GOVERNMENT TECHNOLOGY®

VOL 23 ISSUE 6 SOLUTIONS FOR STATE AND LOCAL GOVERNMENT IN THE INFORMATION AGE JUNE 2010

PLUS:

Riverside, Calif., CIO **Steve Reneker**

inside:

Lockdown: Michigan's award-winning wireless security

Double Duty: Fighting crime and boosting traffic safety at the same time

SLOW LANE ON

LACK OF NATIONAL STRATEGY PUTS THE BRAKES ON INTELLIGENT TRANSPORTATION

PAGE 14

page 25:

DIGITAL COMMUNITIES **Quarterly Report:** Law Enforcement

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contents

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contents

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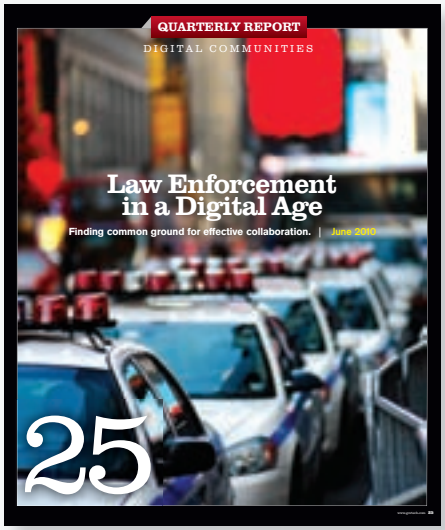
QUARTERLY REPORT

DIGITAL COMMUNITIES



Law Enforcement in a Digital Age

The Digital Communities Law Enforcement Information Technology Task Force, a group of government and industry experts hosted by *Government Technology*, examines how communications standards can drive public safety information sharing. In a detailed special report, the group says collaboration efforts must move from pilot stage to broad deployment.

departments

news

columns

IN OUR NEXT ISSUE ...

Looking Ahead

Government Technology talks with HP, Microsoft, IBM and other industry leaders about the future of technology and how these trends will impact government.

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point of view

BY CHAD VANDER VEEN ASSOCIATE EDITOR

A Little Too Convenient?

Children born this year will grow up in a much different America than the one you or I knew in our youth. I believe people born in the 1800s bore witness to more social and technological change than any generation in history. Imagine coming into an America where phones, electricity, automobiles, airplanes, TV, oil, suffrage, civil rights and social security were largely nonexistent, and leaving it with these things becoming commonplace.

But the next generation of Americans may experience even greater upheaval. As my 2-year-old son grows, it's likely he won't be educated the way children have been taught for centuries. There really is no longer a need to memorize facts and dates. These, of course, can all be Googled. He may never have to lug a heavy backpack around school because electronic readers may soon replace textbooks. There's also a good chance he will never know a dependence on oil as renewable energy technology flourishes.

Much of the emerging technology that will change our world is created with the idea of offering greater convenience. Search engines, smartphones, Netflix, social media — these are just a few relatively new developments that have made modern American life easier than it has ever been. But can too much convenience become a bad thing?

In this issue, we feature several stories that tell the tale of still more technologies designed to make policy, governance and even punishment more convenient. Across the nation, analytics technology is being deployed that will alert us to traffic buildups, energy demands and to infrastructure that's on the verge of failure, all before anything actually happens. Even policing the streets is becoming more a matter of ones and zeroes because of maps and software that predict where crime will occur.

All of it is enough to make one wonder if face-to-face communication and other human interactions will soon slip suddenly into relic, having yielded to the onslaught of technological convenience.

In the Disney-Pixar movie *Wall-E*, a vision of the future is depicted in which humans exist only to fill hovering chairs that glide their obese bodies between the mall and the pool, all while being served by robots delivering lunch in a cup. Characters communicate with each other via video screens, oblivious to others and their environment.

Wall-E, of course, is science fiction. But as so many headlines have read, science fiction often becomes science fact. GT

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Can the Library of Congress Be Downloaded in Seconds?

In March, Cisco Systems announced the launch of its CRS-3 Carrier Routing System, which the company claims is capable of data transfer rates up to 322 Terabits per second. Cisco said the speed would theoretically allow the entire Library of Congress to be downloaded in one second.

WWW.GOVTECH.COM/LOC

Web Comment of the Month

"My friend Rod Kane says 'thanks.' He died in '01 from the 'Agent.'"

By Anonymous on March 12, 2010, in response to our story Veterans Affairs Planning to Automate 'Agent Orange' Claims ***www.govtech.com/va***

VETERANS AFFAIRS TO AUTOMATE 'AGENT ORANGE' CLAIMS:

The U.S. Department of Veterans Affairs (VA) plans to expedite claims processing for those with illnesses caused by Agent Orange exposure. The VA says it will solicit private-sector input on a proposed fast-track claims process for "service-connected presumptive illnesses due to Agent Orange exposure during the Vietnam War." **www.govtech.com/va**

Top-Tweeted Stories

Hillsborough County, Fla., Seeks Budget Cutting Ideas via Social Media
WWW.GOVTECH.COM/IDEAS
104 tweets

Pentagon Embraces Web 2.0 in Social Media Policy
WWW.GOVTECH.COM/PENTAGON
79 tweets

Vermont Adopts Open Source Software Policy
WWW.GOVTECH.COM/VERMONT
70 tweets

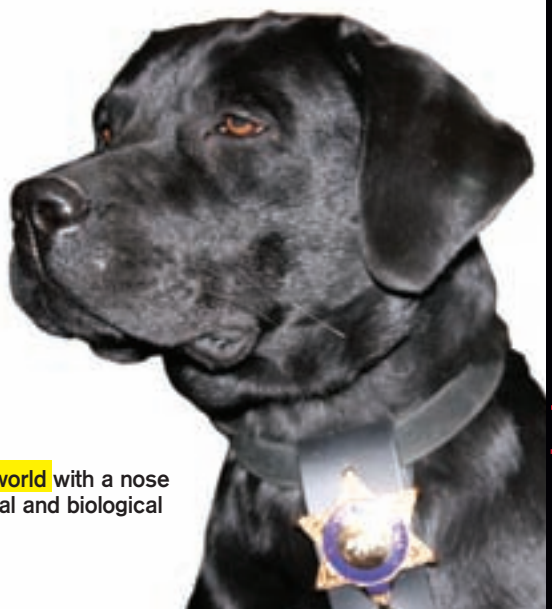
Who Says?

"People already have 'range anxiety.'"

www.govtech.com/whoamijune

Riskiest Cities

Symantec, an anti-virus software provider, teamed up with research organization Sperling's BestPlaces to discern which cities were the riskiest locations for cyber-crime. Hot spots like Seattle, Boston and San Francisco were ranked based on the number of malicious attacks reported; the amount of online activity, like purchasing via the Internet, e-mail and accessing financial information; and the number of places that offer free Wi-Fi, per capita. **www.govtech.com/virus**



1 The number of active dogs in the world with a nose trained to track dangerous chemical and biological agents. **www.govtech.com/dog**

Hot List

Here are the 10 most popular stories from April 4, 2010 to May 4, 2010.

1. **Florida Adopts Forecasting Technology to Target High-Risk Youths**
With predictive analytics software, Florida's Juvenile Justice Department looks to stem recidivism by matching troubled kids with specific programs. www.govtech.com/753071

2. **Feds to Test Results-Only Work Environment**
The U.S. Office of Personnel Management will pilot a 'results-only work environment,' moving 400 agency employees into the flexible work program.
www.govtech.com/751230

3. **California Utility Deploys Smart Grid**
Glendale Water and Power is set to deploy smart grid meters and other technologies with stimulus grants.
www.govtech.com/754873

4. **Broadband Agenda Announced**
The FCC is seeking to expand the E-Rate program that has helped wire K-12 schools and free up additional spectrum for broadband. www.govtech.com/752376

5. **White House Musters 'Grand' Science and Tech Ideas**
Program aims to solve grand challenges of the 21st century.
www.govtech.com/752853

6. **311 Calls for Home Repair Cash in Fort Wayne, Ind.**
Call center to prequalify applicants for federal home improvement grants and loans.
www.govtech.com/751717

7. **The End of the Line for DMVs?**
Virtual queue system lets customers use mobile phone numbers to hold their positions in line, receive text message alerts when it's their turn. www.govtech.com/757145

8. **Managing Merged Departments**
CIOs' job duties broaden as governments cope with budget pressures by consolidating departments and leveraging CIOs' project management experience.
www.govtech.com/752803

9. **Social Media Directory**
Microsoft website aggregates social media platforms and projects from state and local governments. www.govtech.com/757460

10. **Real-Life Police Technology Catches up With Science Fiction**
Gadgets include patrol car-mounted launchers that shoot GPS-equipped darts onto fleeing vehicles and ear-mounted video cameras for cops. www.govtech.com/755804

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By **Karen Stewartson** | Managing Editor

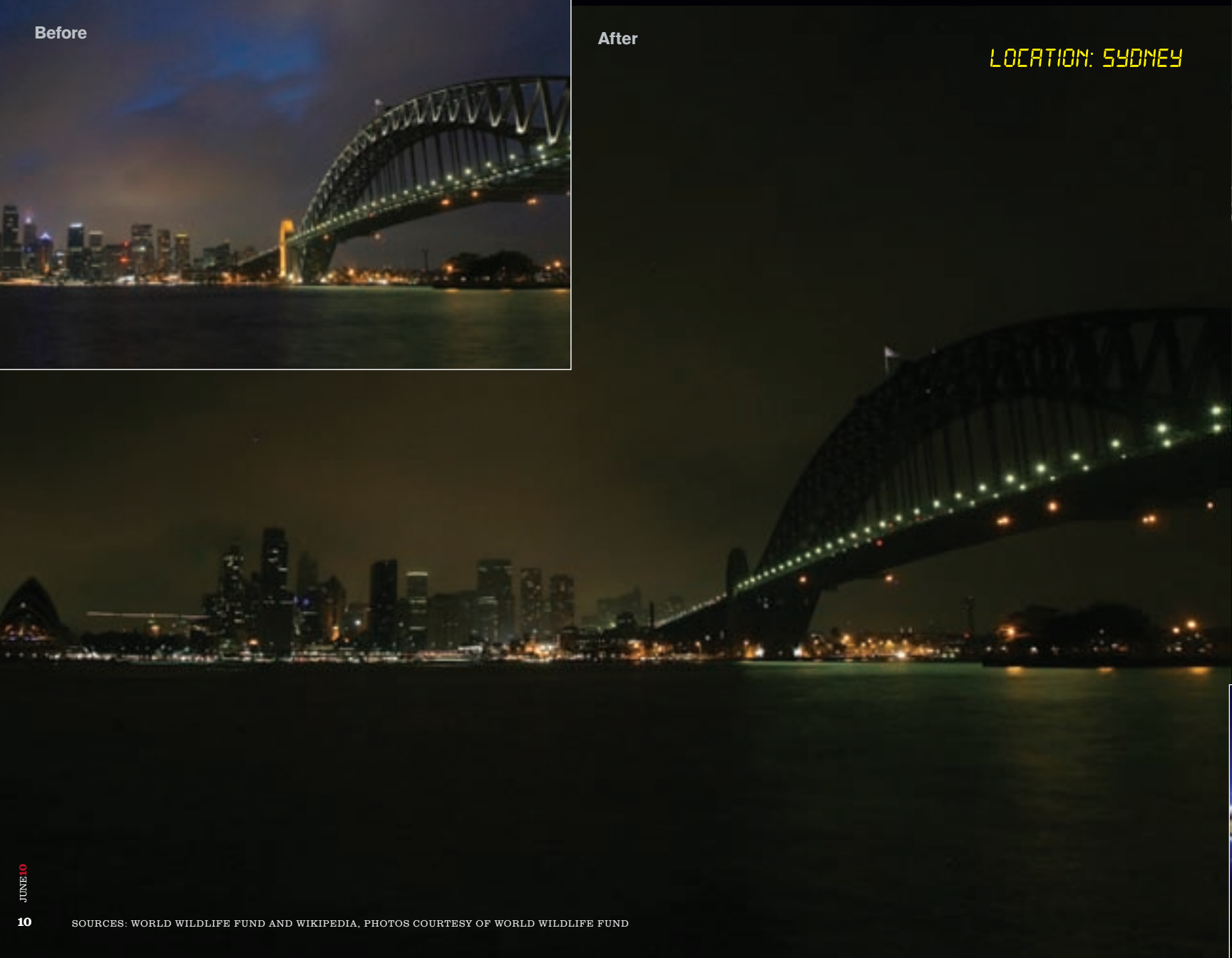
DATE: SATURDAY, MARCH 27, 2010, TIME: 8:30 PM (LOCAL TIME)

PITCH **BLACK**

Various parts of the world went black in March, but there wasn't a blackout. It was Earth Hour, an environmental event where an estimated 1 billion citizens and businesses across the globe turned off their lights and appliances for one hour — to shed light on climate change.

