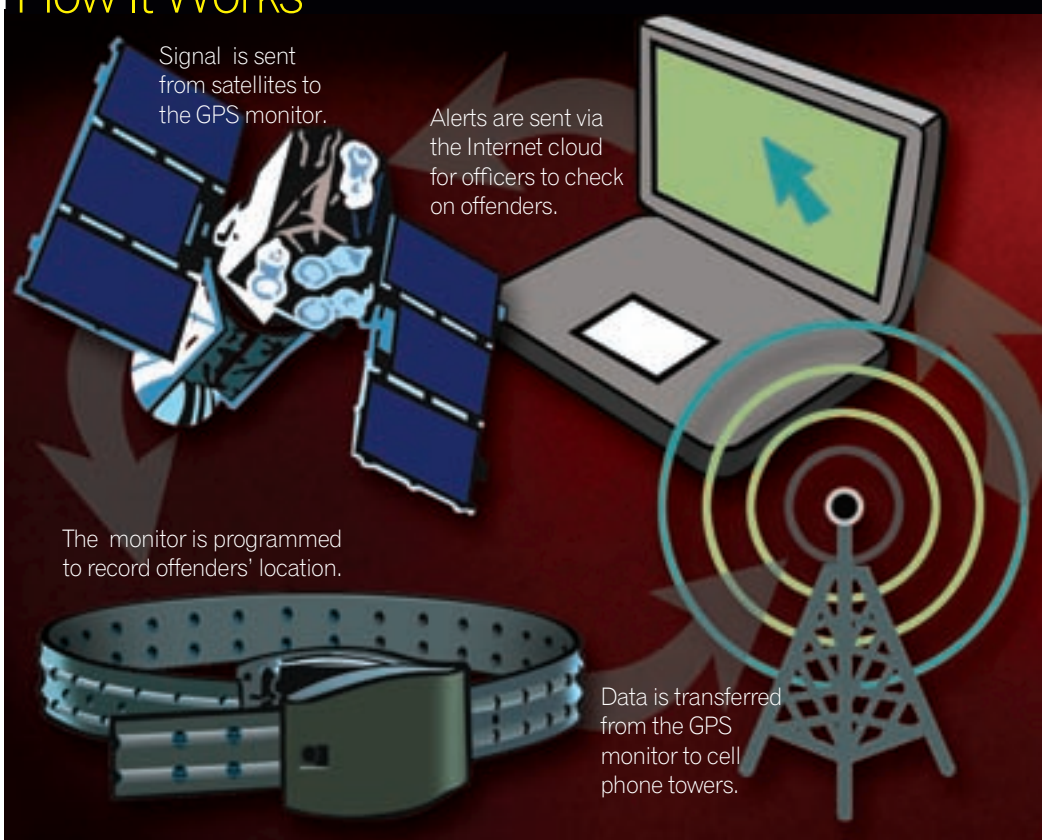
But the technology won't keep people out of trouble if they're prone to trouble. "It's only as good as the approach used to implement it," Coombs said. "If you think the technology is going to protect children because [the offender] can't go near schools, then you forget that children exist in places other than schools."

Arizona eschewed the two-piece units in favor of a one-piece device and has had fewer false alarms, Goss said. "Now, the one piece that straps on the leg is a really small unit and it's all self-contained."

In late 2008, Rhode Island was about to launch a GPS-monitoring program that might be more accurate than technology being used now. It was pioneered by a local private company.

The consensus is that GPS has a role, but its limitations must be understood. "There's a very legitimate and important role for GPS, but it's one tool in the toolbox," Carbone said. "Policymakers need to be better informed so there's not a rush to use GPS because they think it's like LoJack." GT

How It Works



E-HEALTH GATE

New York City's myBenefits system builds on Wisconsin's success.

WAY

HILTON COLLINS | STAFF WRITER

IN THE EARLY 2000s, Wisconsin had a bit of a problem. The state offered plenty of public assistance programs, but they weren't being taken advantage of by many citizens who needed them. Why? Maybe it was difficult to take time off work or use a lunch break to apply for public benefits at an office open only during bankers' hours. And discussing personal information with eligibility workers made some citizens uncomfortable.

In response, the state created ACCESS, a Web portal that allows Wisconsinites to apply for health and social service programs, check eligibility, view the status of current benefits or change personal benefits information — all from a computer.

"It's empowered our members and potential members to take control of their own cases and really have a way of interacting with the program that minimizes any stigma, embarrassment [and] inconvenience," said Jim Jones, deputy state Medicaid director for Wisconsin. The state receives about one-third of its applications online now.

The Wisconsin Department of Health Services built ACCESS for one purpose: to give citizens a faster alternative to receive services.

"The goal of ACCESS from the very beginning was to increase access to the programs," Jones said. "There were people who didn't want to come in to the local agency, who didn't even feel comfortable calling, who we felt would be more comfortable on the Internet."

Online accessibility also lets people receive services when the offices are closed. "If you worked 8 to 5, you'd either have to take a lunch break some other time or take time off to get food stamps applied for your case, or health care for your case and for your family. We wanted to make it easier for people to use," Jones said. "And we wanted to make it easier for people to apply for our programs and get in them."

Applicants can also use ACCESS in public offices, where eligibility workers guide them through the process or type in information for them. Citizens can check eligibility or apply for programs, such as Medicaid; BadgerCare Plus, a program that offers health insurance to children age 18 and younger; FoodShare Wisconsin, designed to help low-income families buy food; and SeniorCare, which helps citizens age 65 and older get prescription drugs.

"Once the application is completed and you submit it, it comes into our automated eligibility system into an inbox; and then, when the [eligibility] worker chooses it, it takes all the data the client has provided and puts it into our automated eligibility system," Jones said. "It means the worker doesn't have to enter that information from a mail-in application form or in a face-to-face interview."

By using **ACCESS and myBenefits**, citizens who need food, rent or medical assistance, can get the help they need.

Not only does this save time for public employees because there's less data entry, it could also make personal interaction more meaningful, Jones said. When completing a traditional, paper-based application, an eligibility worker could be so focused on jotting down information, that discussing a client's personal life became a cold, mechanical task. But if the client entered the information into the computer beforehand, the worker would only call the client if it was necessary to clarify specific information. The discussion could be more informal.

"It's a phone call that says, 'Hey, you said that you have a new job over at Joe's Plumbing, and I wondered how many hours you're working there. Oh, you're working that many hours? Well, that's great. Can you send me your next pay stub?' It becomes that kind of conversation," Jones said, "rather than, 'I have to code this [information in the] computer the right way,' and makes it much more of a person-to-person kind of contact."

"The goal of ACCESS from the very beginning was to **increase access to the programs**."

Jim Jones, *deputy state Medicaid director, Wisconsin*

The ACCESS Story

In 2002, Wisconsin began assessing its enrollment process for public health programs because the state wanted to improve citizens' access to them. Wisconsin was inspired by Pennsylvania's COMPASS system, a Web-based application for benefits enrollment.

Wisconsin applied for a grant from the Food and Nutrition Service, an agency under the U.S. Department of Agriculture (USDA), with the intent to build a similar Web-based tool for people to apply for benefits, check existing benefits status and discern eligibility. In 2003, the Food and Nutrition Service granted Wisconsin $1.7 million along with $1.3 million from the state Department of Health Services for enhancements to internal eligibility systems, the state had about $3 million to get started.

Wisconsin hired consultancy Deloitte, and contractors traveled to communities to talk with focus groups of citizens, county employees and others. Jones said the listening tour took about four months. With Deloitte's findings, Wisconsin decided the solution should be short, confidential, easy to use and at a fourth-grade reading level. The first ACCESS application, the "Am I Eligible?" tool — where people input information to be screened for program eligibility — went live in August 2004. The three other tools followed in 2005 and 2006: "Check My Benefits" in September 2005, "Apply for Benefits" in June 2006 and "Report My Changes" in September 2006. Jones estimated that it took about $6 million to get ACCESS where it is now.

ACCESS Code in Demand

The application has proved to be popular, and not just with Wisconsin's citizens and staff. Jones said other public-sector entities have contacted the state about adopting the ACCESS solution. Since the Department of Health Services is a public entity that used public funds to develop ACCESS, the state is required to make it available. So far, New Mexico, Vermont, Oregon, Nevada and San Francisco have acquired the source code. Jones said other states have gone live with a modified version of ACCESS.

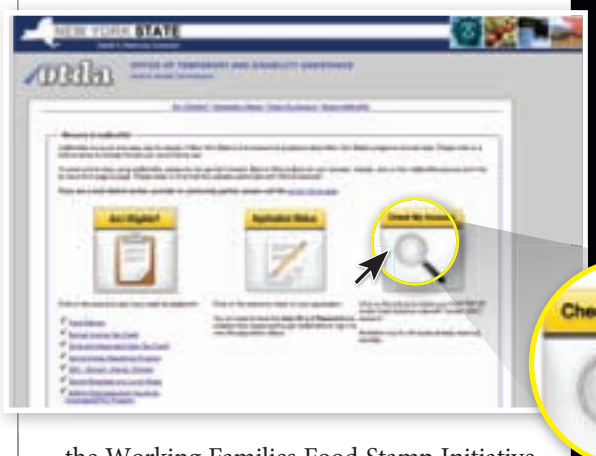
After filing a memorandum of understanding, Wisconsin gave New York the ACCESS

code on Feb. 4, 2008. Then the state forged ahead on design and development and contracted with Deloitte for assistance. The first phase of myBenefits was the eligibility prescreening tool released in May 2008. The next phase, released in late August 2008, incorporated screening for home energy assistance and the "Application Status" tool.

Eligibility workers and community partners can use myBenefits to input citizens' data electronically and submit the data to personnel at local social services departments, who determine program eligibility.

"The vision of myBenefits is really to provide a single online site and portal through which low-income working families, low-income individuals in the state and community partners can connect with the benefits, services and the work supports that they need. So it's essentially an e-government hub for human services," said David Hansell, commissioner of the Office of Temporary and Disability Assistance (OTDA).

MyBenefits was conceived as part of an OTDA initiative to help New York align with then-Gov. Eliot Spitzer's proposal to expand low-income residents' access to the Food Stamp Program. On June 5, 2007 — National Hunger Awareness Day — Spitzer announced the Working Families Food Stamp Initiative, a drive to simplify and streamline the state's application process for food stamps. However, portions of the initiative had to be approved by the USDA before it could get formally under way. That summer, the OTDA began working on the project.



"Within a month, we were busy trying to figure out what kind of solution [we could] bring in or look at in order to support our Working Families Food Stamp Initiative," said Daniel Chan, CIO of OTDA.

The USDA approved the initiative, and on Feb. 4, 2008, Spitzer announced its launch. By then, OTDA had already acquired the ACCESS functionality. Several weeks later, the state had its Web application up and running, which was a crucial step toward increased citizen participation.

> "We're **anticipating a tremendous mean increase** in the need for many of the programs that we're talking about because people are going to be losing their jobs."
>
> **David Hansell,** *commissioner, New York Office of Temporary and Disability Assistance*

Just in Time

It's good that New York has myBenefits, Hansell said, because the area has been hit hard by tough economic times. In October 2008, Gov. David Paterson said more than 160,000 New York residents could lose their jobs soon.