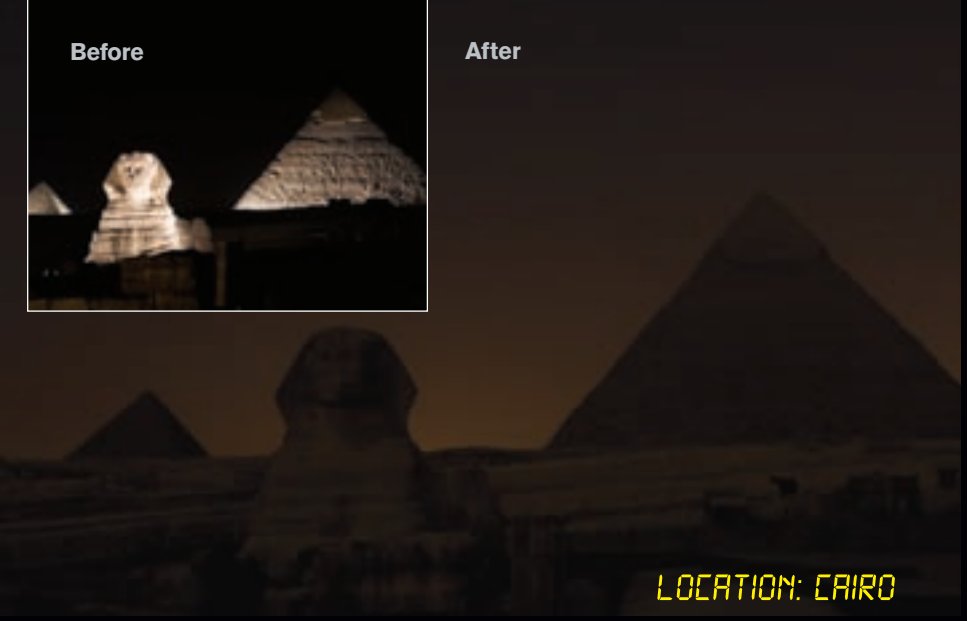
The idea originated in Sydney, Australia, in 2007, and garnered support from more than 4,000 cities in 88 countries in 2009. This year, 126 countries participated. "When Earth Hour started in Sydney in 2007, we never in our wildest dreams imagined it would catch on like this. The world's citizens know that the time to act is now — the planet can't wait," said Andy Ridley, Earth Hour co-founder and executive director.

Many iconic buildings and landmarks flicked off their switches to help conserve energy.



LOCATION: SYDNEY

SOURCES: WORLD WILDLIFE FUND AND WIKIPEDIA, PHOTOS COURTESY OF WORLD WILDLIFE FUND


Before
After
LOCATION: CAIRO


After
Before
LOCATION: SAN FRANCISCO


After
LOCATION: SEATTLE
Before


After
LOCATION: BEIJING
Before

4 questions

BY KAREN STEWARTSON | MANAGING EDITOR

Steve Reneker

CIO, Riverside, Calif.

As CIO of Riverside, Calif., **STEVE RENEKER** manages the Department of Information Technology. For the last four years, he's overseen IT projects like the 2008 citywide Wi-Fi deployment, which provides Internet access to more than 3,600 low-income families. Reneker is also executive director of SmartRiverside, a nonprofit charged with creating technology initiatives that benefit the city. Two years ago, Riverside began using GPS-enabled cameras to fight graffiti, which helped the city recoup $126,000.

1 Why did you create the graffiti abatement tool?

The tool was developed because of ongoing graffiti issues. Our biggest issue was figuring out a way, once we caught an individual, to have some knowledge of where that individual may have painted graffiti elsewhere in the city. We came up with a solution between our Police and Public Works departments to use a digital camera that captures GPS data.

2 How does it work?

Each night, digital images of graffiti are loaded into an [ESRI] ArcGIS application, which creates a front end for Public Works so that abatement crews can validate the information. Our Police Department reviews the validated images and adds associated data characteristics. For instance, if it's a known gang member, they'll also put in the [gang] moniker. Police have captured suspects in the act of spraying graffiti, and we [can] use the database to find other occurrences associated with that moniker and go after the individual for abatement costs.

3 What technology do you use?

We primarily use ArcGIS as the front-end development platform. Oracle is the back-end database. The only other components are Ricoh cameras and their associated software. You can use any camera. The Ricoh camera is ruggedized, so you can throw it in the trunk or drop it from 3 feet and it doesn't break into pieces. It also has a Wi-Fi interconnect that we may start using for real-time downloads.

4 What's planned for the future?

We have three other phases to add to the program. Many are just enhancements to data elements that are being collected and captured. We're also working with University of California, Riverside students to do graffiti recognition much like signatures or fingerprints. We want to have technology where a moniker image can be captured and then correlated with other images to autopopulate information so it's easier for police. GT

THE UNITED STATES HAS YET TO FORM A NATIONAL INTELLIGENT TRANSPORTATION VISION, BUT POCKETS OF INNOVATION ABOUND.

DRIVING INTO THE FUTUR

THE NINE COUNTIES that compose the San Francisco Bay Area will determine this fall whether technology can help ease the region's infamous traffic congestion.

The Bay Area Metropolitan Transportation Commission (MTC) is leading efforts to build an 800-mile express lane network stretching from the Napa Valley wine country to California's fabled Silicon Valley. The initiative will create high-occupancy toll (HOT) lanes that are free to vehicles carrying multiple passengers and available to single drivers for a fee.

The United States already has HOT lanes, like the 95 Express in Florida, but the MTC plans to test new technology on the debut segment of the Bay Area's HOT lane construction. If everything goes as planned, a stretch of I-680 will play host to a pilot project in October that will feature "intelligent" cars that could automate the tolling process.

BY HILTON COLLINS | STAFF WRITER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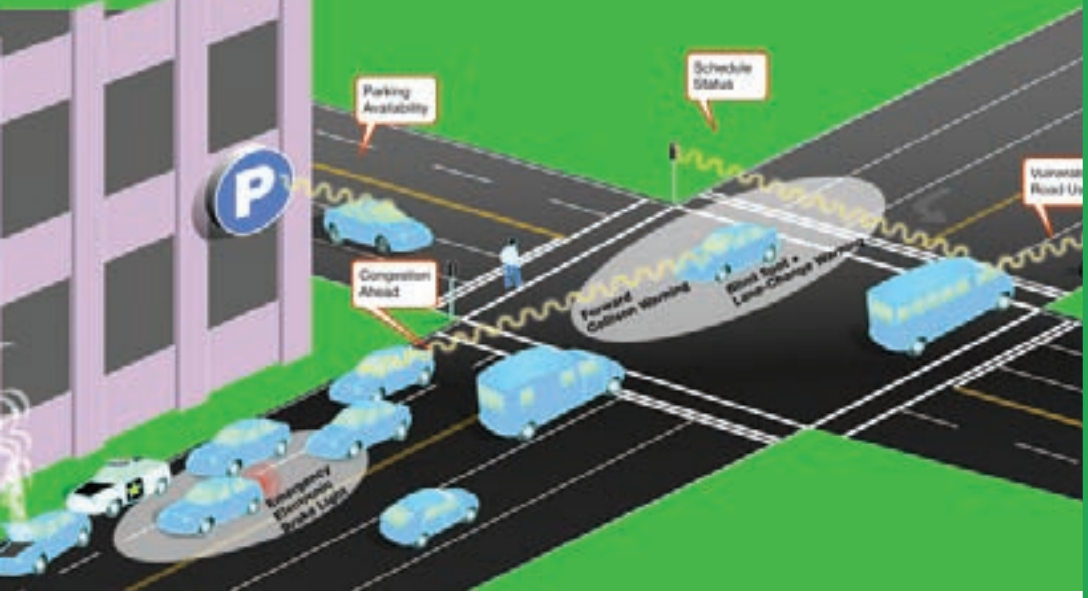

STREET SMARTS: The technology in IntelliDrive systems could provide motorists with alerts, situational awareness, forecasts, tips or toll information while they drive.

The MTC intends to use wireless technology developed through the U.S. Department of Transportation's (USDOT) IntelliDrive project to automatically detect how many passengers are in a vehicle, give drivers estimated commute times, and calculate and charge toll fees.

"IntelliDrive requires each vehicle to have an onboard unit, like a personal navigation device, where you have lots of time and space to communicate information to the driver," said Janet Banner, the project manager at MTC. "Things that drivers want to know when they're approaching or in a HOT lane are, 'How much is it going to cost?' and 'How much time would it take me to take a trip?'"

The MTC will supply some drivers in the HOT lane project with vehicles equipped with IntelliDrive technology. Others will have to agree to allow the vehicles they already own to undergo temporary installations for the project's duration.

In March, the organization released the first draft of an RFP for help designing, building and operating the test bed site, including roadway structures and technology that will assist in electronic tolling and radio communications for patrol officers. The HOT lane project is scheduled to end in March 2012, according to the program plan.

Looking for Vision

IntelliDrive is a federal initiative to outfit cars with wireless connectivity that lets them communicate with one another and fixed structures. The goal is to see how this technology can help combat congestion and make commuting safer. The national IntelliDrive program will eventually push for deployment of onboard intelligent transportation systems (ITS) equipment into vehicles. Efforts like the MTC's HOT lane project will test whether the equipment is effective for automated tolling.

But national thinking on ITS issues has been in short supply, according to ITS advocates. "We haven't had a transportation vision that is equivalent to the vision that Eisenhower had when he built the National Highway System," said Scott Belcher, president of the Intelligent Transportation Society of America (ITS America), referring to the Federal-Aid Highway Act of 1956 that was championed by then-President Dwight Eisenhower.

Most current intelligent transportation systems operate independently, which limits their effectiveness when drivers cross jurisdictional lines. As the Information Technology and Innovation Foundation points out in the report, *Explaining International IT Application Leadership: Intelligent Transportation Systems,* a system that allows a vehicle to communicate over a Michigan-centric network won't work in Indiana. Of course, moving to a more nationally coordinated approach also raises sticky issues about management of these systems between localities, states and the federal government.

In addition, ITS America — a government and industry group that promotes ITS deployment — contends that the U.S. simply isn't spending enough on highways and the tools needed to keep traffic flowing smoothly.

"Three bipartisan panels over the last two years have looked at U.S. investment in transportation," Belcher said. "Each of them concluded that the United States has woe-

PHOTO COURTESY OF PAUL KIRCHNER STUDIOS

GPS-enabled vehicles leave the lot during UC Berkeley's Mobile Century project in 2008.

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GLOBAL ITS

How does the rest of the world fare when it comes to riding and driving with a digital edge? A lot better than the United States does, at least when it comes to funding for intelligent transportation systems (ITS) deployment, according to the Information Technology and Innovation Foundation (ITIF).

In ITIF's January 2010 report, *Explaining International IT Application Leadership: Intelligent Transportation Systems,* Japan and South Korea are among the global leaders in the area. They've put more money into ITS and have a more unified national vision for transportation. But those countries also may have had little choice but to innovate in their commuting.

"If you look at Japan, for example, it's very dense," said Scott Belcher, CEO and president of the Intelligent Transportation Society of America, an organization founded in 1991 as an advisory committee for the United States Department of Transportation. "They have no capacity to expand their infrastructure, and they've really had to do a lot more with technology more quickly than we have."

Compared to the United States, Japan and South Korea have much less land mass and more centralized governments. In Belcher's opinion, that's made it easier for them to unify and apply an intelligent transportation vision.

South Korea will invest $3.2 billion in ITS from 2008 to 2020. Today South Koreans use a smart card or mobile phone application to make 30 million contactless transactions daily in public transit. Thousands of buses are equipped with real-time location and status notification systems. Japanese citizens benefit from Vehicle Information and Communication Systems to view traffic information in their cars. The system has been nationwide since 2003 and is part of Smartway, a service that warns drivers before they reach obstacles like congestion.

fully underinvested in transportation and transportation infrastructure."

Pockets of Innovation

That's not to say that innovative projects aren't under way. Existing research explores how ITS can take the guesswork out of surface travel for citizens and managing agencies.

The USDOT's Research and Innovative Technology Administration's (RITA) ITS Joint Program Office receives $110 million annually for research. The office's 2010-2014 strategic ITS plan lists projects on the horizon, including vehicle-to-vehicle projects involving wireless communication between vehicles and vehicle-to-infrastructure projects involving wireless communication between vehicles and surrounding structures.

RITA created the IntelliDrive project that's behind the MTC's HOT lane endeavor. IntelliDrive also is supporting SafeTrip-21, a California Department of Transportation (Caltrans) initiative to use technology to reduce congestion and improve safety.

Although IntelliDrive envisions equipping vehicles with specialized short-range wireless communications technology — known as dedicated short-range communications — most vehicles won't have it in the near future. So SafeTrip-21 uses the ubiquity of the mobile phone instead.

"We wanted to do something near term that could be useful to a large population," said Jim Misener, executive director of California Partners for Advanced Transit and Highways at the University of California, Berkeley, an organization assisting Caltrans with SafeTrip-21 efforts. "SafeTrip-21 was the bridge between now and the future."

It's a huge project that includes numerous subprojects, like Mobile Millennium, which ran from November 2008 to November 2009. Mobile Millennium used GPS-equipped cell phones in moving vehicles to gather real-time traffic information.

"[Researchers] wrote an application that resides on a smartphone that collects that speed at a location and then transmits it back through the cell-phone network to a server, and it's collected from many phones and aggregated to give a good idea of what's happening on the roadway network," said Greg Larson, chief of the Office of Traffic Operations Research in Caltrans' Division of Research and Innovation.

More than 5,000 participating drivers downloaded free software designed by UC Berkeley and the Nokia Research center onto their phones. The software also incorporated digital mapping capabilities from Navteq, a company that provides electronic traffic and location data.

Software applications downloaded by participants also allowed them to receive data and incident reports for traffic arteries.