"We're anticipating a tremendous mean increase in the need for many of the programs that we're talking about because people are going to be losing their jobs," Hansell said.

On top of job losses fueled by collapsing Wall Street investment banks, another unemployment wave predicted by Paterson could create an economic quagmire and consequently more people will need public assistance. Chan might already be seeing the signs. During October, myBenefits' Web traffic increased threefold, he said.

"The job losses will be at all income levels. It will be from investment bankers down to support staff, but there also will be the ripple effects on the New York City economy," Hansell said. "As those people lose their jobs and have less money to spend, it's going to affect restaurants — it's going to affect all sorts of support work, so we expect that there'll be job losses at all levels."

Hansell said OTDA has ambitious plans for myBenefits that will take time to implement. He would like to add more programs that low-income residents would be eligible for, like health insurance and child care. He also wants myBenefits to give citizens more power to manage and administer their benefits online.

OTDA is working with open source developer Red Hat to implement a rules engine — software that classifies and defines crucial system code — which will let New York expand myBenefits to more easily encapsulate additional programs and functions. These changes will move New York even closer to the functionality of Wisconsin's ACCESS system.

But ACCESS' features will also continue to evolve, Jones said.

"I'm satisfied with what we have because I see where it's going. It's really going to this interface that deals with all members' needs," he said. "I think, eventually, we're going to get to this particular point where we have to go back and refocus on the technology, but it's just been a few years now, and we've been good at keeping it up-to-date." GT

How They Compare

New York state's Office of Temporary and Disability Assistance offers the myBenefits Web application, which is similar to ACCESS in appearance and function. The home page features three clickable icons that look similar to Wisconsin's ACCESS. "Am I Eligible?" prescreens users in a process similar to Wisconsin's version. The "Application Status" lets users check their existing applications. The **"Check My Account"** icon is analogous to ACCESS' "Check My Benefits," allowing users to check their existing benefits.

MyBenefits was created with the Java 2 Platform, Enterprise Edition, a.k.a. J2EE, which uses Java programming language. ACCESS was built with the same software. There are no licensing fees, so it's more cost-effective than a vendor solution. MyBenefits is supported by an Oracle database and runs on an IBM server. ACCESS also runs on IBM server technology.

TURNING 10: LOCAL GOVERNMENT ERP

BY HILTON COLLINS > STAFF WRITER | PHOTO BY GMP DIGITAL

IN SUMMER 1998, Sacramento County, Calif., and Phoenix, Ariz., entered the world of public-sector enterprise resource planning (ERP) with their eyes wide open. Each needed to replace disparate legacy systems in various departments with an all-in-one enterprise system that integrated individual business processes and their data. Ten years later, the two governments who led the way for local government ERP provide insight on how they did it and what they've gained. Both purchased solutions from ERP software giant SAP, and they're two of the company's oldest local government customers.

SACRAMENTO COUNTY, CALIF., AND PHOENIX MARK A DECADE OF ENTERPRISE SOFTWARE.

MICHAEL CONNELLY, IT MANAGER, OFFICE OF COMMUNICATIONS AND INFORMATION TECHNOLOGY, SACRAMENTO COUNTY, CALIF.

Tammy Ryan, management services administrator, Phoenix Water Services Department

PHOTO PROVIDED BY TAMMY RYAN

"These are really the first two SAP public-sector customers in the U.S. Sacramento County and the city of Phoenix, in my opinion, they're really on the leading edge of the rise of the platform," said Rod Massey, vice president of SAP's Global Public Sector.

Both jurisdictions' deployments are still going strong.

Time for Change

"We had a lot of legacy systems, mainframe systems that did various components of our business. We had a purchasing system that was vended, a financial system that was vended and an HR system that was vended. And they were from three different vendors," said Michael Connelly, an IT manager in Sacramento County's Office of Communications and Information Technology (OCIT). Connelly wasn't there for the original implementation, but he currently manages personnel who perform system upkeep. "These were older legacy systems, and so we thought, rather than just spending a lot of money trying to bring these into compliance, why don't we put that money to use instead and bring in a newer system and maybe something that integrates all of these pieces?"

And that they did. According to Connelly, the move to bring ERP into county government was spearheaded by business units that wanted to replace end-of-life programs that might not function in the new millennium. They also wanted to streamline data transfers between departments.

"I don't think, **with people needing real-time data**, that you could have used the old system we had where you waited at the end of the month and did batch processing."

Tammy Ryan, *management services administrator, Phoenix Water Services Department*

"If you have separate systems, somehow you have to link the information from one system to the other. Things don't always translate right. Things don't always work the way they should," he said. "And inevitably, your systems are out of sync. They have different data in them. Transactions don't happen that you thought should happen and so forth. With an ERP system, it's all integrated. So purchasing feeds finance, HR feeds finance, finance feeds purchasing."

The county shortened its hiring process by two weeks after the deployment. Sacramento also eliminated the distribution of paper reports, which used to take 80 hours.

But the government didn't only implement the solution to save time and manpower hours — a threat loomed on the horizon. Y2K was coming, and as early as 1997, the government wanted to prepare for it. Many people worried about applications that could only handle 20th-century dates beginning with 19. How would these programs handle newfangled 21st-century dates starting with 20? The county wasn't waiting to find out.

"There were several systems that needed to be upgraded for Y2K, and we came to the realization here at the county that, rather than try to upgrade these, in some cases, nearly 15-year-old systems, maybe it would be more cost-effective to upgrade to an ERP system, which really consolidates things and integrates things," said Jim Hicks, principle IT analyst for the operations server support department within the OCIT.

According to Craig Rader, a Sacramento County purchasing agent, the county purchased the system in 1997 and implemented the first phase, which included financial, purchasing and inventory in July 1998. Following that, the HR module was deployed in January 1999. Since the 1990s, the county has used more modules, but has yet to utilize the ERP's full functionality.

"So even though we might not be using all the modules, we can implement them at any time because, my understanding is, we own the licensing for everything," Rader said.

Sacramento organized its ERP into two main systems: COMPASS — Comprehensive Online Management Personnel and Accounting System for Sacramento County — which provides online management of personnel, accounting, procurement and inventory, and FOCUS — Fully Online Customer Utility Billing System — which handles utility billing. In Connelly's estimation, both programs span about 44 departments and 1,500 employees.

Hicks leads the team that manages the ERP's operating system, its interface with the back-end Oracle database and the physical servers that support the whole setup. Connelly's team handles the modules at the application level and configures how they operate and communicate with each other. The latter team works with county departments when they need to modify or augment their applications.

"A lot of paperwork and forms were eliminated," Connelly said. "Obviously some business processes were shortened, but probably the biggest advantage is the elimination of redundant information and the integration that you get by each part of your business feeding the other parts."

County departments can quickly generate reports on expenditures to monitor their activities and purchases because the ERP system stores the data. Reports that used to take 10 days to produce can now be immediately produced and available through workflow mail systems. Before the ERP system was deployed, three county employees spent three days each month making labor and pay calculations, but now these calculations are done automatically.

A Wealth of Benefits

ERP also made a big difference in how employees get their work done in Phoenix

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According to Sacramento County IT Manager Michael Connelly, the move to bring ERP into county government was spearheaded by business units that wanted to replace end-of-life programs that might not function in the new millennium.

PHOTO BY GMP DIGITAL

— Arizona's capital and arguably most well-known city.

"It has allowed us to make better decisions and rapidly assess where we are," said Tammy Ryan, management services administrator of Phoenix's Water Services Department. "We can actually go right into the system, find out exactly to date how much we've spent. You can go do immediate analysis on your electricity usage or your electricity costing."

This is important in Water Services, where people must know how much electricity treatment plants use and how much money is spent on chemicals. ERP tools make rapid analysis a convenient technological reality. And Phoenix, just like Sacramento County, also benefits from speedy report creation.

Before the city's 1998 SAP implementation, the municipal financial system wasn't the user-friendly application it is today. Previously employees pulled up reports by microfiche and prepared entries on paper, and Ryan doesn't

Phoenix

even recall accessing the system by computer like people can now. She doesn't think Phoenix would be able to function in today's high-tech environment without ERP.

"You would have had to have [gone] to a system like this," she said. "I don't think, with people needing real-time data, that you could have used the old system we had where you waited at the end of the month and did batch processing. I suppose we could have, but you would have been really slow in reacting, and that's just not the world we live in today."

Phoenix began its ERP journey in the late 1990s with similar concerns to Sacramento County's — Y2K and older systems with low-integration functionality. The government hired a consulting firm to perform a risk analysis to assess the city's needs and what solutions could help. Phoenix purchased the same product Sacramento did, which was named SAP R/3 at the time. The city's Finance Department manages the system.

"We had a lot of challenges in trying to get people to let go of these niche systems that they had in their departments. So that was a challenge, to make people feel comfortable enough with the central agency that we could provide their needs," said Deputy Finance Director Susan Perkins.

Although Finance manages the system, she estimated that around 30 departments use it for their own needs when necessary, including accounting, bill paying and inventory management functions. The city still uses PeopleSoft for HR payroll in a separate system from the SAP software. Perkins estimated that about 3,000 employees use the ERP system compared to the some 900 who started using it right after the initial 1998 go-live date. This increase in users is due to the system being deployed to more areas over the years.

Case in point: the Aviation Department. In 2000, Phoenix began the ERP rollout there and finished after 18 months, according to city employee Jan Mueller. Today she's an administrative assistant for the Metro Facilities and Energy Management Division of the Public Works Department, but back then, she worked for Aviation and played a role in the SAP implementation.

"At the airport in 2000, it was a transition trying to get foremen used to being in the field to track their work, to sitting in front of a computer to track their work. So that cultural shift was a little bit difficult to address," she said. "But it really was very successful out there. I think it still is. It's so simple to run reports."

Now the system's so ubiquitous that it's hard to picture any Phoenix citizen who hasn't been affected by it. The ERP solution stores information about city buses, including make, model and year, and a fleet-management module tracks how often oil and air conditioning service should occur. City personnel also use it to track information about police radios, light poles and traffic-signal equipment. The system manages the deployment of street signs on city roads, and space and rental areas for concession shops in the Phoenix Airport System.

And the Trend Grows

SAP's Massey believes ERP use will grow in the public sector. It'll likely have to — citizens expect greater, speedier service from their local governments, and agencies will be forced to comply. This was the main reason why San Buenaventura, Calif., recently purchased an ERP system from Agresso, an ERP-providing subsidiary of the Netherlands-based company Unit 4 Agresso.

Most people know San Buenaventura as Ventura, home of great Southern California surfing spots. The city's government is currently implementing its own ERP system to replace a 25-year-old back-end system that won't support e-government solutions city officials want to deploy.

CONTINUED ON PAGE 44

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Quenching Nationwide Thirst

Governments turn to technology to support water conservation efforts.

Synopsis: State and local governments seek new technologies to aid in combating drought.

Agency: Idaho's Department of Water Resources, Atlanta's Department of Watershed Management and Healdsburg, Calif.

Technologies: WeatherTRAK and METRIC.