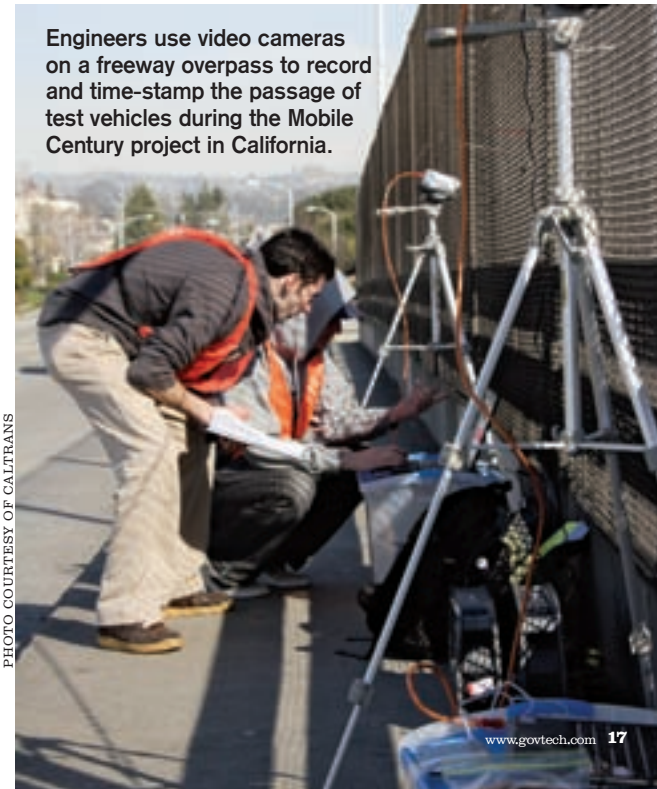
"It was more a behavioral study to see, What type of information will we get from this? How good would the information be? How frequent would the information be?" said Alexandre Bayen, assistant professor of civil and environmental engineering at UC Berkeley. "It was really way before the massive wave of iPhone apps."

Months before Mobile Millennium's debut, UC Berkeley launched Mobile Century, a similar project that ran on Feb. 8, 2008, in the San Francisco Bay Area. Nokia N95 GPS-enabled mobile devices were placed in 100 cars. The vehicles drove on a stretch of Interstate 880 near San Francisco from 9:30 a.m. to 6:30 p.m.

"We had also set up a bunch of high-def cameras to get impartial measurements along the route, and so we have independent data where we can look at the cameras and see exactly how fast traffic is moving, how congestion is forming and compare that with what we can infer from the data from the mobile devices," said Quinn Jacobson, a research leader at the Nokia Research Center.

The project used data from the cameras and loop sensors on the ground to collect information and check it against data collected from the phones. The Mobile Century data is available for download for other research institutions to use as they wish.

Cell phone technology is a cornerstone of these Caltrans SafeTrip-21 projects, but plans for future initiatives hit a snag in late 2009 when federal Transportation Secretary Ray LaHood spurred a crackdown on distracted driving and cell phone use in vehicles.



Engineers use video cameras on a freeway overpass to record and time-stamp the passage of test vehicles during the Mobile Century project in California.

PHOTO COURTESY OF CALTRANS

Healthier Bridges

In 2009, the American Society of Civil Engineers gave the overall U.S. infrastructure a "D" in a report and claimed that all levels of government should invest $2.2 trillion over five years to improve — the nation's bridges alone earned a "C."

Research now in progress may help bring those grades up. "A significant amount of research and product development is under way to advance the capabilities and usability of bridge inspection and monitoring technology," said Ian Friedland, technical director of Bridge and Structures Research and Development in the Federal Highway Administration's Office of Infrastructure Research and Development. "In addition to work sponsored by the Federal Highway Administration, other federal and state agencies are supporting these efforts, along with industry and academia."

Sometimes it takes a disaster, like 2007's Interstate 35W bridge collapse in Minnesota, to spur action. Today engineers at the University of Minnesota (U of M) use hundreds of sensors on the replacement bridge to analyze data and develop 3-D models of the information.

"We have 500 sensors throughout this structure that's 1,200 feet long, down into the piers and foundation as well," said Catherine French, a civil engineering professor at U of M who leads the project. "A lot of effort has been put in by the university to do the data interpretation and also develop a system that can be used for long-term monitoring of the bridge."

French and her colleagues intend for the data to help them see how damage and fatigue could occur from various factors, including temperature and load pressure.

"Certain design assumptions and modeling tools are used in designing bridges," French said. "This gives us an assessment of whether the assumptions made in the design of the bridge were accurate."

The story is similar with the Tacony-Palmyra Bridge in Philadelphia, which is managed by the Burlington County Bridge Commission. The commission let Drexel University use the structure for experimental analysis that could affect the future of structural health monitoring.

"The project will leverage different modalities of sensing and imaging: point sensing; distributed sensing based on electronic, optical or acoustic sensors; video imaging; infrared imaging; etc.," said A. Emin Aktan, a professor of infrastructure studies at Drexel and director of the university's Intelligent Infrastructure and Transportation Safety Institute.

The project began in fall 2009, and Drexel plans for classrooms to receive live sensor and video clips from the bridge for assignments. "We should be able to push the button on the computer and project the bridge onto the screen for all students to see," Aktan said. "We should be able to see the cars and trucks moving. We should be able to look at the weather."

Dave Lowdermilk is a vice president at Pennoni Associates, the firm that's the commission's resident engineer and a partner in the project. He said research on monitoring the structural health of bridges and other transportation infrastructure often is impeded by tight federal funding. "We're fortunate that the Burlington County Bridge Commission is a self-sustaining organization through toll collections. They [can] do a lot of the work that they need to through toll revenues," he said. "State [transportation departments] and other agencies that rely on federal dollars are at a loss right now."

The federal government authorized the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users to fund highway research programs from 2006 to 2009. Congress extended it through December 2010. In January 2009, the National Institute of Standards and Technology announced about $88 million in awards for research to develop sensors to aid in structural health monitoring projects over the next five years.

That meant some changes were in order for all cell phone-related projects on California's end.

"Our field testing is scheduled to end on Aug. 31 of this year," said Larson. "It was originally supposed to end in January 2010, but because of the rescoping we had to do to comply with the distracted driving concerns, we had to extend the project."

California also modified another SafeTrip project where drivers are notified by phone about upcoming accidents or slowdowns. Thanks to the changes, volunteers will get instrumented cars pre-rigged with phones, but they won't know they are there.

"In deference to our USDOT sponsors, there's not going to be a cell phone anywhere in sight. The cell phone's going to be hidden," Larson said. So drivers will have to rely on their ears for alerts. "It's going to be delivered to them through the stereo system in the car."

The researchers' goal is to monitor how people drive normally versus when they get alerts. The cars will have sensors to gauge driving changes.

"For one week, we see how they drive naturally," Larson said. "For the next week, we see how they drive when they start getting these alerts as they drive through the network, and what we're expecting is, when people get an alert, they're going to start to slow down."

Riding Smart

Of course, intelligent transportation isn't all about drivers. Transit systems also come into play, and pockets of intelligent transit innovation pop up here and there, like the Metropolitan Atlanta Rapid Transit Authority (MARTA) in Georgia. Tonya Saxon, a transit systems planning analyst there, knows firsthand how the technology helps her and her co-workers analyze their transit network.

MARTA uses an automatic passenger counting (APC) system, consisting of multiple sensors inside buses to collect data — like stop frequency, passenger enter and exit rates, bicycle rack usage and wheelchair lift cycles — to analyze what happens during routes. Then transit management uses analytics software to assess data for route planning and adjustments.

"These APC systems collect the ridership data [and] GPS information on the bus route that they are assigned to daily," Saxon said. "When those buses return, the data is transmitted via wireless to a base station in the garage. And on the back end, the predictive analysis is done through the software to bring us back the ridership information."

The data lets personnel see what trips are productive and determine where to place or remove stops. They can also generate custom reports. MARTA still uses manual data to check against the automated data for accuracy.

"We have ride checkers who go out on the bus and manually count people getting on and off, and they have a sheet with the stops and the trip times for that particular route," she said.

RITA's IntelliDrive project also pumps funding into making public transit more attractive. Field-testing on many SafeTrip-21 projects is scheduled to end in August 2010 and some involve public transportation.

Caltrans is working with the San Mateo County and Santa Clara Valley transportation authorities on a network traveler transit project in the Bay Area. In the project, citizens waiting for buses can receive information on their smartphones about bus locations and expected arrival times.

PHOTO COURTESY PEG SKORPINSKI FOR UC BERKELEY

To launch the Mobile Millennium traffic-information pilot, UC Berkeley students and staffers formed a "tech bar" to assist early adopters in downloading the free research-grade traffic program.

"Let's say your bus is arriving in seven minutes and you're at the bus stop next to Starbucks and you think, 'Hey, maybe I have time to go get a cup of coffee and still catch my bus.' So there's an example of a benefit you get," said Caltrans' Larson.

Transportation 2.0

Although research and pilot projects continue, some leaders think the United States has work to do before an ITS revolution takes off.

In 2009, *The Washington Post* reported that high-speed rail had emerged as the flagship of President Barack Obama's transportation agenda, and that nearly half of the $48 billion in stimulus funds set aside for transportation would go to non-highway projects, but the president's website doesn't mention a broad transportation agenda. The USDOT specifies in the 2011 budget plan that RITA will conduct more than $300 million in research, education and technology application, but LaHood's site doesn't mention large-scale ITS activities. It says he plans to shape the economy of the coming decades by building new transportation infrastructure.

The ITIF contends that the U.S. government needs to advance the domestic ITS agenda and take the lead on the issue. RITA, for example, is allowed to research but not to deploy. ITIF recommendations include spending billions more annually on ITS funding, allowing RITA to implement systems rather than just study them, and developing a national ITS by 2014.

Until then, drivers and commuters may need to live with a patchwork of projects instead of a national ITS strategy.

"It's a mixed bag," Belcher said. "For the most part, there are some states and local governments that do deploy technology and deploy various stages of technology to manage traffic in their cities, and they do it through a combination of technologies." GT

BY HILTON COLLINS
STAFF WRITER

Tightening the Net

Michigan took an award-winning approach to securing the state's wireless network.

SYNOPSIS
The Michigan Department of Information Technology (MDIT) upgraded the state's wireless network keeping security in mind.

CONTACT
Jack Harris, director of telecommunications, MDIT, harrisj8@michigan.gov.

The Web has become an everyday utility to so many Americans that government IT leaders feel growing pressure to give employees secure wireless Internet access.

Michigan wanted to achieve that goal, but in 2007, the state's IT environment wasn't ready to provide that level of service delivery. Though the Michigan Department of Information Technology (MDIT) served 19 departments, back then, different offices had different wireless equipment. The state lacked enterprisewide policies or standards for wireless networks, and wireless coverage was confined to fiber-connected offices.

"We had different products from different manufacturers, and they weren't working very well together," said Rhea Linn, the wireless LAN project manager for the department's Office of Telecommunications. "And they were past their shelf life, so to speak."

These problems motivated the MDIT to centralize the wireless network under one unified network and create enterprise policies. Leaders like Linn and Jack Harris, director of telecommunications, put a team together to work on the wireless LAN project, an effort to expand coverage on a platform that's safer and easier to manage. The solution was implemented in May 2007, and today 16 locations in the state have wireless LAN services.

"We had to have a secure solution that our clients could use. Otherwise, our clients would be off installing their own solutions that would not be secure," Harris said. "We must have a secured and acceptable solution that the client can point to and use — and use happily to keep them from trying to engineer their own thing on the sly."

And new state employees likely prefer the type of broadband environment they've been accustomed to using outside of work.

"The new students coming in who are taking state jobs are used to having free Wi-Fi at the university, and it was easy. They liked the portability," Harris said. "More and more state employees are using laptops."

Costs and Benefits

Many people refer to the current Michigan wireless infrastructure as Version 2. The Version 1 environment left much to be desired in many agencies — and not just technically. A huge sticking point was the cost agencies paid for using Version 1.

The state spent more effort and money servicing disparate wireless systems in Version 1 than the MDIT liked. In Version 2, the MDIT rolled Wi-Fi capability into the managed LAN service to the participating agencies.

"At no additional charge, we could put Wi-Fi access in points in their conference rooms, hallways [or] gathering places," Harris said, "and there's a one-time charge that they pay for an RF survey of the building, but after that, it's rolled into their managed LAN."

An RF, or radio frequency, survey identifies behavior of radio waves in an area before installing a wireless access point.

The cost to run Version 1 was estimated at $3,696 per month, including the $31 monthly charge per user, and about $93,677 per year for staff support and overhead. The cost to run Version 2 is staggeringly low by comparison — $105 a month, including a $1.25 monthly charge per user, and $14,989 per year in staff support and overhead. Harris said he's heard that customers are happy with savings in the new environment.

"We knew right away that it was too cost-prohibitive," Linn said of Version 1. "And people were not going to want to roll it out."

Linn spearheaded much of the technical development for Version 2 and was part of the initial design team — 13 people responsible for design, product research and installation. During this early phase, the group set up a pilot site with other MDIT agencies to hammer out issues like operational

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> "We had to have a secure solution that our clients could use. Otherwise, our clients would be off **installing their own solutions** that would not be secure."

— Jack Harris, director of telecommunications, Michigan Department of Information Technology

parameters and call-center procedures for customers with wireless problems.

But before all this, Harris had to help lay the project's groundwork in 2006 by convincing then-state CIO Teri Takai and other officials that network changes would benefit the state.

"We had to convince our Office of Enterprise Security that what we were building would be secure and meet their standards," Harris said, "and we took a lot of time with them to make sure that they understood."