Contact: Melinda Langston, director of water conservation, Atlanta Department of Watershed Management, mlangston@atlantaga.gov.

BY ELAINE RUNDLE | STAFF WRITER

As states like Georgia and California cope with historic droughts, they're turning to technology to aid water conservation — not only for drought recovery, but also to prepare for a future of smaller water supplies.

Climatologists say climate change will worsen dry spells — so the problem isn't likely going away.

As weather patterns change, governments are creating initiatives that save water, time and money. These improvements include automatic water meter readers, satellite-based evapotranspiration monitoring and electronically controlled watering systems.

Smart Irrigation

Healdsburg, Calif., was seeking a more efficient way to water its athletic fields and instead found a solution that overhauled its water conservation initiatives. According to David Mickaelian, the city's community services director, many of Healdsburg's fields used manual water controllers. If a city worker needed to change the watering schedule, he or she had to visit the field to make the updates. Park Superintendent Matthew Thompson told Mickaelian about WeatherTRAK, a climatologically controlled irrigation system.

WeatherTRAK is a remotely managed sprinkler controller that automatically adjusts water schedules based on a landscape's needs — such as how much water specific plants living there require — and the local weather conditions. Mickaelian said the system has a one-day lag, using the previous day's weather information to modify watering times.

"It has a satellite; it tracks the weather patterns," he said. "So what it does, it really tracks the weather for us. On really hot days, it automatically adjusts to irrigate based on the temperature readings from the previous day."

The city installed the technology in 2007 in selected parks to ensure the system worked properly. After comparing the park's water usage between 2006 and 2007, the city calculated water savings in the range of 5.5 to 18 percent. "We started to realize this is more than we're looking for as far as the payback because now we're starting to see significant savings, and that correlates with reduced water use," he said.

The system is enabling the city to update its entire water system. By tracking water metrics, Healdsburg is finding that some meters are tied together that shouldn't be — such as athletic fields' irrigation systems that are connected to bathrooms. Mickaelian said when the metric doesn't match the expected savings, it prompts them to investigate the issue. The technology also reports water leaks in real time, allowing officials to fix problems immediately and reduce the amount of wasted water. Another bonus is that man-hours have decreased because the systems can be remotely controlled.

Healdsburg's water use was down 11 percent in 2007 through a combination of city-led efforts and citizens who voluntarily reduced their water consumption. The city plans to upgrade all athletic fields, parks and pools with the irrigation system technology within the next two years for less than $40,000.

"This WeatherTRAK system kind of goes into our toolbox, if you will, so it allows us to be a leader in the community, saying, 'We're practicing what we preach,'" Mickaelian said.

Extreme Drought

In fall 2007, Gov. Sonny Perdue declared that most of northern Georgia, including Atlanta, was in a Level 4 drought and he required all water utilities to cut back production by 10 percent. Atlanta had already enacted outdoor watering restrictions, which reduced water use by 14 percent. "We had already taken care of all the low-hanging fruit," said Melinda Langston, director of water conser-

vation for Atlanta's Department of Watershed Management, "and we really had to go to some drastic measures at that point."

According to the National Drought Mitigation Center, Level 4 is the most severe drought classification. Atlanta is working on many initiatives to mitigate the drought's impacts.

As part of the city's $3.9 billion Clean Water Atlanta infrastructure improvement program, an initiative was launched in December 2006 to convert all water users — commercial and residential — to an automated meter-reading system. The change will reduce meter reading, customer service and operating expenses, while ensuring the accuracy of customer usage numbers. Langston said this switch, which is halfway complete, is the largest contributing factor to the city's success in moving toward water efficiency. Officials track water usage by monthly readings or at any time by using a radio system and driving by locations to pick up readings.

Langston said Atlanta also is encouraging citizens to purchase household water conservation aids, such as the HydroClean Fill Valve that cuts toilet water consumption as much as 33 percent. The city invested $1 million in a residential toilet rebate program that encourages residents to replace toilets that use 1.6 gallons of water or more per flush.

"The bottom line for us is we really need to be in a water conserving mode from now on," she said. "And this has been a good opportunity to teach people how to do it."

The city-owned Hartsfield-Jackson Atlanta International Airport is upgrading its 725 toilets, 338 urinals and 601 sinks to low flow, according to Al Snedeker, the airport's public relations manager. By switching toilets from 1.6 gallons per flush to 1.28 gallons per flush, the airport estimates it will save 44 million gallons per year.

The airport uses almost 1 million gallons of water per day and would like to reduce consumption by 15 percent in 2009. The airport's maintenance division installed three rain barrels each with a maximum capacity of 2,500 gallons. The barrels collect water that would otherwise be unused. Now it's used for washing maintenance vehicles and watering the grounds, Snedeker said.

Mapping Water Use

Idaho uses remote sensing and GIS to be resourceful with water. Instead of devising measures for drought recovery, officials are working toward being sustainable and preparing for the future.

Tony Morse, GIS manager of Idaho's Department of Water Resources, said the state uses a satellite-based evapotranspiration (ET) tracking model. ET is the water that's evaporated from soil or transpired from vegetation, and it represents the amount of water loss from a watershed. Tracking ET lets state officials see how much water is used by irrigated agriculture, like farms. This is an important measurement because irrigated agriculture accounts for more than 95 percent of Idaho's water. Morse said some states like Kansas use an honor system to report the amount of water farmers use each year. Idaho's ET tracking model can more accurately gauge their usage.

"It's about using the state's water resources in an efficient way," Morse said. "It has to do with how much water an irrigation district ought to get in order to satisfy its customers and users. It's about trying to allocate a scarce resource in as efficient way as possible."

Idaho uses its satellite-based Mapping Evapotranspiration at High Resolution with Internalized Calibration (METRIC) model to compute ET. METRIC uses digital images from Landsat satellites — the only operational satellites that have enough resolution to map ET in individual agricultural fields — which lets the state track how much water is used by each field. Temperatures are determined from the digital image's pixels, which creates a continuum between "no ET" and "maximum ET" to identify areas of water use.

Idaho's use of METRIC was one of the top 50 programs in the 2007 Innovations in American Government Award competition held by the Ash Institute for Democratic Governance and Innovation.

During a drought, the information the program provides would aid the state in determining how much water an entity should be allotted, Morse said. Officials can review an entity's historic water use and make an educated decision about how much water it can use under the new conditions. "During a drought, of course, you have competing interests, entities compete for water," he said. "And understanding the history of water use by an entity is very important." GT

Synopsis: Google Flu Trends uses search query data to track flu activity.

Agency: Centers for Disease Control and Prevention.

Technology: Google search engine.

Contact: Katy Bacon, spokeswoman, Google, katybacon@google.com.

A Virulent Web

By tracking searches on Google, public health officials get a new tool to combat flu outbreaks.

BY CHAD VANDER VEEN | ASSOCIATE EDITOR

For much of its history, Google has been a widely admired company that could seemingly do no wrong. But in recent years, some observers have cast a suspicious eye at the search giant. From censoring content in China to accusations of invading user privacy at the behest of the U.S. government, the company with the motto "Do no evil" has lost some of its luster.

If its image has been tarnished, much of the blame stems from Google's ability to intimately track users' Web browsing habits. Though Google is by far the most popular site for searching the Web, users are growing more uncomfortable with the notion they may be under the lens of Google's microscope.

But what if Google could use its considerable power for good? The company will tell you that's what it's always done. If you want proof, look no further than Flu Trends, a remarkably simple service Google devised to help the nation's health officials get an upper hand during flu season.

Following the Flu

If advertisers can determine your shopping trends based on Web searches, health officials should be able to monitor health trends the same way. That's the underlying, albeit simplified, rationale behind *Detecting influenza epidemics using search engine query data*, a paper that appeared in the November 2008 issue of *Nature*. The authors — Jeremy Ginsberg, Matthew H. Mohebbi, Rajan S. Patel, Mark S. Smolinski and Larry Brilliant of Google and Lynnette Brammer of the Centers for Disease Control and Prevention (CDC) — analyzed years of search terms and concluded they could develop a model to quickly identify influenza outbreaks.

"By processing hundreds of billions of individual searches from five years of Google Web search logs, our system generates more comprehensive models for use in influenza surveillance, with regional and state-level estimates of ILI (influenza-like illness) activity in the United States," they wrote.

The authors gathered historical logs of Google search queries from 2003 to 2008. From that data they developed a formula to track the occurrence of common search queries amid the 50 million most common searches in the U.S. during that time. The formula was then further refined to narrow the query tracking to ILI-related searches. The resulting search trends were then compared to the data gathered by the CDC across its nine public health regions. The CDC's influenza-surveillance data is gathered by 1,500 doctors who report to the CDC on 16 million annual physician visits concerning ILI — a process that can take several weeks. It turned out that the researchers' Web query analysis produced trends similar to those discovered by the CDC.

"Google Web search queries can be used to estimate ILI percentages accurately in each of the nine public health regions of the United States," according to the authors. "Because search queries can be processed quickly, the resulting ILI estimates were consistently one to two weeks ahead of CDC ILI surveillance reports. The early detection provided by this approach may become an important line of defense against future influenza epidemics in the United States, and perhaps eventually in international settings."

The authors are quick to note, however, that their model is not intended to replace the sort of on-the-ground surveillance conducted by the CDC. Instead, Google Flu Trends is designed to help public health officials spot an outbreak before it starts. "This system is not designed to be a replacement for traditional surveillance networks or supplant the need for laboratory-based diagnoses and surveillance. Notable increases in ILI-related search activity may indicate a need for public health inquiry to identify the pathogen or pathogens involved. Demographic data, often provided by traditional surveillance, cannot be obtained using search queries," the authors said.

"In the event that a deadly strain of influenza emerges, accurate and early detection of ILI percentages may enable public health officials to mount a more effective early response."

They also point out that, during the process of tracking queries, no personal information is recorded, nor are user IP addresses or users' specific physical locations.

Public Health Goes Public

You can see just how accurate the gathered data is at **www.google.org/flutrends**. With the formulas in place, Google engineers can show flu trends just as easily as they show webmasters their sites' analytics. When the data is charted, the results are strikingly similar to those found by the CDC's surveillance system. In fact, from 2004 through 2008, the flu activity reported by Google and the CDC are almost identical. The Google numbers skew slightly higher, but that can be attributed to people searching the Web for flu information when they don't actually have the flu.

So what search terms give hints there may be a flu outbreak on the way? According to Google spokeswoman Katy Bacon, it could be something as mundane as "thermometer." When taken together, these search terms can give vital, advance notice to health officials.

"Maybe you're [searching] for where you can buy a thermometer or what the best chest congestion remedy is, or things like that," she explained. "By tracking the popularity of certain Web search queries, we can accurately estimate the level of flu in each state in near real time. The reason this is important is early detection is critical to helping health officials respond quickly. That's why the CDC tracks the disease. But Flu Trends can help inform the public and officials about flu levels one or two weeks before the traditional surveillance system."

With Flu Trends helping to inform the public about influenza, the obvious question is whether these sorts of analytics can be applied to fight other outbreaks.

"We have a product called Google Trends that lets you track the popularity of specific search queries," Bacon said. "I know the team is excited about where they can go next. But for right now they're just focused on making sure Flu Trends continues to work."