The MDIT chose the Cisco Unified Wireless Network so users could have a single vendor solution that could meet scalability, operational and security needs. The new network offers high-speed connectivity over a wider area, and is easier to run and keep track of because it's centrally managed on compatible equipment, unlike the former heterogeneous environment. According to Linn, Michigan has a long-term contract with AT&T, which supplies the state with Cisco technology.

$3,591

Estimated monthly savings from Version 2 of Michigan's wireless LAN.

"Michigan is very Cisco-centric, if you will. We look to them first," she said, adding that she did consider other options. "I was looking at Nortel and the other solutions out there, and Cisco was the overwhelming winner. They met all of our requirements with security, and ease of deployment and integration with our other tool sets."

Lockdowns and Upgrades

Linn is confident that Version 2's security is superior to Version 1's. For one, Version 2 has more physical security layers in place when nonstate personnel connect.

"When someone comes into a state building," she said, "they have to pass a security guard, and they get visitors' passes and things like that." Once in the building, they must take extra steps to connect their mobile equipment. "With our wireless network, they must have a physical device that is owned by the state to connect onto our secure network, so a guest will not come in and connect wirelessly using their own laptop."

Guests are restricted on how much bandwidth they can consume so they don't impede network operations and their Internet access is tracked by a security appliance. All Web transactions are logged through security servers. This way, administrators can view Web usage patterns, and audit user history and other data to help them protect the network and make policy decisions.

Employees must provide authentication protocols to access Michigan's network, but that method was irritating with Version 1. State workers carried small devices called fobs, which are keychain-sized gadgets with tiny screens that display a random number every 90 seconds. The fobs were synced to the network, so when a state employee wanted to access the network from a computer, he or she had 90 seconds to enter the number shown on the fob.

The MDIT discontinued this method in Version 2, opting for a less cumbersome authentication process.

Harris and Linn are pleased with the MDIT's current network, and so are others in the department. The state nominated the wireless LAN project for consideration in the 2009 National Association of State Chief Information Officers Recognition Awards and won in the Information Security and Privacy category.

But as technology and threats change, security also must change. The MDIT will keep this in mind as it modifies the wireless network.

"As more devices are integrated to what is assumed to be a ubiquitous Wi-Fi environment," Harris said, "we have to be able to secure these other devices that may or may not have a person attached to them." GT

QUARTERLY REPORT

DIGITAL COMMUNITIES

Law Enforcement in a Digital Age

Finding common ground for effective collaboration. | June 2010

About This Report

This report is based on the work of the Digital Communities Law Enforcement Information Technology Task Force, a group of experts from government and industry that meets regularly to examine critical public safety issues and make recommendations for improvement. The Digital Communities program, hosted by *Government Technology* and the Center for Digital Government, is a network of public- and private-sector leaders focused on solving challenges faced by cities, counties and regions.

Also in This Section

Introduction

THIS *DIGITAL COMMUNITIES* special report focuses on some of the challenges and opportunities for law enforcement agencies in the digital age, especially the new or enhanced possibilities for collaboration and information sharing.

Of course, the underlying lesson for law enforcement is the same one that most institutions have had to learn in our rapidly changing world — adapt and evolve, or perish. But what makes this particularly challenging for law enforcement is that this must occur on two major fronts.

On one hand, crime organizations have moved onto the Internet big time. Federal statistics from the U.S. Department of Justice show a 33 percent increase in cyber-crime complaints in 2008 from the previous year, and these now routinely include all manner of criminal enterprises, such as money laundering, check fraud, identity theft and credit card fraud.

As the National Institute of Justice points out on its website, the overwhelming majority of law enforcement occurs at the state and local level. So while federal agencies may have a major responsibility in combating e-crime, they simply cannot handle the sheer number of incidents. Therefore, preventing and combating cyber-crime "depends on building relationships and partnerships in local communities."

On the other front — the one we deal with in more detail here — there's a continuing need to harness information and communication technology-based tools to drive new levels of collaboration and coordination across jurisdictions and agencies.

That again is necessitated by a changing world — one where criminals may no longer operate from the neighborhood or even the same jurisdiction or country. Rather, they might be sitting in a compound in Afghanistan or a drug lord's encampment in South America. And local law enforcement needs the same kind of reach and a global perspective as the criminals now have. Now that's a culture shift!

BY BLAKE HARRIS | DIGITAL COMMUNITIES EDITOR

PHOTO BY DAVID KIDD

United We Stand

The case for collaboration is clear; it's time to build a standards-based communications infrastructure.

IN TODAY'S ENVIRONMENT, successful law enforcement requires more than just willingness to work together. It requires the ability to effectively share data, information and intelligence across multiple jurisdictional boundaries in a secure and efficient manner.

Advances in information and communication technology (ICT) have created amazing opportunities for law enforcement professionals at local, state and federal levels to collect, categorize, cross-reference and share data and intelligence in a way that often results in a wealth of actionable knowledge. To take advantage of the opportunities these tools create, criminal justice agencies have formed multijurisdictional and regional relationships designed to combine, cross-match and share data from a wide variety of sources. Until now, the U.S. Department of Justice (DOJ) has supported these collaborative efforts through a series of pilot project grants. These pilots have been successful because they have shown the utility of collaboration and information sharing. However, it is time to shift from pilot projects to more effective implementations based on lessons learned.

In 2006, the Justice Research and Statistics Association conducted a survey of information-sharing initiatives either in existence or under development in the U.S. at that time. While they were not completely satisfied with their survey response rate, they identified 266 information-sharing systems in place in 35 states and Canada.

As one public-sector Digital Communities Law Enforcement Information Task Force (LEITTF) member said, "There is a screaming need for a review of all the regional law enforcement information-sharing systems floating around out there. I hate to see us continue to fund additional pilot/grant projects without any goal of finding one or two systems that will meet most of our needs."

This is the time for federal, state and local agencies to increase their efforts to work together and build upon a common standards-based infrastructure rather than continue the development of separate systems.

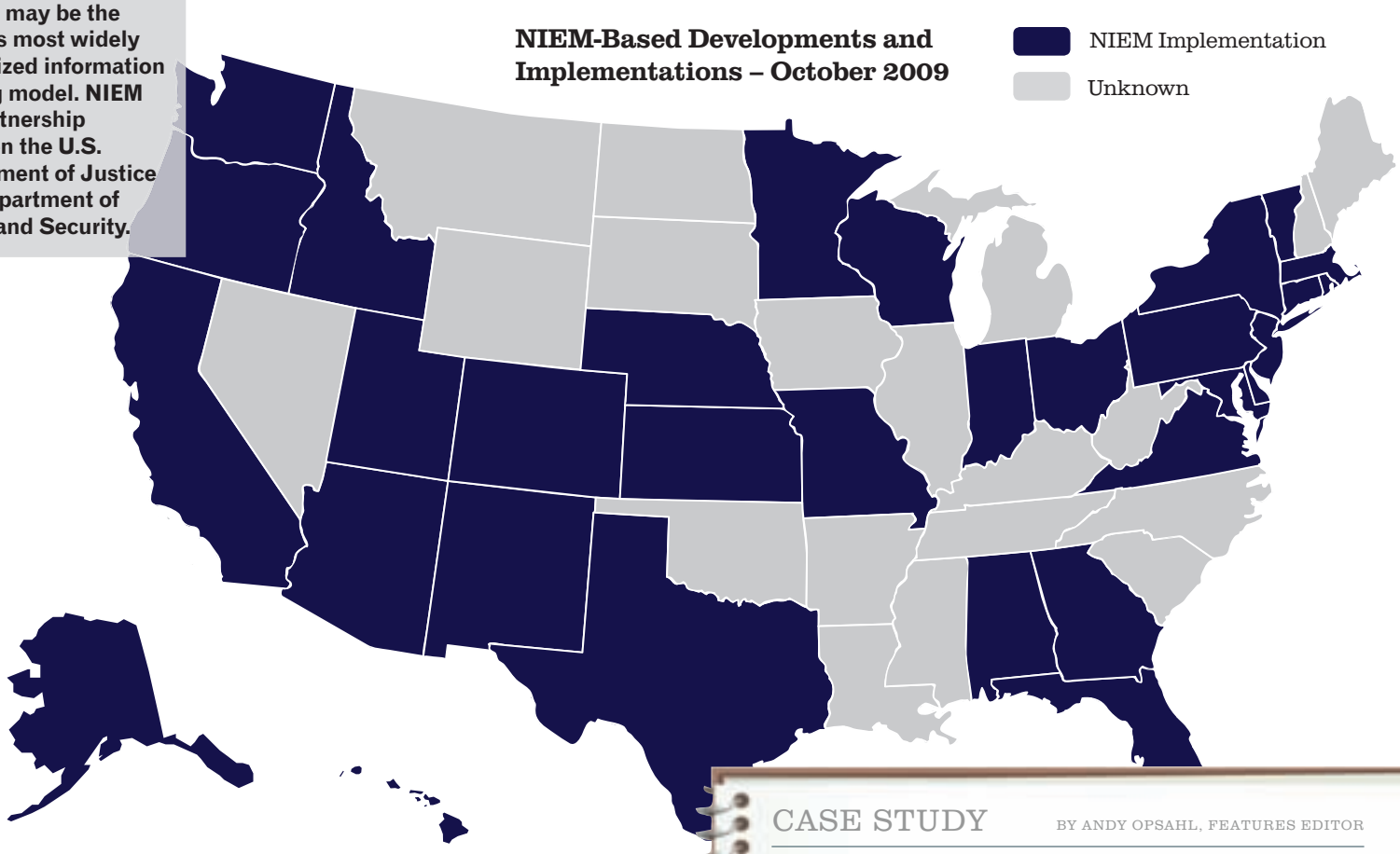
Mapping the Way

The case has been made for multijurisdictional information sharing, and the fundamental building blocks of data and technical interoperability standards are now in place. But local governments need to better understand what resources already exist so that they can be leveraged in all future plans and acquisitions, thereby creating a platform for sharing that can be easily built upon and expanded over time.

Law enforcement ICT needs must be considered and addressed as cities, towns and counties strive to consolidate their IT infrastructures. Unfortunately much of the good work done over the past several years in criminal justice information sharing has resulted in confusing sets of systems, standards and organizational contributions.

The National Information Exchange Model (NIEM) may be the nation's most widely recognized information sharing model. NIEM is a partnership between the U.S. Department of Justice and Department of Homeland Security.

NIEM-Based Developments and Implementations – October 2009



This report examines some of the most common and widely accepted standards, systems, programs and organizations available to support local officials as they seek to improve their information-sharing capabilities. It's intended to spark dialog among law enforcement professionals, newly assigned enterprise IT support staff, and private-sector providers of law enforcement information tools and services, engaging them in the important conversations necessary to fully understand the needs and opportunities facing the local law enforcement community.

A Long-Standing Issue

There is one issue that has perhaps challenged and frustrated proponents of multijurisdictional law enforcement information sharing more than any other: information ownership and control.

Traditionally law enforcement intelligence sharing is conducted in a task force environment where there was an immediate and tactical need for information. Within those narrow confines, multiple agencies established trust relationships. Today advances in information technology allow virtually anyone to view and share data. This fundamental shift is disconcerting for many since they can no longer control access to data as they did in the past. One of the most common and widespread controls has been the requirement that participants demonstrate a "need to know" before they are provided with information.

In the aftermath of Sept. 11, the 9/11 Commission issued a report calling for a fundamental change in this way of thinking. The report

CONTINUED ON PAGE 33

CASE STUDY

BY ANDY OPSAHL, FEATURES EDITOR

Virginia Jurisdictions Swear By LInX

State and local agencies in Virginia exchange data through the Law Enforcement Information Exchange, hosted by the Naval Criminal Investigative Service.

The Law Enforcement Information Exchange (LInX) is the glue that holds nearly 200 Virginia and Maryland agencies together for information sharing. The Web-delivered system is hosted by the Naval Criminal Investigative Service (NCIS), which covers the yearly maintenance costs for all state and local agencies connected to it. Agencies pay a one-time $75,000 fee for Northrop Grumman, the system's vendor, to adjust its hardware for connection.

"We get arrest information, mug shots — you name it — across the board," said Mark Calhoon, planning administrator for the Newport News (Va.) Police Department.

Calhoon said the various agencies trusted LInX from an IT security perspective because it was run by the NCIS, which they viewed as having credibility in that area. He attributed comfort with LInX among agencies mostly to the mutual trust of the leaders involved. He described the trust-based protocol for using information stored by another organization within LInX.

"You look into the system. If you see something you need, you call the jurisdiction to verify it and get whatever official documents are needed," Calhoon said.

Law enforcement in Texas, Washington and Alaska share data using LInX. Calhoon said Northrop Grumman was considering an idea to link all states using the system to one another.

Regional Information Exchange Systems

The following systems are examples of what's possible when regional partners work together. They consist of differing technologies and differing management and governance structures, but they all demonstrate an improvement in law enforcement information-sharing that stretches from the data center to the officer on the street.

LInX

The Law Enforcement Information Exchange (LInX) is an award-winning system initially launched by the Naval Criminal Investigative Service (NCIS) — the felony investigative arm of the U.S. Navy — to enhance information sharing between local, state and federal law enforcement in areas of strategic importance to the Navy.

According to Mark Calhoon, planning administrator for the Newport News (Va.) Police Department, "LInX has grown to include 104 member agencies in Virginia, including the NCIS, FBI, U.S. Marshall's Service, Virginia Port Authority, Virginia Department of Alcoholic Beverage Control and the Virginia State Police.

In addition, there are similar LInX networks in agencies in Alaska, Idaho, Oregon and Washington (250 member agencies); Texas (24); Georgia and Florida (58); New Mexico (23); Hawaii (six); and the National Capital Region (80). Calhoon believes that "LInX is a big initiative that deserves to get bigger."

ARJIS

The Automated Regional Justice Information System (ARJIS) was created as a joint powers agency to share information among justice agencies throughout California's San Diego and Imperial counties. ARJIS has evolved into a complex criminal justice enterprise network used by 71 local, state and federal agencies in the two California counties that border Mexico. The secure ARJISnet intranet integrates more than 6,000 workstations throughout the 4,265 square miles of San Diego County. There are more than 11,000 authorized users generating more than 35,000 transactions daily.

OLLEISN

The Ohio Local Law Enforcement Information-Sharing Network's (OLLEISN) mission is to create a voluntary network based on model policies and established technical and security standards. Its purpose is to assist officers and investigators in preventing and responding to acts of terrorism and crime. More than 725 of the 900 local law enforcement agencies in Ohio share record management system data through OLLEISN, and can conduct in-depth searches and create reports based on subjects, persons, organizations, vehicles, property, report identifiers or locations.

Colorado COPLINK

In 2008, the public safety agencies in the Denver metropolitan area joined together and implemented Knowledge Computing Corp.'s COPLINK as their preferred multijurisdictional shared information system. Participating agencies defined a need for a secure, intuitive system for querying across databases that's easy to use and maintain.

The initial implementation in Jefferson County has now been expanded into other areas of the state. The Colorado Information Sharing Consortium (CISC) acts as the governing board for a statewide initiative to make COPLINK available to law enforcement agencies.

CISC is composed of seven public safety "core partners," including the Adams County Sheriff's Office, Arapahoe County Sheriff's Office, Aurora Police Department, Colorado Bureau of Investigation (a branch of the Colorado Department of Public Safety), Denver Police Department, Douglas County Sheriff's Office and the Grand Junction Police Department.

Mo-DEx

The Missouri Law Enforcement Data Exchange (Mo-DEx) is a statewide data warehouse also based on the COPLINK solution suite. It conforms to the NIEM standard and interfaces with the FBI's Law Enforcement National Data Exchange, N-DEx. Mo-DEx lets law enforcement agencies search, link, analyze and share criminal justice information, such as incident/case reports, incarceration data, computer-aided dispatch, photos, citations, collisions and pawnshop data on a statewide basis.

Mo-DEx was developed in cooperation with the Missouri Department of Public Safety, the Missouri Police Chiefs Association, the Missouri Sheriffs' Association, the Missouri State Highway Patrol, the Missouri Department of Corrections and the Office of State Courts Administrator.

CASE STUDY BY ANDY OPSAHL, FEATURES EDITOR

Colorado Jurisdictions Share COPLINK

Law enforcement jurisdictions in Colorado view COPLINK as a simple standard for cities and counties elsewhere to join.

As the law enforcement community samples various options for multijurisdictional data access system standards, it may want to examine usage of COPLINK software in Colorado. Agencies statewide find it a secure, low-maintenance fit for connecting disparate infrastructures, according to Mark Pray, IT director of Aurora, Colo. Participating agencies receive COPLINK as a Web application, which automatically transposes their data into its own code standards.

"Any new agency that wants to come onto this consortium pays to have its data converted to COPLINK and then pay the cost-sharing agreement for the local node they'll attach to," Pray said.

Four counties serve as "nodes" for hosting the data of surrounding municipalities. For example, Aurora County hosts data for Denver and Colorado Springs. Those two cities contribute to the cost of hosting their data in Aurora County. As more agencies submit data to the Aurora County node, the cost for all involved will drop.

Pray said hosting COPLINK had a minimal impact on his IT staff workload and the maintenance largely took care of itself. "I'll give you an example," Pray said. "COPLINK did an update to the system. We had staff onsite to monitor the work to make sure nothing unplanned happened, and we just watched. They handle all of that remotely from their offices in Arizona. It's working really well."

CONTINUED FROM PAGE 30

focuses primarily on federal agencies, but there are lessons included for law enforcement agencies at every level.

The commission stated the problem this way: "What all these systems have in common is a system that requires a demonstrated 'need to know' before sharing. This approach assumes it is possible to know in advance who will need to use the information. Such a system implicitly assumes that the risk of inadvertent disclosure outweighs the benefits of wider sharing. Those Cold War assumptions are no longer appropriate. The culture of agencies feeling they own the information they gathered at taxpayer expense must be replaced by a culture in which the agencies instead feel they have a duty to the information — to repay the taxpayer's investment by making that information available."

Excessive information compartmentalization in the name of security serves no one well. Modern systems and processes enable authorities to establish accountability and oversight capabilities to ensure that access and use comply with policy and law. Real-time tracking and auditing of system users and their activities guarantees that they do so consistently with their mission, authorities and responsibilities. A more robust implementation of available tools can help rebalance the historical equation and make the rewards for sharing greater than the risk of inadvertent disclosure, thereby improving overall intelligence sharing and law enforcement success.

National Standards and Regional Partnerships

LEITTF member Paul Wormeli, executive director of the Integrated Justice Information Systems (IJIS) Institute, captures the consensus view of LEITTF when he describes the benefits of standards this way: "Standards make the most sense when we deal with the information exchanges, not the underlying individual systems. Particularly with a service-oriented architecture, it is the exchange that needs to build on open standards."

Perhaps the most widely recognized and important standard of the day is the National Information Exchange Model (NIEM), a partnership between the DOJ and U.S. Homeland Security (DHS), which addresses cross-domain information sharing.

Many in the justice information-sharing community see NIEM as the key standard and foundation for exchanging information across multiple domains and disciplines. Because of this, all grants from the

DOJ or DHS now carry special conditions requiring that information systems that share data must conform to NIEM specifications and guidelines to better promote increased information sharing. Grantees agree to make all schemas generated as a result of their grant available through the component registries.

State and local governments are traditionally skeptical when it comes to the federal imposition of standards. However, NIEM standards are generally viewed as reasonable and helpful. LEITTF member Peter Gnas, network manager with the Milwaukee Police Department, describes them as "… a good example of a broad-based framework which outlines how each agency can package their data in a universally acceptable method."

While a single, fully integrated national system that provides information to every law enforcement agency in the nation may be the absolute ideal, the reality is that significant progress has been made through bringing regional partners together in voluntary collaboration. There are many examples of regional collaboration — some may even say there are too many examples. However, the reality is that through these partnerships, the best progress is being made and the necessary lessons are being learned — and they may one day carry us to the point where a fully integrated national system is feasible.

CASE STUDY

BY ANDY OPSAHL, FEATURES EDITOR

ARJIS Becomes Tool for Multijurisdictional Collaboration

The Automated Regional Justice Information System serves as a platform for numerous agencies to strategize together.

Beyond enabling multijurisdictional data sharing, the Automated Regional Justice Information System (ARJIS) serves as a cross-jurisdictional forum for policy strategy, according to Pam Scanlon, executive director of ARJIS. The system functions as a joint-powers agency that's centered primarily on Imperial County and San Diego County, Calif. Through ARJIS, those two counties have access to data at 82 local, state and federal agencies.

ARJIS provides a platform on which public safety executives and elected officials are unusually open to listening to one another, said Scanlon. She attributed this to the fact that elected officials and public safety executives have equal voting power within ARJIS.

"That has really equalized the playing field," Scanlon said. "It has also provided an opportunity for the public safety executives to explain public safety better and what their needs are to the elected officials. On the other side, the elected officials understand those needs and help give better legislation."

ARJIS hosts 20 task forces on the members' various data needs, and that commonalty has fostered a lot of good will among them, reported Scanlon.

"There is a tremendous amount of respect around the agencies," she said. "They support each other."

Further promoting that friendly sense of collaboration is the fact that ARJIS' business plan comes from the bottom up, rather than top to bottom.

"Our members come up with the business plan. We don't take our business plan and shove it down anybody's throat," Scanlon said. "They develop it for the user based on their requirements each year."

ARJIS subsists on fees charged to members, which are based on size and number of network connections. The organization outsources hosting of the system to a private company.

Scanlon said joining ARJIS required ensuring that an agency's hardware could interface with the IP addresses and firewall used by the organization. ARJIS guides agencies in completing that.

"We write up a statement of work, do a technical design document and get their technical folks on board as well as their business people," Scanlon said. "It's a very easy installation. We come up with the cost. They sign a memo for kind of a user agreement and we get them up and running."

Three Steps to Start

For members of the law enforcement community, the LEITTF offers a few suggestions for improving an agency's information-sharing capability. Even starting small by simply looking to share information that is easy to distribute to agencies and jurisdictions closest to you will help establish a culture of openness and collaboration. This will make it easier to move on to larger, more complex relationships in the future.

- Make an organizational commitment to create a culture and structure for sharing information however and whenever possible with other departments and agencies. Great success can come if you are willing to adopt a "share unless there is good reason not to" approach instead of a "share only under special circumstances" policy. There are guidelines in the National Criminal Intelligence Sharing Plan — available online from the Institute for Intergovernmental Research — to help you.
- Become a member of the FBI's Law Enforcement Online (LEO) system. LEO is available at no cost to its users and provides secure e-mail capability; a national alert mechanism; and access to special interest groups for sharing information by providing access to other networks, systems, databases and other services.
- Take full advantage of the Internet, law enforcement websites and information-sharing opportunities like those highlighted in this report that are created by local, state and federal organizations. The Internet provides a wealth of open source information, including government information and access to private agencies that share with law enforcement. Information-sharing and collaboration opportunities are available through sites like the Digital Communities LEITTF.

Also available are national plans and reports outlining strategies for improved information sharing such as: the Bureau of Justice Assistance National Criminal Intelligence Sharing Plan, the Markle Foundation Task Force on National Security in the Information Age, the DOJ IT Strategic Plan Fiscal Years 2008-2013 and the Law Enforcement Information Sharing Program.

There is both a need and an opportunity for local law enforcement agencies to improve their information-sharing capabilities. These initiatives must be evaluated in the harsh context of the current financial situation in which most local governments find themselves. It is a difficult time to begin something new if it requires any additional funding.

However, this can be the perfect time to change the often rigid and parochial structure of law enforcement information management, create new relationships, and develop new collaboration and information-sharing methods and protocols. Such changes don't require a large amount of cash, but rather a full measure of vision and courage — something law enforcement officials traditionally have plenty of, regardless of economic cycles.

Learning Curve

The largest school district in Georgia finds a better way to manage electronic accounts and provisioning.

Gwinnett County Public Schools (GCPS) is the largest school system in Georgia. Located in the metropolitan Atlanta area, GCPS prides itself on academic accomplishment. In 2009, the district became only the second school system in Georgia to be selected as one of five finalists for the prestigious Broad Prize for Urban Education. The $2 million prize is the largest education award given to school districts in the United States.

This recognition validates the school system's continuous commitment to excellence. The district embraces technology to help further students' success. Pupils have access to live homework help, online media resources and many other technology tools. But students all need their own user names, passwords and permissions — even while moving to the next grade or changing schools. Managing the directory of electronic accounts for students and staff is a huge challenge for GCPS.

The district has approximately 22,000 staff members and 160,000 students. With such a large student population, transitions occur nonstop. Students enter or leave school for a variety of reasons. Students move to other schools within the district. Some move out of the district — and some later move back.

After the vendor discontinued support of the district's existing Active Directory (AD) management system, GCPS decided to look for a new solution. "The old system was showing its age, and after a couple years of increasing load and no upgrades, my team was spending a significant amount of time keeping the old system running," said Terry P. Chapman, LAN operations coordinator for the district's Information Management Division.

Also, the previous solution for managing AD didn't allow changes to student information to be made quickly. Group management and provisioning tasks were cutting into IT staff time — time that would be better spent supporting technology resources for teaching and learning.

The old system also was inefficient when it came to dealing with students changing schools between school years. And the addition of approximately 1,600 new students each year was difficult to manage. The only solution was to delete all student accounts at the end of each school year and create new ones at the beginning of the following year — a task that became more challenging each year as enrollments increased. The previous system simply couldn't expand to deliver what the district needed.

These limitations led the district to implement a directory management solution from Quest Software. Quest's ActiveRoles Server (ARS) greatly enhanced the district's ability to manage AD. ARS lets the district provision, re-provision and de-provision users quickly and securely. It gives users the proper access, enables the district to quickly create groups and provides an improved audit trail. ActiveRoles Quick Connect extends ARS' capabilities into non-Windows platforms, giving the district the flexibility to leverage its heterogeneous environment.

Big Step Forward

The most important benefit of the new system for the district is the ability to quickly make changes to student information. The district's team includes local school technology coordinators (LSTCs) and technical support technicians (TSTs). Each school has at least one TST who supports its technology resources. Some larger schools have more

than one TST and some smaller schools share TSTs.

Using ARS and a Web interface, a TST can make a change to a student user account and have it take effect almost instantly. With the new system, a TST can go into a lab of 30 computers, make a change to a group assignment and know the change will take effect in just a few minutes. "We had to have the changes near real time, nearly immediately. Quest was able to make that happen for us," said Chapman. "We no longer have to tell TSTs and LSTCs, 'We're sorry, but you need to make your change 30 minutes or an hour ahead of time.'"

TSTs can now easily manage users and groups in their schools, and provisioning, deprovisioning and moving student accounts require less effort and time. And ARS' role-based administration allows the TSTs to ensure that the users and groups they manage have the right access to information they need for learning or to do their jobs, but nothing more.