The team of researchers who gathered the data for Flu Trends wants to expand the capability to regions with inadequate medical care. They believe the tool can be particularly useful in developing nations.

"We hope to extend this system to enhance global influenza surveillance, especially in areas that currently lack the necessary resources, including laboratory diagnostic capacity." One problem, of course, is that many areas that could most benefit from this data are those that have limited Internet access. But as Internet access continues to spread, Google is hoping Flu Trends will help ensure the flu doesn't. GT

Synopsis: Washington, D.C., residents compete in the Apps for Democracy open source competition, but startups might get to win big bucks.

Agencies: Office of the Chief Technology Officer, Department of Consumer Regulatory Affairs.

Technologies: iLive.at and the Internet.

Contact: www.appsfordemocracy.org, www.octo.dc.gov.

Long Live Democracy

CTO Vivek Kundra and Mayor Adrian Fenty eye enlarged Apps for Democracy mash-up contest.

BY MATT WILLIAMS | ASSISTANT EDITOR

There's been no shortage of limelight on Washington, D.C., Chief Technology Officer Vivek Kundra, especially since he reportedly landed on President Barack Obama's shortlist for the nation's first federal CTO.

But Kundra seems to have his focus squarely on Washington, D.C. — at least for the time being. In a recent conversation with *Government Technology* he revealed that he is in talks to expand the scope of the district's Apps for Democracy. The first-of-its-kind contest awarded $20,000 in prize money in November 2008 to private citizens who built open source mash-up computer applications that show publicly released data in a user-friendly manner.

"I just got out of a meeting with a bunch of venture capitalists [in November 2008], and the next thing I'm planning on doing is creating a competition for startup companies," Kundra said. "What I want to do is articulate the biggest problems that faze the public sector and Washington, D.C., and essentially bring in the smartest people and say, 'Normally I would pay $10 million to solve this problem. But I challenge you to solve this problem for half a million dollars.' [I want to] have the startup entrepreneurs come in and create solutions so that we are basically 'solution sourcing,' rather than spending years going through [a bureaucratic] process. We're actually going to move quickly into providing solutions to some of the toughest problems we face."

It's that type of out-of-the box thinking that Kundra contributed to the Obama transition team's Technology, Innovation and Government Reform working group. Kundra and Virginia Secretary of Technology Aneesh Chopra were group members, among several other IT luminaries, of this so-called "TIGR team."

Kundra's Office of the Chief Technology Officer has already found uses for some of the open source applications built by Apps for Democracy contestants, he said. Two examples: The iLive.at contest winner that maps the schools, banks, etc., nearest to a street address will be integrated into Washington, D.C.'s Web portal strategy so that all citizens may create their own iLive.at accounts. The Department of Consumer and Regulatory Affairs is already integrating an Apps for Democracy application into its business process, Kundra said.

"I think I'm most proud of the fact that we have embarked on technology evolution, and this revolution has achieved what we are looking for in terms of transparency in government and in terms of the ability to engage citizens and lowering the cost of government operations," Kundra said. GT

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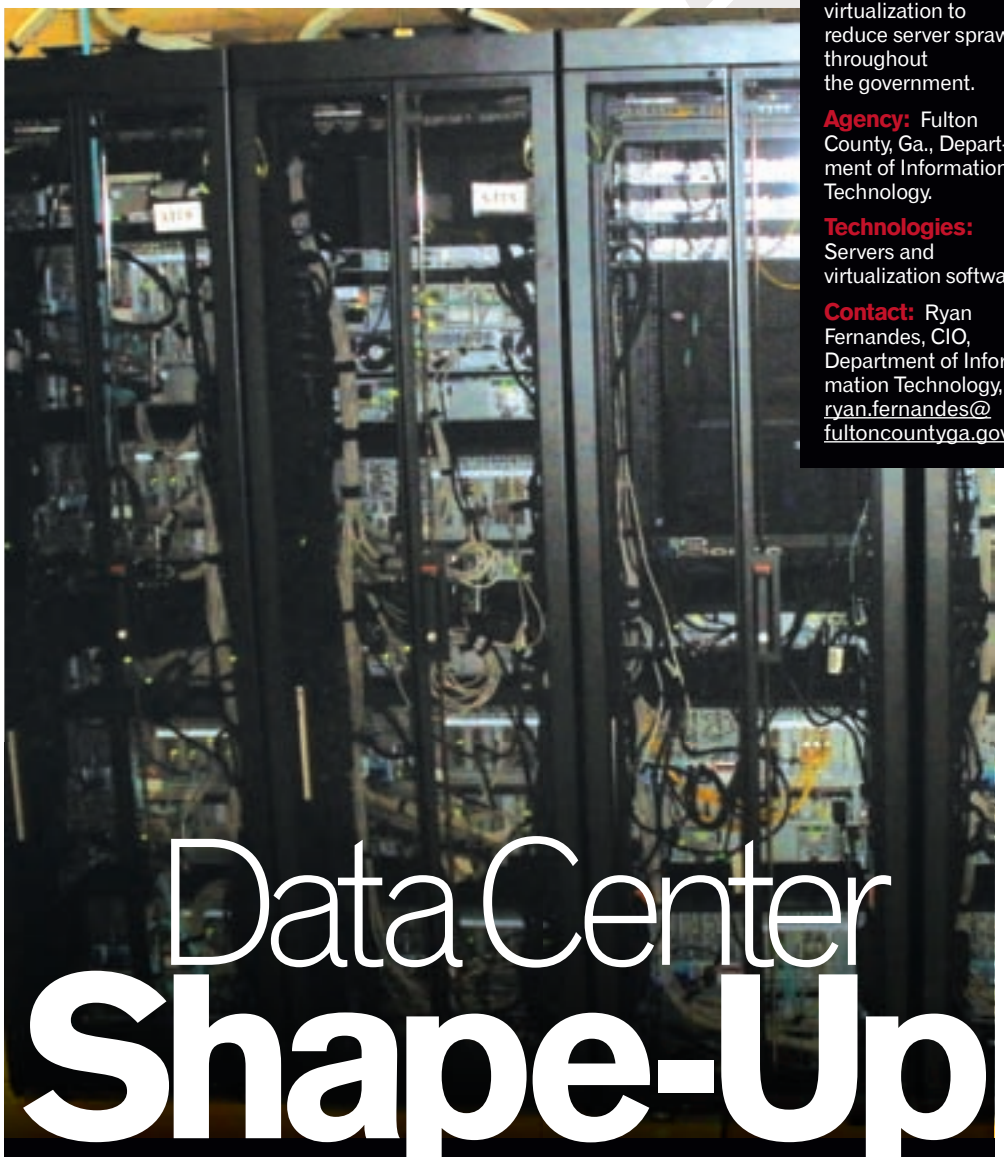


Data Center Shape-Up

Synopsis: Fulton County's Department of Information Technology used blade servers and virtualization to reduce server sprawl throughout the government.

Agency: Fulton County, Ga., Department of Information Technology.

Technologies: Servers and virtualization software.

Contact: Ryan Fernandes, CIO, Department of Information Technology, ryan.fernandes@fultoncountyga.gov.

Fulton County, Ga., consolidates its servers and improves application management.

BY HILTON COLLINS | STAFF WRITER

Counties have many reasons to consolidate — enhanced efficiency, reduced operational costs and easier-to-manage infrastructures — especially when they're as large as Fulton County, Ga., which includes the city of Atlanta. According to the most recent U.S. Census Bureau data, the county is home to nearly 1 million residents. The county's Department of Information Technology (DOIT) undertook an enterprise server consolidation project to make serving such a large constituency — and the county's 42 government departments the DOIT supports — a little less trying.

"One of our biggest concerns was obviously the server sprawl that was happening," said Ryan Fernandes, the CIO of DOIT. Before the consolidation project began in 2005, many county applications were installed in different locations. Prior to that, many departments had applications running on their own servers instead of one central machine. "We decided that it made logical sense for, No. 1, all of those servers to come under the IT [department's control], and then at another point in time, they were physically moved to our data center. Most of the servers were physically moved to the data center [after the consolidation got under way]." Once the migration happened, the county could more easily audit their server environment and assess total cost of ownership.

At first, Fulton County officials didn't believe a server consolidation project was necessary. In 2005, IT decision-makers decided to replace legacy server equipment to increase efficiency and capacity. In the process, they discovered consolidation would be a valuable improvement.

"The original plan, as my predecessor saw it, was to just simply buy blade servers as a replacement for hardware that had reached [its] end of life," said Jay Terrell, the county's chief technology officer. "It was not a consolidation strategy; it was just a shift of platforms."

But after the decision was made to replace equipment, the county quickly saw the benefits of virtualization and consolidation. When virtualization software is installed on a server, the technology allows one server to house multiple "virtual servers." Thanks to this technique, Fulton County's blades can house more servers on one machine.

"For every blade, we could put eight servers on it instead of 1-to-1 servers to the blades, so at that junction, we moved away from a hardware-centric approach to a more virtualized-centric approach," said Keith Dickie, assistant director of networks for the county.

Before the hardware replacement and consolidation decisions were made, the DOIT managed various department servers — Terrell estimated about 250 — in remote locations across county infrastructure. Not all servers were being used to optimum capacity; and to make matters worse, they weren't all being backed up properly, which put a serious damper on disaster recovery and business continuity capabilities.

"You would have one application running per server because that's the way in which it was purchased and funded," said Dickie of the

older server environment. It wasn't uncommon for a department to have its own server housing only department-specific applications, which amounted to extra, unused capacity. "So by the consolidation, we were able to take advantage of the [economies of scale] and the power of the virtual consolidated environment to take away that type of wasted resource."

On the Blade's Edge

Fulton County partnered with Fujitsu to acquire blade server technology and use the power of VMware virtualization software. The DOIT consolidated the old servers onto Fujitsu's Primergy series server blades. The IT department also purchased Fujitsu's Itanium Primequest servers, which use Red Hat Enterprise Linux to support Oracle databases.

"There were a lot of surprises [in testing and training] because we were used to dealing with stand-alone servers that were a pretty much a known quantity to us, and we understood how they connected to the rest of the infrastructure," Terrell said.

The county discovered that not all systems were candidates for virtualization because some crucial systems aren't well suited for the virtual frontier. Dickie said applications like the Kronos time-keeping program are too specialized and require connections or hardware that won't work in virtual environments.

Also, the county's interactive voice-response (IVR) systems can't be virtualized because they need unique hardware to interface with phone systems. These IVR systems need access to the primary-rate interface, which is a digital network that sends voice and other data over digital or nondigital telephone lines. Manuel Martull, Fujitsu's senior director of server marketing, said Fulton County's upgrade and consolidation allowed IT personnel to maximize its server usage.

"They noticed that some of these servers were significantly underutilized, so the utilization rates were in the 30 to 40 percent [range], and by virtualizing, some of these environments now can run the multiple applications within a single server and boost that utilization rate up to about 80 percent," he said.

Martull said the Primergy equipment will provide the county with dependable operability with very few failures over time.