'E' for Efficient

The new system increases staff efficiency, and it's paying off for the district in numerous ways. "The things we have now that we didn't have before are the speed at which changes happen and the manageability of the system," said Chapman. "It's just more efficient."

The scalability of the new system will help the district grow its capabilities. The new solution allows the district to implement auto-provisioning of students, and the scalability to auto-provision faculty and staff in the near future.

> "The things we have now that we didn't have before are the speed at which changes happen and the manageability of the system. It's just more efficient."
>
> **Terry P. Chapman,** LAN operations coordinator, Information Management Division, Gwinnett County Public Schools

Because the IT staff can now make changes quickly, they can stay focused on helping teachers and students fulfill their core missions. "During times when we typically have a lot of students moving between schools, a high school with 3,000 students can have 100 of these changes a day. This is not the most efficient use of a TST's time," said Chapman. "TSTs should be in classrooms, labs and administrators' offices, helping make sure the technology we've worked so hard to make available for teaching and learning is working as designed."

Chapman also noted, "As the number of schools and the number of students increased, the task of creating all of the new accounts in a short period of time became impossible." The new solution alleviates this problem. It creates one account per person, and can keep that same account available no matter how many changes in the person's situation over the years.

Rapid Deployment

The district had an aggressive schedule for implementation, and with the help of Quest partner IBM, it easily met the deadline. The purchase of ARS was approved by the Board of Education in June 2009, and the tool was up and running the next month. Staff training and other preparations were completed prior to the first day of school on Aug. 10. "As always, our major focus is on supporting teaching and learning," said Chapman. "We had several hard deadlines we had to meet in order to have things ready for the new school year." Despite the short timeline, the district got it done. "The project was completed on time and within budget."

Chapman gives much of the credit to his staff. "We have some of the most dedicated staff here that you can imagine," he said. "These people — they took an impossible task and made it happen. If you look at my timeline for implementing this thing, it's really a testament to their hard work that this got done. Without their hard work and without Quest working with us, we never could have done it."

Stepping It Up

Public safety communications get a boost from Ethernet radios and a powerful, yet affordable MPLS network.

The Thurston County, Wash., Department of Communications administers a countywide 911 public safety answering point (PSAP), which provides radio communications dispatch for all of the county's fire, police and emergency medical services agencies. But the department's 12-year-old communications network was no longer meeting the county's needs, and there were gaps in the network because all desired locations weren't connected. The department, known as CAPCOM, moved to a new microwave system using multiprotocol label switching (MPLS) and state-of-the-art Ethernet radios, which provide greater flexibility, reliability and scalability.

CAPCOM — which is based in Olympia, the county seat and state capital — greatly enhanced the county's public safety communications with the new network. The previous time division multiplexing (TDM), or "T1," network couldn't keep up with the county's demand for more communications bandwidth. The new MPLS networking protocol allows high-capacity network traffic while also making the network easier to manage. It prioritizes data packets, so high-priority data — such as voice packets, which require a continuous data stream — are moved through the network faster than others. While TDM and T1 circuits have their merits, they're older technologies — and they were holding the county back. MPLS technology allows more sophisticated applications, such as video, to run over the same network as voice and data without degrading quality.

Federal funding aimed at greater interoperability helped the county make the leap to more robust technology — and it was a big leap. Previously the county had 1.54 Mbps capability over its legacy T1 data transmission system. Now it has 150 MB, Internet protocol (IP)-based service featuring the Ethernet radio network and MPLS. The new network and radios from Alcatel-Lucent have been working well for Thurston County since they were deployed in October 2009.

Radio equipment installed on Capitol Peak is part of the new microwave network in Thurston County, Wash.

Like many government agencies, CAPCOM found that network technologies have improved and costs have come down, allowing smaller agencies to afford the same types of high-grade networks that modern telecom carriers have. "Smaller, local governments and public safety agencies can really take advantage of the newer network technologies and MPLS now," said David Taylor, technical services manager of CAPCOM. Although CAPCOM is a small, local government 911 center, it's been able to deploy MPLS and take advantage of increased security, network efficiency and staff responsiveness while serving the public.

The county now has better interoperability, improved flexibility and greater reach. It also has the many benefits of IP-based communications. "It's definitely been a huge improvement for our whole radio communications system," Taylor said.

The new microwave system is the backbone of the county's public safety communications. The MPLS network runs on top of it and manages bandwidth and other aspects of the network.

Major Flexibility

The new system is more robust, strong and solid. And it worked without any glitches straight out of the box. "We haven't had a single failure or problem since we started operations in October of 2009," Taylor said. "The system worked as configured from the factory — from day one."

The Alcatel-Lucent MDR-8000 Ethernet radios, the microwave system and the MPLS

network have all performed admirably, taking CAPCOM's communications to a new level. "MPLS gives you a lot more to work with than the previous technologies, in a more reliable manner," Taylor said. With MPLS, the county has more options for linking various systems. It's much easier and faster now to connect the public safety agencies that need to work together.

The new system was developed with the help of a federal Public Safety Interoperable Communications grant. The grant was awarded, in part, to help the county address its bandwidth and interoperability issues. MPLS was chosen because it's easy to manage and monitor. That helps ease the burden on CAPCOM's small staff. Ease of use, in fact, is one reason many government agencies are moving to this type of IP-based, wireless network.

MPLS allows CAPCOM to connect various networks together however it wants. Taylor said the Alcatel-Lucent service routers are a big part of that. "These things are one box, one-stop shopping," he said. "They can handle everything. Any type of standard interface and protocol can be administered and connected right at the router itself."

The new system also extends the network, for greater connectivity to numerous agencies. "When we deployed the new setup, it allowed us to connect to a lot of key, significant sites where we had no presence at all," Taylor said.

The new network gives the county's communications greater flexibility and improved data security. And the larger bandwidth allows CAPCOM to have video surveillance cameras at its various sites. That was something it simply couldn't do before.

Radios and More

IP-based communications and MPLS are critical in part because communication isn't just about radio anymore. Moving large amounts of data, such as video, has become important too. "Even though the new 150 Mbps microwave system seems like a lot of bandwidth, it's relatively small compared to the multi-gigabit speeds that enterprises employ in the LAN," said Scott McIntyre, systems engineer at Alcatel-Lucent. "Video surveillance and mobile data applications will eventually compete with other mission-critical and best-effort applications for this 'limited' amount of bandwidth. MPLS traffic engineering, the statistical multiplexing nature of IP, and the granular quality-of-service control of the new equipment will really help CAPCOM efficiently manage the bandwidth needs of current and future applications for years to come."

Meanwhile, radios will always play a large role in public safety communications. Thurston County likes the Alcatel-Lucent MDR-8000 Ethernet radios. "I really appreciate the fact that it's a mature product line, but it's still relevant for future technology and today's technology," Taylor said. "That's because basically they're taking the same reliable platform and just changing the way it transports data."

Taylor said the installation of these 150 MB Ethernet radios, as he expected, went very smoothly. "We didn't have to do any software upgrades, and we didn't have to do any changes. We installed them, turned them on and they were ready to go," he said. "And they work well natively with the MPLS network and the IP design."

The county chose the Alcatel-Lucent solution for several reasons. The company had already worked with several other state and local agencies in the region to deploy similar technology. "It was a proven technology to us," Taylor said. "The Alcatel-Lucent sales and engineering teams looked at our current system, what our intended goals were, and then came up with a solution that would work for us."

Alcatel-Lucent provided a turnkey system for the county. The company managed the design, engineering, licensing, project management, installation, commissioning and testing. CAPCOM provided project management and engineering support, in addition to handling logistics in receiving, storage and deployment of equipment, and oversight for installation and commissioning. "The Alcatel-Lucent staff has been excellent to work with — everyone from sales to engineering to project management," Taylor said.

Following the installation, the company also assisted the county with initial configurations, provisioning and other transitional matters. Alcatel-Lucent helped the county move from the old TDM skill sets to those needed for an IP-based system. It turned out to be a solid partnership that benefits numerous public safety agencies within the county. And CAPCOM now has a network it can build upon for many years to come.

Smart IT Moves Save City Money

New technologies, including the cloud, enable a tech-savvy city to provide better services for the public — at substantial cost savings.

People in Plano, Texas, know technology. The suburb north of Dallas has nearly 270,000 residents, and they're generally well educated. Numerous global companies have headquarters or a large presence in Plano — including several technology companies.

The city's IT staff knows that Plano residents expect a lot from the city. That staff is currently upgrading several key technologies to provide better services for Plano residents. The new technologies will also lower costs and increase the efficiency of city workers and processes.

Plano is transitioning to a cloud-based solution for e-mail, Web conferencing, online collaboration and other communication tools. It's also switching to a new management tool for virtual environments. And it's moving to a new solution to manage its IT infrastructure — integrating the management of its physical and virtual environments across data centers, desktops and devices.

These technologies will help Plano integrate various systems across the enterprise — and gain significant cost-savings. And with a simpler environment that's easier to manage, the city's IT staff can focus less on maintenance and more on providing even better services for citizens.

The new technology platforms will help Plano aggressively cope with issues facing many governments today — budget shortages, the need to do more with less, and the aging work force. "It's all part of a strategy on how we can provide better service to our end-users, our customers and ultimately to our citizens," said David Stephens, director of technology services for Plano. "We have to make sure we have stable environments that are cost-effective."

Cloud Has It Covered

By having business productivity tools hosted in the cloud instead of on its premises, the city will reduce the amount of hardware and software it needs to own and maintain. And it can provide the kind of mobile tools today's younger work force expects. It will even have a better system for open records and e-discovery compliance.

With Microsoft's Business Productivity Online Suite (BPOS) and the cloud, the city will also have better video conferencing than it had in the past, at lower cost. The city's previous video-conferencing tool was expensive, difficult to maintain and cumbersome to use. The new solution will simplify all of that.

With all the benefits, the city is impressed with the cloud. "I think it's the future," said Bruce Glasscock, deputy city manager. "I think more cities will be doing this in the coming years."

The city decided to move to the cloud when it wanted to upgrade its e-mail environment, and realized it could get more capabilities and a lower cost by going with a hosted solution. Microsoft's BPOS will give the city more mobile services, fewer servers consuming less power, better data security, improved business continuity, more ways to communicate with citizens and additional tools that help the city's workers be more productive. And hosted solutions can be deployed much more quickly than internal ones, so time is saved as well as money.

"With the potential of going to the cloud, we can reduce the number of servers and the infrastructure that we need here," said Glasscock. "That has the potential for significant savings." More savings can be realized, he added, from the cloud's ability to enable more devices. For example, BPOS gives more capabilities to cell phones, such as access to e-mail, calendar, contacts, tasks and shared

content. The city could save a lot of money by allowing employees to use their own cell phones for work, rather than the city continuing to buy phones for the employees.

In addition to BPOS, the city also is using Microsoft solutions for virtualization and infrastructure management.

Virtually Vital

About two years ago, the city embarked on a consolidation project, which led to Microsoft's Hyper-V, said Chester Helt, infrastructure manager. Hyper-V's cost-effectiveness made it the natural choice to manage server virtualization in the consolidated environment. "With the consolidation project," he said, "we're looking at about a 30 percent decrease in power requirements in our server rooms, based on our pilot projects and work we've already accomplished."

In addition to the improvements in virtualization, the city wanted to streamline and optimize its management of various systems. To do so, it selected Microsoft's System Center, which integrates the management of all aspects of IT infrastructure. System Center provides detailed knowledge of operations, identifies root causes of problems, and much more. It enables the management of numerous environments from one console. System Center is replacing several tools for the city.

Plano has been moving its systems to the Microsoft platforms for years now. Since employees are already familiar with Microsoft products, training time is minimal and real value is realized quickly. Expanding on these platforms will lead to more economies of scale. And the standards-based approach eliminates the need for specialized knowledge — an important factor with today's IT retirees taking a lot of institutional knowledge with them.

These new solutions will benefit both the city and its citizens. "I can bring more value to the citizens of Plano, at a lower cost," Helt said. "The citizens will benefit from a cost standpoint, and a capability standpoint. The functionality will improve also. And I can help my staff be more efficient at what they're doing."

> "It's all part of a strategy on how we can provide better service to our end-users, our customers and ultimately to our citizens. We have to make sure we have stable environments that are cost-effective."
>
> **David Stephens,** director of technology services, Plano, Texas

Strong Partnership

Helt and his staff will be able to deploy new tools much faster with the cloud. For example, Plano is upgrading its Microsoft Exchange platform soon, and the city anticipates it will do so in one to two months. "If we had to do it in-house, we'd be looking at a six- to nine-month time frame," said Helt.

Microsoft's expertise is also something that's highly valued by Plano. "We're looking at a partner that is going to be stable, and going to be in business. They're viable," Stephens said. "And being the manufacturer of the software, they should know it better than anybody else. So that gives us an additional comfort level, in that they know the product and they're able to maximize its benefits for us. They're going to know the best practices and make suggestions on its use that we'll be able to incorporate into our environment."

While the changes will require some adjustment from the city's staff, it's not expected to be a long process. Once the city's workers are familiar with the capabilities provided by the new tools, Plano will be able to fully realize the improvements.

The transitions are easier because the city's workers are already adept at using Microsoft products. And the company is helping the city make the most of the new tools. "Microsoft has been a very good partner," Stephens said. "They're providing some very good insight into the capabilities of the applications. They've been very supportive."

Microsoft

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City of Big Bear Lake

Taming a Bear of a Data Protection Process with the Help of Symantec and AIS.

The City of Big Bear Lake, Calif., learned the importance of data protection the hard way: A critical system failed, and recovery of the data cost $25,000. To expand the scope of the city's backups from one file server once a week to nightly backups of all 18 of its servers, the city turned to Symantec and partner Advanced Internet Security. In the ensuing three years, the city has lost no more data.

IT Trouble in Paradise

Big Bear Lake is a small city supported largely by tourism. It sits on the banks of a mountain-lined lake 100 miles east of Los Angeles, within a swath of National Forest that encompasses more than a million acres. In summer, this setting draws enthusiasts of water sports, cycling and hiking. In winter, skiers and snowboarders pack nearby slopes.

But all was not smooth sailing in Southern California's mountain paradise. Four years ago, the city's government had much more of a challenge meeting the needs of its 6,000 residents because of IT systems — and processes — that were seriously outdated. One part-time employee managed clients, servers, network and IT services.

"There were some very non-standard practices before I came on board," says Ken Watts, who is now manager of the city's information systems. "The IT guy was regularly rebooting critical servers in the middle of the day; he was taking down the city's email server three times a day."

Watts estimates that the city's network was available 50 percent of the time. And phones ran over IP, so when the network crashed, they went down too. "City employees would lose their telephones, they'd lose their computer systems, they'd lose their email," he says. "The entire IT environment was a real mess."

Learning the Price of Unprotected Data

Three and a half years ago, the City of Big Bear Lake hired Watts to deliver the high-quality IT services that were needed. He immediately discovered a bigger problem than network downtime: The city was unwittingly putting important data at substantial risk.

The part-time IT administrator had been performing weekly backups, but only of one file server. He never backed up the Microsoft Exchange server or any of the production servers. And the backups he did complete stayed on premises. "The city had one tape, and he just left that tape in the drive all the time," Watts explains.

Within the first month of his tenure with the city, Watts coped with the failure of a disk drive that stored many years' worth of files employees had scanned into a document imaging system. The city had no backup of any of the data. Watts took the failed drive to a specialty data-recovery company. The images were recovered, but the service cost $25,000.

"That experience taught everyone in the government that we need stability in our IT systems," says Watts. Around the same time, a spate of wildfires near Big Bear Lake highlighted the importance of moving data backups off-site. "The city manager tapped me on the shoulder and said, 'Make our data secure, and do it now.'"

Symantec Backup Success: 99 Percent, Citywide

The city's IT troubles helped Watts convince managers to invest in a more reliable technology infrastructure. "I sold the city leadership on the idea of doing IT right," he says. "They had been through so much pain over the previous few years, they saw that if they didn't do it right, they would just face more of the same." He worked with Colorado-based Advanced Internet Security (AIS) to select hardware and software.

"AIS came up with a solution, and within a month we moved forward light-years in terms of our network stability," Watts says. He centralized all the city's servers into a data center that runs only high-quality hardware. "Once in a great while, I have to restart something during the day, but that's very rare, and usually it's an application like the spam filter, which doesn't cause a service disruption for users. Only once or twice a year, at most, do I restart a production system during the workday."

Another key component of the AIS solution was implementation of Symantec Backup Exec™, with agents for Microsoft Exchange Server and Microsoft SQL Server. Now Watts protects the data on all 18 of the city's servers through nightly incremental backups and weekly full backups — a 126-fold increase in the scope of the city's data protection. Although he is the city's only IT employee, Backup Exec almost always runs smoothly, so data protection requires little of his time. Watts estimates it takes him just an hour per week.

"Symantec Backup Exec works very well," Watts says. "We've had some minor issues with the tape drive, but 99 percent of the time, we have no problems at all with our backups."

No Data Lost in Three Years

The city's incremental backups reside on a local server, so restores are very fast for data that has changed within the previous week. The full backups save to tapes, which Watts sends off-site for storage; the off-site facility keeps six weeks' worth of backups at a time. If a natural disaster were to befall Big Bear Lake, the city would lose very little data from any of its servers.

"On the few occasions that I have had to go back and restore something, I've had no problems at all," Watts says. "Our data recovery has been 100 percent successful." In fact, in three years, the City of Big Bear Lake has lost no data — a statistic that brings smiles to faces throughout the government.

AIS continues to support Backup Exec. If the city needs help with the software, an AIS consultant connects to the network via VPN and fixes it. "AIS does a great job," Watts says. "If we have a problem, I call AIS and they take care of it. That's the kind of support I need. I have too many responsibilities to spend time on the phone talking to support people and troubleshooting problems."

> "I don't think there's another backup solution that would do a better job for us. Symantec Backup Exec is the perfect fit."
>
> **Ken Watts,** Manager of Information Systems, City of Big Bear Lake, Calif.

Vaulting Into the Future

Watts hopes to soon implement Symantec Enterprise Vault™ for archiving the city's emails and other documents. "We could potentially be exposed to litigation because we would have trouble producing old files that have been deleted," he says. "Our backup system is great, but we're keeping backups for six weeks at this point. If somebody deleted something three months ago, I likely wouldn't be able to restore it — and we would have a hard time explaining that in a court of law."

Enterprise Vault could also save the city from buying a new Exchange server. City managers have balked at the idea of establishing quotas for email storage, and Watts estimates that the city will have to buy a new email server, at a cost of $12,000 to $15,000, within the next two years unless it implements Enterprise Vault.

The only hang-up in Watts' document archiving project is that the City of Big Bear Lake has put the brakes on capital spending as a result of California's budget crisis. "The state took our improvement agency money," Watts explains. "A group of cities have jointly mounted a legal challenge, but nobody knows what's going to happen."

For now, at least Watts has the satisfaction of knowing that Symantec and AIS have contributed to protecting his city's data. "I don't think there's another backup solution that would do a better job for us," he says. "For what we need, Symantec Backup Exec is the perfect fit."

Virtual Value

Big savings on the horizon for McKinney, Texas, thanks to desktop virtualization.

When McKinney, Texas, decided to explore the idea of virtual desktop infrastructure (VDI), it quickly learned of the many benefits. "We expect to save about a million dollars a year by going virtual on the desktops," said Don Grammar, director of information technology for McKinney.

The city is in the first of three phases of implementation. Eventually the city will deploy a VDI across all its departments. Desktop virtualization moves programs, applications, processes and data from users' individual desktop computers and places them on central servers. There, hundreds of computers can be managed at once from the central location. Much of the savings the city expects to see will be due to a greatly reduced need for desktop maintenance and support.

"The average desktop costs $2,000 to $3,000 a year to support," said Grammar. "We run about a thousand desktops, so that's about $3 million a year. If we save a million, it's a third of the total, and that's a huge cost savings. And we get better service to the end-users."

VDI includes both the hardware and software needed to support the virtualized environment. Users get faster desktop performance while also having more control over their environments. They can have the applications they need, without the ones they don't need slowing down their machines. And with virtual desktops, it's like having a new computer every day, with all the latest updates and patches.

Popular Subject

A fast-growing city of more than 120,000 residents, McKinney is located northeast of Dallas. The city is often an early adopter of new technologies. "We're one of the fastest growing cities in the nation, and we're busy building infrastructure — not just technology, but streets, water, etc.," Grammar said. "We have to use technology better than other cities. We have to use the best technology we can get to automate as much as we can. We're a small staff, and we have to avail ourselves of any leverage we can find."

At this writing, the city is halfway through a four-week proof of concept. After that, a pilot project will be launched with selected groups of users within the city. Following the pilot, a full implementation is planned. The city wants to virtualize about half of its 1,000 desktops this fiscal year, with the rest planned for 2011.

McKinney recently presented its desktop virtualization plan at a conference, along with the solution provider, CDW•G. The presentation was of great interest to other government agencies. "The room was full," said Grammar. "It was standing room only in the room, and there were people lined up at the door, trying to hear what was being said inside. There's a tremendous amount of interest."

Years of Savings

With the desktop virtualization, the city will see big savings on maintenance and support. "A lot of the cost saving is on deliv-

ery, on getting the machines on the desks, on that desktop support side of things, and power consumption," said Steve Cross, deputy director of information technology. "There are a lot of costs out there that are not related to the actual initial purchase."

Once the VDI is in place, savings begin to add up. "The longer you run the virtual desktops, the more return on investment," Cross noted. "If you can push it out to something like five years, the return on investment is astronomical."

There are numerous other benefits as well, thanks to the centralized environment. Overall desktop management is simplified and more efficient. Security and compliance are improved, and recovery processes are simpler and faster. Additionally, data integrity is better, since all data is housed in the same place for everyone.

"The speed of updates is a big benefit," Grammar said. "You only have to update the servers in the back, and that can be done overnight, so everybody who uses that server, all their machines will be updated. There's no more need to go out and put individual updates on the individual machines. It can all be done on a single platform in the computer room." New applications, special requests, patches and more can be administered without having to touch the desktops.

The project evolved quickly. Since the city's existing server virtualization uses VMware, the first inclination was to use VMware for all the desktop virtualization as well. But as CDW•G and McKinney talked further, it was decided the city's needs would be best met with VMware servers in the back room, and Citrix on the front end as the desktop interface.

The hybrid solution combines the best of both systems. It was helpful to use VMware, since the city already had experience with it. When McKinney virtualized its servers earlier, there were numerous benefits. "It has made an immense difference to our organization," said Cross. The city has nearly 160 servers, and about 80 percent of those are virtualized. That prior success with virtualization made it easier for the city to make the leap into desktop virtualization.

> "There's no more need to go out and put individual updates on the individual machines. It can all be done on a single platform in the computer room."
>
> **Don Grammar,** director of information technology, McKinney, Texas

Good Start

In the proof of concept, the city is testing various options and seeing how VDI works in a variety of situations. "We are still very early on in the proof of concept, but so far, it works. It appears to work really well," said Cross. Already, provisioning desktops is easier, long-term support issues are being mitigated and desktop performance has been improved.

"The software engine has turned out to be relatively easy to maintain," said Grammar. "There will always be upgrades and updates, like there are with any other software package, but it's turned out to be fairly straightforward to configure and implement."

As things move forward, Grammar keeps the mayor and city council informed. Soon there will be a formal presentation for them. Then the city will embark on the pilot project, where things will be fine-tuned. Exact plans for the pilot are still being worked out.

The VDI project has the support of everyone involved at the city. "The council is always very interested in any cost savings we can find," Grammar said. "And they tend to trust what we do with technology. We have not failed them yet, and I don't plan to start now. They're all smart people. They recognize the benefits of desktop virtualization, and they support it."

Viewpoint

Coming Full Circle

From doing more with more to doing less with more.

BY TODD SANDER | DIRECTOR OF DIGITAL COMMUNITIES

THE '60S BAND, THE BYRDS, famously reminded the world of something that Bible readers already knew: "To everything there is a season." (Turn, turn, turn.)

In thinking through the changes that have taken place in our state and local institutions since I began my public-service career in the early 1990s, I am struck by the notion that information and communication technology (ICT) budgets have come full circle.

In the early '90s, those of us who were involved with state and local ICT were pioneers and inventors. We were riding the wave of the technological revolution and bringing tools and capabilities to government unlike anything ever before imagined. Times were good, and we were "doing more with more."

In the mid- to late '90s, things started to normalize a little and much of the proverbial "low-hanging fruit" of system and process improvement had been at least initially harvested. The heady enthusiasm of technological "revolution" began to give way as ICT became a more routine part of public-service delivery, and the challenge became how to "do better with the same" levels of funding.

The economic expansion of the first half of the 2000s generated escalating property and sales taxes revenues that encouraged many local elected leaders to support major policy initiatives and capital projects at the same time they cut taxes in response to "excessive government surpluses." ICT was viewed as a necessary but routine business expense, and it was time to start doing "more with less" as funds were reprioritized.

Now we're living in the shadow of foreclosed houses and the bailout of financial giants that were "too big to fail." Unemployment recently reached a 26-year high and just about every community has seen significant decline in home prices. Local government budgets are being forced to accommodate double-digit reductions. Lucky public employees are being forced to take mandatory salary and benefit reductions. Unlucky ones are joining the ranks of job seekers. Many communities are just now coming to grips with the idea that, for a while, government is going to be "doing less with less."

As hard as it is to see programs eliminated, facilities closed and employees laid off, I think the toughest days may still be ahead. In 2009, federal government borrowing funded the American Recovery and Reinvestment Act and saw significant funds passed through to state and local government. Most of that money is scheduled for delivery during 2010, and it will help mask the true difficulty many states and communities are in, but only for a little while.

The federal government cannot continue borrowing at its current rate, and sustainability payments to state and local government are not going to continue. It's very likely that, in response, local government will be forced to reduce services and further increase or implement new taxes and fees. We're coming full circle to a point where government will be left with no choice but to "do less with more" until the bills are paid, the unfunded liabilities are covered and financial stability is re-established. That will be hard for people to understand and accept.

If government is going to be doing less and people paying more, it's absolutely critical that it does the most important things very well. To help, ICT professionals must once again think like pioneers and inventors, inspire their organizations, and find the tools, processes and strategies to help create community understanding and consensus, and ensure that during this time, safety, security, health and education are built up and not broken down. (Turn, turn, turn.)

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BY ANDY OPSAHL
FEATURES EDITOR

Beyond E-Mail Archiving

Washington state prepares to add new types of documents to its innovative virtual vault.

SYNOPSIS
Washington state will add Microsoft SharePoint documents to its central data repository, simplifying public-records searches.