"Once you purchase a Primergy system, it is expected to perform without failures for up to six years," Martull said, which would be a significant improvement compared to the server equipment Fulton had before the consolidation. "Some of the older systems that they had, I think they were 7-year-old systems."

Using blade servers like these, Fulton County transitioned to a virtualized and centralized operation with its consolidation overhaul.

Upside of Consolidation

The county installed four Fujitsu BX600 S2 chassis each containing 10 BX620 S2 blades. Fulton County began the server blade implementation in January 2006, implementing the first two blade chassis and installing VMware software. The county purchased two more chassis later that year. After purchasing the virtualization solutions, county IT personnel began testing how to use and configure the technology for different scenarios.

"For our testing environment, we used one blade from each blade chassis, and each blade chassis has 10 blades stored in them," said Katrina Terrell, a network manager for the county who is not related to her colleague Jay Terrell. She and her co-workers were able to test the scenarios differently and in different environments.

Using only one blade from each chassis lets DOIT take only a portion of the server environment for testing, while leaving the rest available for application support. This agility in the server infrastructure allows the DOIT more flexibility for day-to-day operations.

The county took a slow and steady road to implementing the blades and the virtualization, not to mention testing, configuration and training. The project was completed in fall 2008. Jay Terrell and his co-workers are unsure exactly how much the consolidation cost the county because of the implementation's long time frame.

The new setup improved the county's ability to manage its server environment in a few crucial ways. For one thing, the blade technology saves the county maintenance hours because it allows remote upkeep. And because the technology is standardized under the DOIT and not dispersed among multiple departments, it's easier to maintain. Virtualization also lets the county clone new servers from others much faster than before.

"When it comes to new server environments, we could have a server up within an hour or so or less," Katrina said. "It definitely enhances our environment to be able to reach the level of service to our departmental customers and maintain that level of service in a timely manner." GT

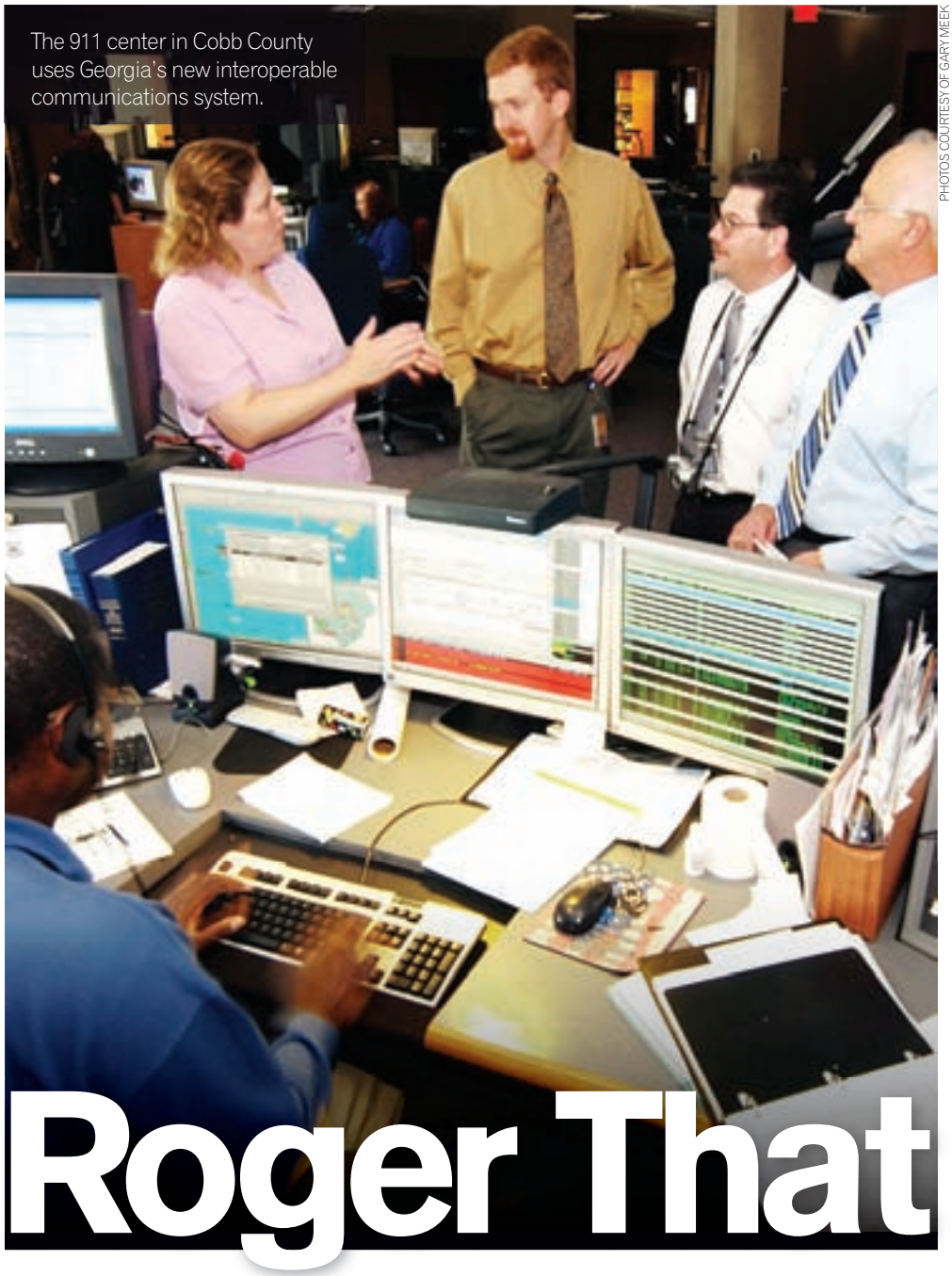
> "For every blade, we could put eight servers on it instead of 1-to-1 servers to the blades, so at that junction, we moved away from a hardware-centric approach to a **more virtualized-centric approach**."
>
> **Keith Dickie,** *assistant director of networks, Fulton County, Ga.*

Synopsis: Construction is under way to create a communications network that will connect all radio frequencies.

Agencies: Georgia Emergency Management Agency, Georgia State Patrol (GSP) and Georgia Tech Research Institute.

Technologies: IP, Gateway unit and public safety answering point systems.

Contact: Dan Brown, network project director, GSP, 404/624-7818, dbrown@gsp.net.



The 911 center in Cobb County uses Georgia's new interoperable communications system.

PHOTOS COURTESY OF GARY MEEK

Roger That

Georgia Interoperability Network will link state's 159 counties.

BY ELAINE RUNDLE | STAFF WRITER

Having interoperable communications during an emergency can be priceless for first responders and the public, but rolling out the network can take years. The Georgia Interoperability Network allows statewide communication for first responders without requiring counties to replace existing radio equipment. By retaining the counties' current radio equipment, the state has achieved widespread buy-in among first responders in Georgia's 159 counties.

The Georgia State Patrol owns the network, which was funded by a multimillion dollar grant from the U.S. Department of Homeland Security's Law Enforcement Terrorism Prevention Program. The state patrol, Georgia Emergency Management Agency (GEMA) and the Georgia Tech Research Institute (GTRI) collaborated on the network. Production on the network began two years ago and is expected to be completed December 2009.

Click, Drag, Connect

The network will save millions of dollars by using a gateway system that lets counties use their current radio frequency infrastructure equipment. Every 911 dispatch center in the state is equipped with a public safety answering point (PSAP); and smaller counties that share a 911 dispatch center will require only one PSAP. The PSAP lets dispatchers visually connect calls on a computer screen. An icon represents each person calling, and dispatchers stack icons on top of one another to connect the callers.

"It connects through technologies that are installed at the PSAP; it allows for interoperable communications across all of the radio spectrums that we use in Georgia," said Ralph Reichert, the project's GEMA sponsor and the director of GEMA's Terrorism Emergency Response and Preparedness Division. "It does not increase the radio footprint of a jurisdiction, but it does allow other jurisdictions to communicate as they come into a specific area."

According to Dan Brown, the Georgia State Patrol's network project director, the state holds workshops with each county to collect buy-in and formulate a plan for day-to-day

interoperability. The Georgia State Patrol provides each county with the necessary equipment: a radio gateway unit; workstation gateway unit; router; firewall; multiprotocol label switching circuit; and a common platform in the form of VHF radio, which is a Motorola CDM1550.

GTRI staff meet with each county to customize the network for its individual needs and provide technical assistance and training.

The network costs an average of $130,000 to $135,000 per county, according to Brown. "It is completely federally funded with the exception of the network recurring costs, which is a state endeavor."

Counties can make additional investments if they desire. Several counties have added more radio gateway units to get additional radio frequencies, Brown said. The provided radio gateway unit has eight ports; the first port is used by the statewide radio VHF, which leaves seven ports available.

"I think the thing that works for Georgia about this technology is that locals don't have to replace their systems because that would be very cost prohibitive," said Leigh McCook, a GTRI principal research associate. "It doesn't make those systems obsolete, but it makes the systems talk and work with each other with their existing technologies."

Combining Efforts

The state patrol hopes to increase buy-in by covering future maintenance. "If you leave it up to individual collaboration, you don't get the level of participation you would like to occur," said Brown. By providing and installing the network equipment for the counties, the state doesn't have to worry that some counties won't be able to allot money for it. "Maintenance and all the issues are taken care of, and the state also pays for network recurring costs, and gives us a common platform that all can use without people determining that it's not as big a necessity as we believe interoperability in Georgia is."

The provided training enables county participants to be comfortable with the network and ready to use it when needed.

The GTRI's role is working with each county to determine what type of equipment is needed to implement the system. Brown said the GTRI is acting as an independent validation party and a technical resource. "They provide technical assistance to the locals in implementing the network, and they are also working to provide training for the locals," McCook said.

GEMA works as the grant manager to ensure the cost is reasonable, according to Reichert. The agency is responsible for the U.S. National Response Framework's emergency support function No. 2 — interoperable communications, and emergency and disaster response — so it's important to have a robust, statewide communications system.

"We come from different perspectives, but the idea is to meet the goal for the citizens of Georgia and determine the best, most cost-effective strategy to solve whatever problem arises," Brown said, later adding that the network isn't a panacea.

"It doesn't reach the Level 6 form of interoperability that we would all like to achieve, but it does give us a Level 4 opportunity whereby we can be financially responsible."

According to research from the Virginia Modeling, Analysis and Simulation Center, Level 4 interoperability is called "pragmatic interoperability" — when systems exchange data with some expectation of meaning. Level 6, called "conceptual interoperability," is the topmost level, when systems can make full use of data passed between them.

Reichert recommends that all counties find a reliable person to train on the network. "The 911 industry is, by its very nature, one that has a great deal of turnover," he said. "One thing that we found is we need to train the trainer within each of those PSAPs that has the equipment with someone who will be longstanding." Find the person who has the best chance of continuing with the agency. Since the technology isn't used every day, it's important to keep people up-to-date on the information. GT

Adding Mobility to Interoperability

All 159 counties will participate in the Georgia Interoperability Network either directly or indirectly. According to Dan Brown, the Georgia State Patrol's network project director, two mobile command units were developed for counties where the population is small and the network infrastructure needs to be available every day. One example is an area where wildfires ignited in a swamp — a location that normally wouldn't require network use.

"When we were fighting the wildfires, we needed communications because we had to send first responders and forestry there," Brown said. "This allowed us to build a temporary infrastructure using a satellite backhaul, and we could create another node for interoperable communications when and where it was needed."

One mobile command unit is kept in Cobb County and the other is in Wayne County, with the idea that they can reach any Georgia location within several hours.

"The mobile communications unit can be used for day-to-day activities, for multijurisdictional events or they can be used for large, emergency-scale disaster events," Brown said.

Uniting VHF, UHF, 800 MHz

The Georgia Interoperability Network connects existing radio communication systems to an IP-based network through a Motorola gateway system, called the Motobridge.

"It allows the signal to be converted to a digital IP packet translated over the network, reconstituted at the far-end radio gateway unit and then heard in an analog signal that we hear with the common ear," said Dan Brown, the Georgia State Patrol's network project director.

Four components make up the Motobridge:

- The **operational management control server** manages the system and keeps track of network configuration.
- The **session-initiated protocol server** sets up calls on the system.
- The **radio gateway unit** connects the network with the radio systems.
- The **work station gateway unit** allows dispatchers to access the system.

A Chicago music teacher uses unorthodox methods that produce advanced students.

Educational Chaos

BY ANDY OPSAHL | FEATURES EDITOR

Synopsis: Music teacher Carol Broos allows students to do projects of their choice, which stimulates their interests and advances their technology skills.

Agency: Sunset Ridge School, Northfield, Ill.

Technologies: Adobe Flash, Adobe Photoshop, Apple's Quartz Composer, Sibelius (for composing music), Google SketchUp.

Contact: Carol Broos, beatechie@gmail.com, 847/881-9413.

Carol Broos offers no rubrics in the technology classes she teaches at Sunset Ridge School in Northfield, Ill. Her classroom's learning environment is a free-for-all — students do whatever assignments they want. All her students receive A's at the end of the academic quarter, whether they complete one project or 10.

Broos doesn't even have professional training in technology. She's a music teacher, and frequently doesn't know how to operate the software she provides students. Her technology class is connected to her music program — each student learns to use music composition software. However, projects go far beyond that realm, and into Web design and graphics programming.

Apparently her unorthodox methods are effective. Many of her students work above their grade level and win national technology awards. Broos recently won the 2008 Golden Apple, a teaching accolade viewed by many as the most prestigious in the Chicago area.

Broos insists a traditional classroom environment in which the teacher gives the same lesson to the entire class can cripple technology education. She begins each class with five minutes of instruction; then students work on whatever projects tickle their interest.

"I don't believe in rubrics because they're too confining for my gifted kids. If I had a rubric, my gifted kids would totally slack [off]," Broos said.

Her approach enables speedy learners to dart straight to projects that match their abilities. High-achieving students typically need little help, which gives Broos extra time to focus on other children. By students working at their own pace, they produce better work, Broos said. The focus on projects that students pick also propels that advancement, she noted.

Broos contends that her teaching approach does a better job of stimulating students' interest in technology careers than a traditional learning environment. This could have implications for the technology work force as a whole, as the Computing Research Association's 2008 Taulbee Survey of Ph.D.-granting computer science (CS) and computer engineering departments reported an 18 percent drop in newly enrolled CS students over the prior two years. This decline will likely hit state and local governments hardest because CS graduates tend to favor private-sector jobs. A larger pool of technology graduates would give state and local governments a better shot at meeting their IT work force needs.

Staying Focused

Educators commonly struggle to increase the amount of one-on-one instruction in the classroom. For a teacher, like Broos, who monitors vastly different student projects all at once, overcoming that challenge is mandatory. Broos found a solution using headsets. All of her students wear them, and their computers face toward the classroom walls so she can see all activity from her central station. The students — fourth- through eighth-graders — work in pairs.

"Their heads are faced in the direction of the wall. Even the ADHD [attention-deficit hyperactivity disorder] kid tends to be very focused. The only thing they can really look at is their screen," Broos said. The students don't hear the clatter of the classroom, so they sit down and work.

Through her headset, she instructs students who need help by viewing their work from her monitor.

Individual Tracks

The students' freedom to achieve their academic interests has produced results in Broos' classroom. Seventh-graders Henry Bacon, 13, and Frank O'Meara, 12, won digital education awards at the Center for Digital Government's 2008 Best of the Web awards ceremony. The boys developed Lazertron.net, a Web site that offers games and

tutorials to teach their classmates how to program using Adobe Flash.

"We just totally fell in love with Flash, and we wanted other people to have the same experience as us," Bacon said.

His partner O'Meara agreed.

"There are so many things you can do with Flash. You can do games and animation. The opportunities are endless," O'Meara said.

While the boys learned Flash in Broos' classroom, she didn't teach them a thing about it. "I have no idea how to use Flash. I work on my own programs. We have different go-to people in the classroom. These two guys are the go-to guys for Flash," Broos said. "Since people are working on different things, they can see what all of the other kids are working on. They tend to say, 'I want to learn how to do that.' It sort of spurs them ahead."

If Broos can't answer a student's question, the pupil is instructed to look for the information in online forums. Increasingly technology literacy requires self-directed learning, contends Broos. "Technology is tripling daily. We, as teachers, are not going to be able to know all of it. All of these kids are on Facebook. No one taught them."

Robby Hauldren, 12, another student in Broos' class, learned Flash using the tutorials on Lazertron.net. Now Hauldren is assuming operation of the Web site because Bacon and O'Meara moved on to other applications.

"I'm working on an Apple program called Quartz Composer," Bacon said. "It's what professional graphics designers use to make 3-D compositions. You can make a 3-D game, or just take images and write code to make them do stuff. Our games right now [on Lazertron.net] are more one-dimensional. It's complicated software for somebody our age."

Kendall Starkweather, executive director of the International Technology Education Association (ITEA), cheered Broos' willingness to bring applications she doesn't know how to use into the classroom. "If we limited education to what the teacher knew, we'd limit all of the creativity and brainpower the student might have," Starkweather said.

Potential Pitfalls

Broos' teaching method, which Starkweather admiringly called "management of learning," doesn't use a systematic grading system — every student gets an A. But this atypical grading system concerns Professor Michael Daugherty, the department head of Curriculum and Instruction at the University of Arkansas.

"The student needs to earn the grade. I'd be much more comfortable if she said this was a pass-fail class. You're going to find that students will take advantage of that," Daugherty said. Though he said he approves of Broos' instructional system, her decision to give all students A's makes the strategy perilously similar to discovery learning, a hotly disputed method among education researchers. With minimal instruction, discovery learners problem-solve by drawing on their experience and knowledge. They interact with their environments by exploring and manipulating objects, wrestling with questions and controversies, or performing experiments.

"There are some [discovery learning] classes where kids just go in and play. You have to really monitor what's going on to make sure there's real learning taking place," Daugherty said.

Broos said that isn't a problem in her classes. "Over the years, I've had one slacker. I try to motivate kids to work. My kids work unbelievably. They don't want to be off the computers. If I see they're slacking, I'll tell them to take off their headsets and sit in the middle of the rug. It's almost like taking food away from them. They know they've got a good deal in here," she said.

She does have general expectations. For example, she asks fifth-graders to compose a song for the fifth-grade band using music notation software Sibelius. She also wants them to produce a Web site with blogs, podcasts, pictures and musical compositions. However, a student still receives an A if he or she just does only parts of those projects.

Guidelines are vaguer in her sixth-grade class, where she requires a "spectacular project."

"They can do anything they want, but it has to be spectacular, and it has to be something someone else has never done. That was where Henry and Frank came up with their [Lazertron.net] Web site. They have to come up with something that totally wows me," Broos said.

Here is another point where some education experts who are generally supportive of Broos' method part company: Starkweather and Daugherty suggest she incorporate more-specific, non-negotiable requirements.

Daugherty said she could easily align her open-ended learning approach with the ITEA Standards for Technological Literacy for K-12. Students could still pursue projects of their choice, but those projects must expose them to a specified minimum of skills. Starkweather said it's likely that Broos' students already satisfy the standards. Both experts cautioned that teachers who use Broos' method could have trouble defending its effectiveness to school administrators without systematic proof of what learning occurs.

> "There are so many things you can do with Flash. You can do games, animation. The **opportunities are endless**."
>
> **Frank O'Meara,** *student, Sunset Ridge Elementary School*

If someone inquires about the abilities of Broos' students, she can point to others besides Bacon and O'Meara. One student excels at Adobe Photoshop. Others use Google Sketch Up to construct fantasy homes and cities. Two fourth-graders who are interested in hunting are constructing a Web site that details hunting trips they took with their fathers. However, Broos can say little about what students know collectively after leaving her class because the skills required to complete the projects vary. Still, Starkweather and Daugherty acknowledged that while Broos' technology education strategy lacks systematic proof of its efficacy, the anecdotal evidence is difficult to ignore.

Futile Restrictions

Broos believes much of the restrictive culture found in technology education is fueled by laudable, but futile concerns about what children can view on the Internet.

"We have a lot of administrators who are worried about 'the two P's': predators and porn," Broos said. "These kids, even with filters, can get to both. We have to teach them how to deal with that, and not say, 'I'm going to protect you.' We're not going to be able to protect them. People that think we can — forget it."

Not-So-Secret Code

Synopsis: Texas city uses bar codes to streamline information and give citizens instant access to information about local venues.

Agencies: Manor Chamber of Commerce and the city of Manor.

Technology: Quick Response codes, camera phone and open source software.

Contact: Dustin Haisler, CIO, Manor, dhaisler@cityofmanor.org.

Manor, Texas, uses Quick Response codes to mark points of interest.

PHOTO COURTESY OF MANOR

BY MICHAEL R. JEFFERS | CONTRIBUTING WRITER

Manor, Texas, isn't notable for much, except that it's where the 1993 movie *What's Eating Gilbert Grape* was filmed. But don't be fooled by pickup trucks and cow pastures. The city of 5,000 people is using a relatively new technology that allows anyone with a camera phone to instantly access information about local points of interest.

"As far as I know, we are the first town in America to do this," said 22-year-old Dustin Haisler, the CIO of Manor.

Haisler, who also serves as city secretary and associate judge — he takes defendants' pleas and issues judgments and warrants — was referring to Quick Response (QR) codes, which are two-dimensional bar codes similar to what's found on a FedEx envelope. Manor placed them at various spots around town.

QR codes are an arrangement of squares, as opposed to the traditional lines used in supermarket bar codes. The squares encode information horizontally and vertically, enabling them to store more information than traditional bar codes. Aided by downloadable, free software for mobile phones, users can snap a photo of a QR code, which then directs them to a Web site for more information.

Haisler, who is also a student at LeTourneau University, is the mind behind the introduction of QR codes and is part of Manor's larger effort to streamline its infrastructure on a shoestring budget by beta testing products and using open source software. "We use things that are open source, that are free and available that we can expand," he said. "When we beta test things, we can say, 'OK, here is what needs to be fixed for your end-user.'"

Haisler was looking for a way to streamline Manor's filing system when he discovered the technology. "We had done some stuff with bar codes, and we were trying to figure out a way to encode a lot of information in a very small amount of space, and something that was cheap," he said. Later at a meeting in City Manager Phil Tate's office, Haisler said he realized QR codes had "a lot of economic development potential."

Small Investment

While it may seem unusual for a city of Manor's size to embrace such forward-thinking technology, the investment's low price tag makes it a viable option for cities with smaller budgets. Manor is uniquely situated to embrace new technology because of its proximity to many of east Austin's high-profile technology companies, such as Applied Materials Inc. and Samsung Austin Semiconductor. Haisler and Tate said QR codes are one way to keep the city at the front edge of new technology and make it an appealing place to live, especially for residents working in Austin's tech industry.

Manor is also using QR codes to one-up Austin, which invested with a local company to provide a GPS-guided tour of the city that costs tourists $11.95 each. But for approximately $400, Manor installed bar codes in various locales to create a walking tour of the city that's available to anyone with a camera phone and the time to download the free software.

QR codes contain more information than a traditional bar code because they encode information horizontally and vertically.

"We don't have a lot of money to develop technology infrastructure, so we try to innovate our own solutions," Haisler said. "We've had a council and city manager who have been very supportive of innovating solutions instead of financing them through bonds or a lease to purchase, which don't spur any creativity."

Manor first used the technology to help make the city's major park a "smart park." A large QR code was posted at the entrance to Jennie Lane Park; when scanned it directs mobile phones to a Web site that provides information about the park, such as who it's named after and what wildlife can be spotted on the hiking trail. The park also includes a wireless network, and officials hope to eventually expand it into a citywide network.

In addition to the walking tour, the city uses the codes to label construction projects and city buildings and vehicles. The town's New Tech High School also has a code affixed to its door.

One of the technology's biggest advantages is that codes are reusable, Haisler said. And after the initial investment, the only cost to produce new QR codes is the paper and printer. There's also little cost for updating or changing the Web sites that are connected to the QR codes.

The codes can be posted anywhere, and their size doesn't matter. A four-foot-square code is painted on the side of Manor's Courthouse. The city also put them on T-shirts during the annual Chips Festival and even had the local supermarket transpose a photographic image of one onto a cake that residents successfully scanned with their phones. Haisler has a code on his business card, and the city puts them on the sides of its vehicles to increase the project's visibility.

A QR code was posted in front of the old water tower and a quick scan guides a mobile browser to a page that describes when *What's Eating Gilbert Grape* was filmed and it shows a photo of actor Leonardo DiCaprio climbing up the tower in the film.

Manor Chamber of Commerce President Danny Burnett, who is a development coordinator for a local realty company, is also incorporating the technology in new developments that his company is involved with. For example, as the company builds new parks and developments, QR codes are posted at trailheads to increase the technology's visibility and also heighten Manor's appeal as a cutting-edge city. The Chamber also encouraged the Manor Farmers Market to use the codes for advertising.

Origins Abroad

Japan-based Denso Wave Inc. invented QR codes in 1994. They were originally used to track car parts before Denso made the technology publicly available. Most Japanese mobile phones have QR reading software preinstalled, and most Japanese advertisements on the street and in print media incorporate QR codes in order to direct consumers to Web sites for more product information.

Many Americans don't know about the technology or how to download the software for their mobile phones. However, QR reader software is available for most mobile camera phones. I-nigma reader, i-nigma.com, is downloadable for most Nokia, Sony Ericsson, Motorola and Samsung cell phones. Google's Android operating system for mobile phones has an open source QR reader, and software is available for the iPhone. All the readers are free. Haisler said Nokia would begin selling its U.S. phones with QR readers preinstalled in 2009.

Manor received the "Most Innovative Use of Technology" award in Texas in 2008 from the Center for Digital Government, a national research and advisory institute on IT policies and practices in state and local government.

"There are ways to do what you need to do to innovate solutions; we have all of the services and conveniences Austin does," Haisler said. "Most of our IT projects have been done for free. We beta test products, we innovate our own, and we use open source products. Along the way we hope to do something that other cities can benefit from." GT

QR codes can be affixed to almost anything, like this baseball diamond backstop. They can be big or tiny.

CONTRIBUTING WRITER MICHAEL JEFFERS IS BASED IN AUSTIN, TEXAS.

CONTINUED FROM PAGE 28

"It didn't have a decent relational database underneath it," said John Emerson, senior IT executive for Ventura. "When you put in an e-government platform, you've got to have a lot of things, like an e-payment type form. You've got to have a lot of components, and it didn't have any of those basically."

The previous system was custom written by the city and became functionally obsolete. Emerson and his team began the Agresso implementation in November 2007 and expect to finish by summer 2009. They've already deployed numerous modules, including those for general ledger and purchasing. Emerson said Ventura paid about $1.2 million for the ERP software and consulting.

"Look at your total cost," he said. "Just don't look at the upfront cost, but look at the long-term costs. Having an ERP — the upfront cost is just the beginning, then you've got upgrade costs and you've got to bring in consultants."

Phoenix and Sacramento County also brought in consultants as part of their initial implementations. Perkins estimates that Phoenix spent about $16 million for its ERP. Connelly said that Sacramento County spent about $19.5 million, the bulk of which was for consulting services. The county spent about $4 million for the software piece and $2.5 million for the hardware piece, in his estimation.

"We probably underestimated the amount of work that would take. We ended up, part of our implementation cost was for SAP to actually bring people out of SAP Germany, which is where they're headquartered, and locate themselves in Phoenix to help us through the project," Perkins said. "And they had kind of a hotline to Germany so they could talk to the programmers and actually configure code differently for government."

At first, Phoenix had trouble budgeting for a project of the ERP system's size, and city personnel discovered it was a more robust animal than they first expected.

"To implement a system like this, you need technical expertise, people who know the SAP side of it, and we filled that in with consulting. Then you need, of course, people who know the business side of it, who work closely with the technical people to explain how we do our business in the county, so that that configuration can take place properly," Connelly said. Sacramento County had a team of more than 100 employees in addition to several SAP consultants to get things moving.

In a sense, Sacramento County and Phoenix paved the way for other jurisdictions to make ERP part of their government landscapes. Now areas like Ventura are experiencing some of the same growing pains their predecessors overcame.

"Most organizations change their systems once every seven to 10 years. We haven't changed it for 25 years," Emerson said. "And [when] you've got people working here for 25 years, it's very difficult to change because they're basically in their 50s and it's the only thing they've ever worked on. And it's a big shock."

If Emerson could go back and redo everything, he's not sure what could be done differently to make the transition smoother. "I don't know how much more we could have done with it because a mindset is a very hard thing to change at times," he said. "You just have to keep working at it." GT

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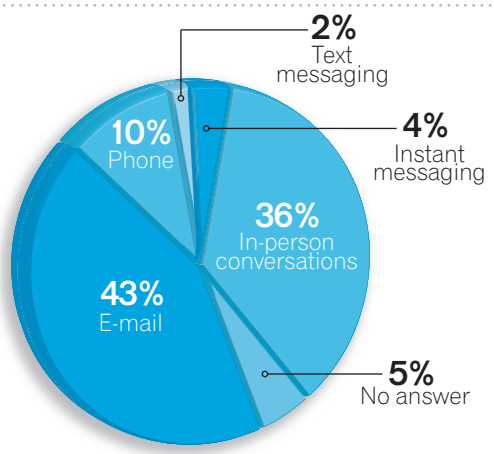
Spectrum

reports from the IT horizon

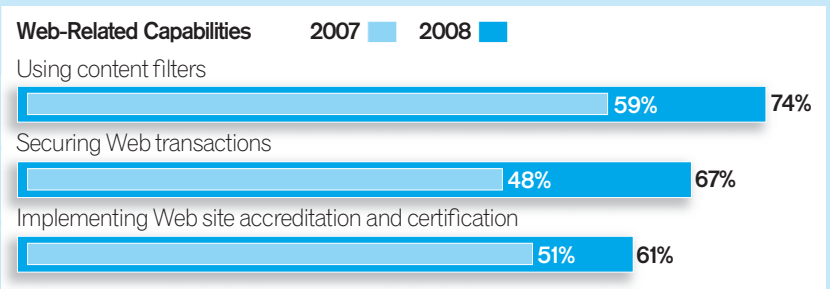
CIO Connection

A recent survey of 1,400 U.S. CIOs conducted by Robert Half Technology shows that 57 percent of CIOs feel more connected with their colleagues due to the prevalence of technology. When asked their preferred way for IT staff to communicate with one another in the office, this is how they responded.



Feeling Safer?

According to the 2008 *Global State of Information Security* survey, conducted by PricewaterhouseCoopers, agencies made significant improvement to protect constituents' personal identifiable information. Here's how agencies compared in the last two years.



High-Tech Self-Control

Technology fosters communication and makes professionals more efficient at their jobs, but at times it harbors procrastination. Fear not — help is on the way. Here are two innovative ways that technology is helping users become more self-sufficient.

- Swedish automaker Saab developed **Alcokey**, a small device that takes users' breath alcohol samples. According to Saab's Web site, if a driver's blood alcohol content exceeds the legal limit, a radio transmitter signals the car's electronic unit, which immobilizes the car.
- Americans are obsessed with checking their e-mail. A whopping 59 percent of respondents of AOL's Fourth Annual *Email Addiction Survey* said they checked their e-mail in the bathroom. However, if you have a Gmail account, you can put yourself on time out. **Google's Email Addict** lets users lock themselves out of their mailboxes for 15-minute increments.

— By Karen Stewartson, Managing Editor

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

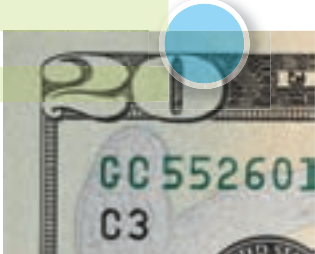
Social Club

According to a survey of more than 500 IT professionals, social networking is becoming more prevalent in the workplace. Nearly 79 percent of respondents use **Facebook, LinkedIn** or **YouTube** at work for business reasons. The most common work-related tasks: professional networking (54 percent), research (52 percent) and learning about colleagues (52 percent). *— www.nytimes.com*

Grappling With the Economy

The National Conference of State Legislatures released its annual forecast of the top nine policy issues that are pressing on state legislative agendas as budgets tighten. The results are as follows:

1. State Budget Gaps
2. Transportation and Infrastructure
3. Higher Education Affordability
4. Health Costs and Reform
5. Clean Energy and Alternatives
6. Sentencing and Corrections
7. Home Ownership
8. Working Families
9. Unemployment



Just Released: This free resource provides a step-by-step evaluation of your content management capabilities and best-practice steps to improve them.

eGovernment initiatives not only facilitate enhanced services and cost savings, but also open the door to new challenges — from navigating paper-based processes to securing digital records. Where to start can be discouraging for many agencies.

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how it works

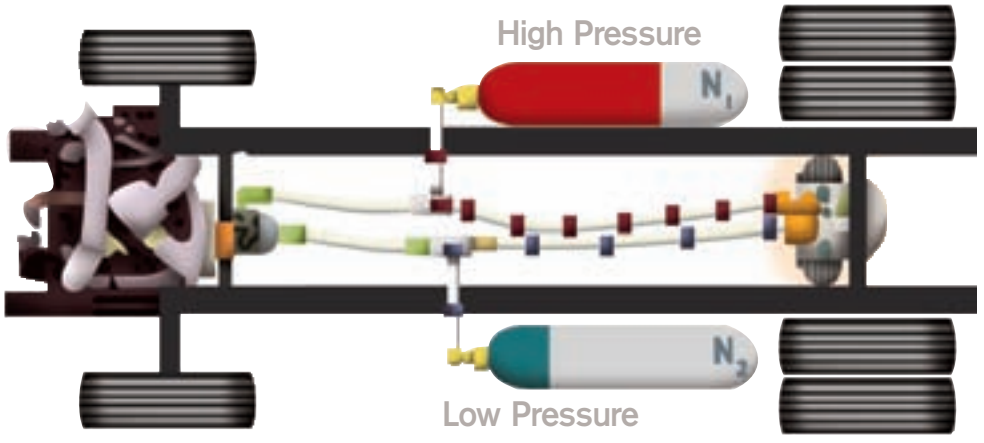
Turning technology inside out

Brown Goes Green

IN 2006, UPS partnered with the U.S. Environmental Protection Agency (EPA), Eaton, International Truck and Engine, and the U.S. Army National Automotive Center to build a delivery vehicle unlike any other on the road. The effort produced the world's first hydraulic hybrid vehicle (HHV) for use commercially. UPS now has two HHVs in its fleet. Though the truck looks ordinary on the outside, inside the HHV technology cuts the vehicle's fuel consumption by about 850 gallons annually and generates 40 percent fewer pollutants. HHVs use age-old fluid mechanics. Engineers took the power of hydraulics — commonly used to amplify force — and applied it to propulsion. Here's how it works. GT

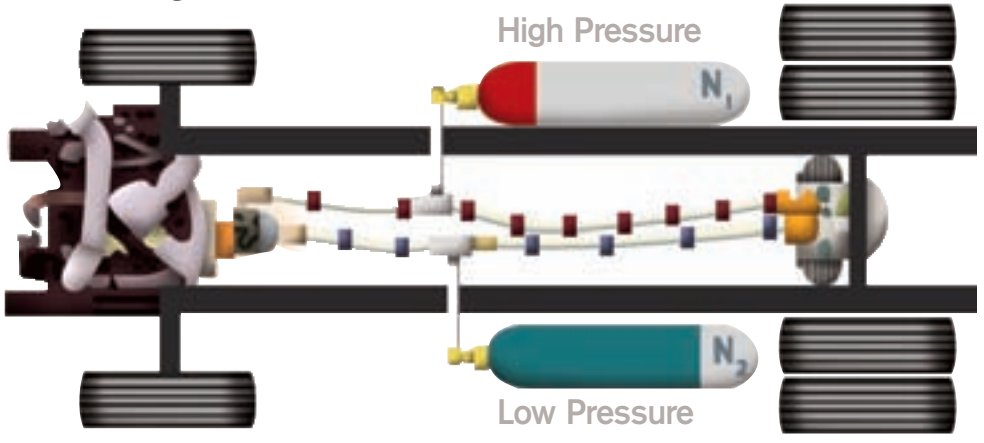
BY CHAD VANDER VEEN | ASSOCIATE EDITOR | **ILLUSTRATION BY** TOM McKEITH

Accelerating



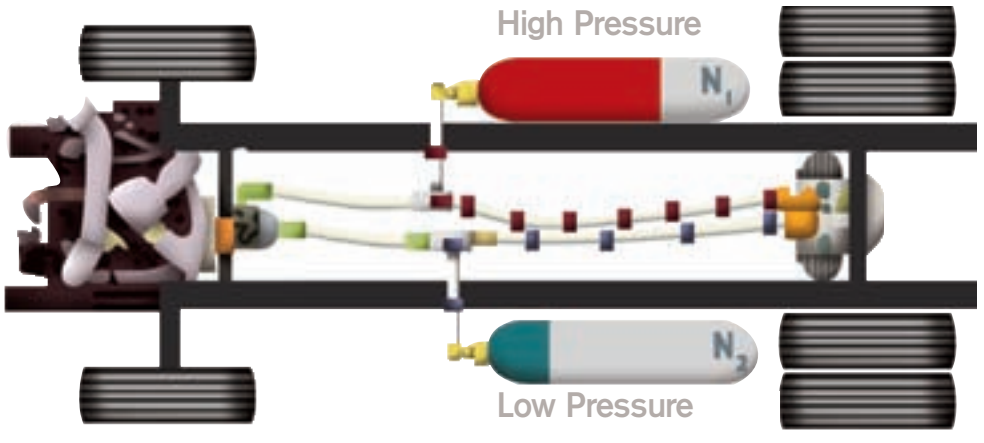
When the vehicle **accelerates**, the pump motor, located between the rear wheels, draws in hydraulic fluid from the high-pressure tank. As the fluid is relieved of its pressure, the energy that's expelled turns the wheels. Once the fluid passes through the pump motor and turns the wheels, it becomes depressurized and is moved by the pump motor into the low-pressure tank.

Cruising



As the vehicle is in **motion**, the high-pressure fluid is slowly depleted. Once the high-pressure fluid has dropped to a certain level, the HHV's combustion engine is activated. The engine takes over propulsion, while simultaneously repressurizing the low-pressure fluid. The engine also drives the pump motor, allowing the pump to move the fluid back into the high-pressure tank.

Braking



During **braking**, the HHV takes advantage of basic physics in the form of kinetic energy. As the vehicle slows, the energy that's generated is used to help further repressurize the depleted fluid. Braking helps power the pump motor as it moves the high-pressure fluid back into the high-pressure tank.

signal: noise

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

Rabbit Ear Response

"Please don't adjust your set, you ain't seen nothing yet." The line is a send-up of those serious-sounding "One Moment Please" announcements that were once commonplace on local TV when things went wrong. The parody was on a scratchy comedy album from a misspent youth, but could prove prescient on the eve of the nation's transition to digital television — or DTV — this month.

The issue on the ground is how you get the signals out of the sky. At-risk viewers are those who rely on rabbit ears or rooftop antennas. Their sets will fall silent and snowy on Feb. 17 without a converter box.

Thankfully it's not IT's problem, unless you are South Dakota's Otto Doll. He is unique among state CIOs because running and programming the state's public broadcasting stations are in his wheelhouse. Public radio and TV happen to be the largest broadcasters in South Dakota.

"We have a natural tendency to expect the state to come to the aid of people in trouble," said Doll, who noted that South Dakota's experiences with fires, tornadoes, floods and hurricanes helped officials prepare a rabbit-ear rapid response. "We know things are going to fail, we just don't know where," he said. Losing TV reception is less severe than losing access to bank machines, he said, but residents still rely on broadcasters for emergency alerts and other information.

The problem is threefold. "Some people will not have heard they needed to do anything, some will have heard but decided to do nothing and others will have done something but will have done it wrong," Doll said. Consequently the state deployed a handful of its public TV engineers in a modified train-the-trainer model to make house calls to different communities. The engineers work with volunteers to provide troubleshooting knowledge, including how to reorient antennas.

South Dakota's planners studied an early DTV transition in Wilmington, N.C., last fall to get a sense of what to expect. The Wilmington experiment drew 1,823 phone calls about adjusting antennas, setting up and tuning converter boxes, and why the transition was happening in the first place. But the largest share of the calls (553) was from residents who complained they were unable to receive their favorite TV stations' signals.

Doll said his state "will muster another six engineers [and] whatever resources I have to make do" as the DTV deadline approaches. Given Wilmington's call breakdown, Doll saw an opportunity to enlist communications students from the University of South Dakota to staff a phone bank, with his engineers standing in the wings. South Dakota Public Broadcasting (SDPB) will cap an awareness campaign that has included 5,000 radio and TV announcements with a DTV telethon, which will have the look and feel of a pledge drive, but instead of asking for money, the SDPB will answer viewers' questions on the air and through the phone bank.

By definition, this will be the last time that video will not be IT's problem. Digital video is the new *lingua franca*, and broadcasting's transition removes analog as the last big barrier to convergence and carriage on any network, including yours. GT

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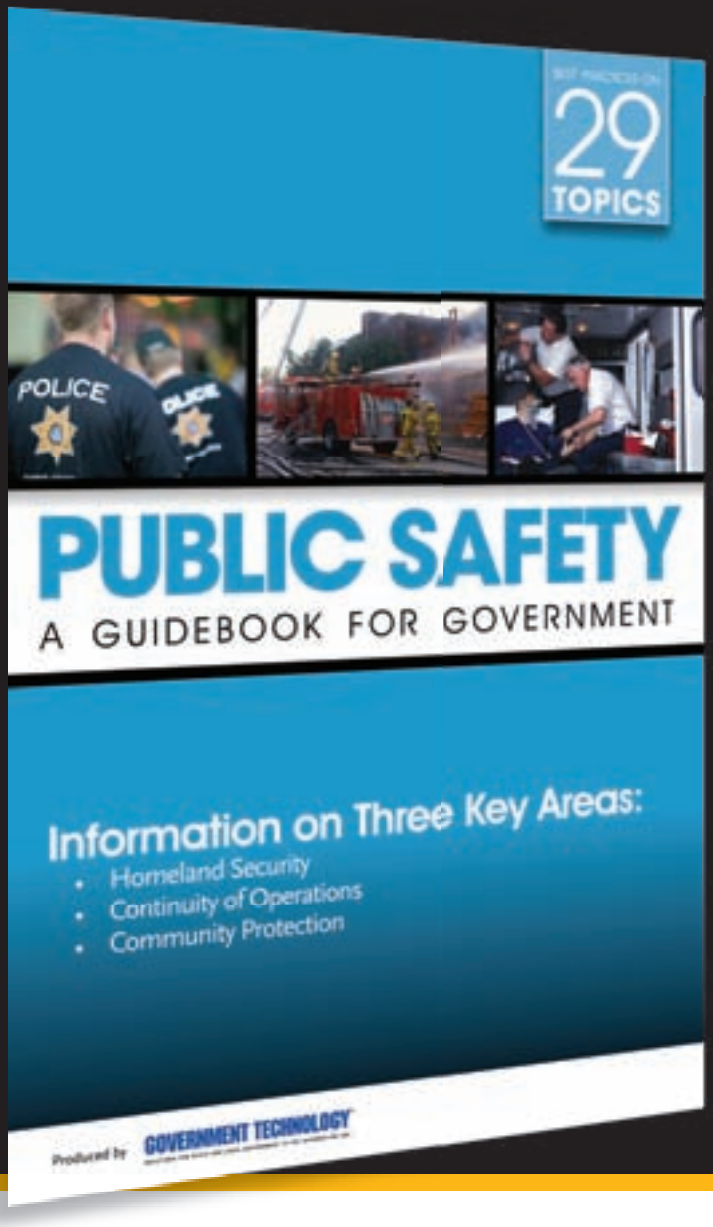
SOLUTIONS FOR STATE AND LOCAL GOVERNMENT IN THE INFORMATION AGE

Your Plan to Building Better Public Safety



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