AGENCY
Washington Department of Information Services (DIS).

TECHNOLOGY
Symantec Enterprise Vault.

CONTACT
Melissa Rohwedder, CIO, Washington DIS, melissa.rohwedder@dis.wa.gov, 360/725-5930.

The headache of maintaining public records is intensifying for state and local governments as freedom of information requests from lawyers and other citizens become more demanding. Given that e-mails are often considered public records, archiving them for e-discovery is a priority for many state and local IT departments. Governments unsure of how to proceed ought to look to Washington state. Since 2008, the Washington Department of Information Services (DIS) has been transferring messages stored in agency e-mail systems into a central data repository. That's a work in progress, as the state prepares to add more types of documents to the repository.

Managing a state's public documents in a single location can be complicated because each agency has different policies for how long they retain public records. On the other hand, having separate public records systems for each agency can make records requests confusing and overly bureaucratic for citizens. Washington state's centralized, virtual vault lets agencies maintain their own data retention rules. The state uses Symantec's Enterprise Vault products: Mailbox Archiving for Microsoft Exchange, and Journaling and Discovery Accelerator.

10,000
The current number of public records vault users.

Hesitation to centralize anything in government is usually rooted in fear of pushback from entrenched officials, which Washington avoided by making participation voluntary and keeping retention rules with each agency. The state appears to have implemented a hybrid approach that its agencies clamor to join. State employees typically refer to this repository as the "the Vault."

The Vault Expands

The primary way Washington's virtual records vault will archive different types of records other than e-mail will be its ability to store any document in Microsoft SharePoint, a Web-based content management system used in most U.S. office environments. When end-users access a document on their H or S drive, or another network drive, SharePoint is usually the program facilitating that.

Meeting requests for public documents, like Excel spreadsheets and Word documents, is cumbersome, according to Cammy Webster, assistant director for the Computer Services Division of the DIS. When such a request arrives, agency officials must chase down individual employees who then go rooting through all of their SharePoint drives for those documents.

"The disclosure office doesn't have the ability to go to one place and pull it," Webster said.

The new vault offers centralized searches and can narrow searches by time frame or document type.

DIS Communications Director Joanne Todd found that deployment of the vault served as an occasion to correct her own "bad" document storage habits. She kept all of her e-mails in her Microsoft Outlook mailbox, rather than saving older e-mails to outside folders. This frustrated IT employees who wanted to save mailbox space. The Symantec product arrived with its narrower and more accurate searches, and it motivated Todd to routinely clear out her mailbox.

Guts of the System

Digital storage may be getting cheaper, but most governments struggle to find physical space for extra server capacity. Washington's repository conserves space by compressing the data and by not storing multiple versions of one document. For example, if a manager e-mails a Microsoft PowerPoint presentation to 30 workers, the vault only stores one copy of that document.

To maintain the vault, the DIS hired two extra people, but expects to hire more as SharePoint documents enter the system.

Yours, Mine and Ours

A key to the success of Washington's public records vault is its flexibility. Each agency controls its own records and policies for the length of time those records are retained. The DIS simply programs the repository to keep records for however long a given agency's policy dictates.

"Every agency has a different set of retentions based on the type of record," said Jim Albert, deputy director of operations for the DIS. "If it's personnel records, it may be seven years. If it's a financial resource record, it could be 100 years."

The vault deletes the files automatically whenever their retention dates occur. The DIS expects this to save storage space by eliminating old, unneeded documents.

Citizens or government officials can still request documents from individual agencies. However, single access points exist if someone needs records from multiple agencies, thanks to the DIS repository's nimbleness. The Washington Attorney General's Office frequently functions as that point of entry.

The disparate e-mail systems serving different agencies in the state don't create problems for the centralized vault, either. Washington has a voluntary centralized e-mail system that only some agencies use, however, any agency can use the DIS data repository.

Given that submitting records to the vault was voluntary, the DIS deployed it with a well prepared sales pitch to agencies, said DIS CIO Melissa Rohwedder.

"They did an awareness campaign, which was a big part of the success of rolling this thing out," she said.

The DIS is transferring five agencies' e-mail systems into the vault, and five more are planned. DIS officials decided to get a handle on archiving e-mail first because it's the focus of most information requests. Symantec charges the state a monthly license fee of $2.45 per end-user and $4.27 per GB of storage per month. Those rates drop as the DIS imports more end-users into the vault. So far, there are more than 10,000 users.

For users, the vault is virtually transparent, according to Webster.

"Their feedback is, 'I can't even tell that I have that — it looks the same. The only thing it changed was an icon to show me that the e-mail isn't sitting on the Microsoft Exchange server. It's now in the vault,'" she said. GT

BY ADAM STONE
CONTRIBUTING WRITER

Keeping Crime in Check

Using data to find the overlap between traffic accidents and serious crime, public safety managers can deploy resources efficiently and effectively.

SYNOPSIS
Data-Driven Approaches to Crime and Traffic Safety helps public safety agencies drive down serious crashes and crimes.

TECHNOLOGIES
ESRI's ArcGIS, Zeurcher's computer-aided dispatch and record management tools, Bair's automated tactical analysis crime software, Tiburon's public safety software.

CONTACT
Capt. Scott Silverii, 532-4339, Scott silverii@lpso.net

An emerging concept of policing appears to be helping communities reduce traffic accidents and serious crime.

Consider Lafourche Parish, La., one of seven test sites nationwide implementing a paradigm known as Data-Driven Approaches to Crime and Traffic Safety (DDACTS). In 2009, the number of severe traffic accidents in the parish dropped to just 10, down from an average of 24 annually in previous years. Major crimes also declined, while drunken driving arrests increased from 154 in 2008 to 297 the following year.

DDACTS puts forward a simple proposition: Look at the times and places where major crashes and crimes occur. Map the two together, look at where the circles overlap and then boost deployment of law enforcement resources in those areas.

While the process may require some technological investment, participants say, it often can be launched using the data already on hand.

PHOTO COURTESY OF WASHOE COUNTY

Sheriff's deputies in Washoe County in northwestern Nevada have seen crime rates fall by 16 percent thanks to DDACTS.

Mapping the Hot Spots

"All of the elements to do DDACTS, we were already doing. We do look at our crashes. We do look at our crime reports on a weekly basis," said Sgt. Eric Spratley of the Washoe County (Nev.) Sheriff's Research and Development Unit.

Washoe County relies primarily on Tiburon public safety software to produce crime statistics. To achieve the overlay with traffic data, the department tapped into the county's existing ArcGIS mapping capabilities and began generating color-coded maps. "Once you do that, the hot areas really jump off the map. It becomes really clear," Spratley said.

Led by the data, the department has been focusing its policing in areas where the most incidences of crime and crashes have been reported. Those deployments have had a deterrent value, Spratley said. In 2009, serious crimes in the county decreased 9 percent from the previous four years; in DDACTS zones, crime fell an additional 16 percent.

"If you overlay your high-crash areas and your high-crime areas, and you go out and work those crash and traffic problems, your crime will go down," Spratley said. "Criminals can't operate when there is significant presence out there."

Federal Involvement

The federal government has stepped in with technical assistance in support of DDACTS implementations across the country. The National Institute of Justice is helping to coordinate demonstration projects in seven jurisdictions.

DDACTS has drawn interest from Washington, D.C., not just because of its policing potential, but also for its ability to meet cost constraints. "The economic environment we are in today really requires that we use all available technology," said Jim Burch, acting director of the Bureau of Justice Assistance.

"If we could combine our analysis and look at traffic safety at the same time we were addressing crime problems, that would really give us a leg up," he said. "It's an economic imperative that we use data to drive our efforts to reduce crime."

The U.S. Department of Transportation also has thrown its weight behind DDACTS, with technical assistance and some grant funding. Planners say the ability to make headway in public safety while working off data that's already in existence makes DDACTS a compelling proposition.

"It provides a very effective and efficient use of the resources that they already have available," said Earl Hardy, a highway safety specialist in the Enforcement and Justice Services Division of the National Highway Traffic Safety Administration (NHTSA). "This is not overtime enforcement; this is not adding additional officers. This is about focusing their efforts in areas where they need to be focused."

But does it work? Suppose one can tabulate the statistical intersection of high crime and high accidents. Will putting more police officers in those zones really bring the numbers down? Reports from the pilot jurisdictions suggest the strategy can work.

Hardy pointed to Nashville, Tenn., an early entrant into the program. Since 2003, the city has cut serious offenses from 48,000 per year to 41,000 annually. Driving under the influence arrests are up 72.6 percent under DDACTS and fatal crashes are down 12.2 percent.

In Baltimore's 15 DDACTS zones, burglaries decreased 16.6 percent from April 2009 to December 2009, Hardy said. Robberies fell 33.5 percent, auto theft decreased 40.9 percent and traffic stops increased 42.5 percent.

The Right Technology

Observers say it's possible to achieve these results with little upfront technology investment.

"If your records management system is 3x5 cards in a shoebox, that's where you start," Hardy said. Many departments are still charting crashes and crimes on the wall with pushpins. So as long as the data is accurate, that can yield effective results.

That being said, better technology will result in better outcomes.

In Lafourche Parish, Patrol Division Commander Capt. Scott Silverii said his department's DDACTS effort hit an early hurdle when it kicked off in April 2009. The problem was mapping. "We could count the number of crashes and crimes, but we weren't capturing exact locations," he said. "That was our Achilles' heel."

While the department was bringing DDACTS online, managers were shopping for new computer-aided dispatch and records management tools, which they eventually acquired from Zuercher Technologies, partly to solve their mapping problem. "We had been wanting this, but when DDACTS came about, it showed us that we really needed it," Silverii said.

Spratley's office in Washoe County also made some technology investments as DDACTS took on a more prominent role. Besides its existing data-driven software, the department purchased Bair Software's Automated Tactical Analysis of Crime software. An NHTSA grant helped offset the $22,000 price tag, Spratley said. The new software can pick apart Tiburon reports for a more detailed analysis.

These technology upgrades may be typical of DDACTS newcomers, Hardy said. "You really need robust records management systems and mapping capabilities, but you don't have to have the Cadillac system in place to start," he said. "You may start to see a need for more real-time data collections and analysis. But you start with whatever you've got."

Getting Buy-In

Because the technology behind DDACTS is relatively straightforward, technical hurdles to implementation should be relatively low. Challenges arise, though, when it comes to the human side of DDACTS. Spratley said he has struggled at times to win buy-in from deputies and sergeants working on the streets. "In law enforcement, people are trying new things all the time, so it can really burn guys out," he said. Cops on the beat don't need another theory of policing. "They just want to go out, catch criminals and make it a safe community."

To sway opinions, Spratley uses every opportunity to spout statistics. If he can demonstrate the hard-and-fast successes of DDACTS, he said, officers typically are more willing to go along with the program.

Some pushback may stem from those who see a new idea muscling in just as other emerging tactics, such as community policing, are beginning to take hold. But at the Bureau of Justice Assistance, Burch said the two strategies are not mutually exclusive.

"You still got to have that community connection," he said. "You can't replace all that intuition and all those connections officers make in the community. The two ideas really have to work together."

Of course, there's also the matter of money. To support surge operations, Spratley needs more feet on the street — an added expense to the department. To bridge the gap this year, he is using a $48,000 grant received in November 2009 from the Nevada Office of Traffic Safety. Silverii, meanwhile, has hired a data analyst to compile the weekly data reports that shape DDACTS deployments.

Despite the cost of technology upgrades, possible personnel expenses and some resistance from within the ranks, those who have test-driven DDACTS say it has been highly successful in helping them smooth out bumps in the road.

"Because we are being smarter about the way we work, these officers can really focus their time, rather than just running from to call," Silverii said. "That is making us a lot more effective." GT

LUCKY NO. 7

The National Institute of Justice helps to coordinate DDACTS demonstration projects in seven jurisdictions:

- Baltimore County, Md.
- Lafourche Parish, La.
- Nashville, Tenn.
- Oakland, Calif.
- Rochester, N.Y.
- St. Albans, Vt.
- Washoe County, Nev.

Putting DDACTS to Work

Data-Driven Approaches to Crime and Traffic Safety (DDACTS) relies on a seven-step implementation.

- **Partners and Stakeholder Participation:** Partnerships among law enforcement agencies and local stakeholders are an essential component.
- **Data Collection:** DDACTS relies on the collection of place-based, crime, crash and traffic-related data that are coded for type of incident, time of day and day of week.
- **Data Analysis:** Fundamental to DDACTS is the creation of integrated maps that overlay crime, crash and traffic-related data.
- **Strategic Operations:** Data analysis lets agencies identify hot spots that become the foci of enforcement activities and countermeasures.
- **Information Sharing and Outreach:** Regular reports facilitate information sharing with agencies, the public and government administrators.
- **Monitoring, Evaluation and Adjustments:** Ongoing data collection and analysis makes it possible to adjust operations as circumstances change.
- **Outcomes:** Measurable outcomes should be used to assess the effectiveness relating to crime, crashes and traffic violations, as well as cost savings based on the use of specific interventions and personnel deployments.

Roadwork

The U.S. transportation system received $150 billion in American Recovery and Reinvestment Act (ARRA) funds. Numerous states have used millions of dollars for resurfacing streets and repairing bridges. But stimulus dollars also are being used to upgrade transportation technology. Here are two examples:

Virginia: The state created a dashboard to track $694.5 million in stimulus-funded transportation projects. One of those projects is an automatic vehicle location system for the Williamsburg Area Transit Authority, which will use GPS technology to provide better customer service to public transportation users.

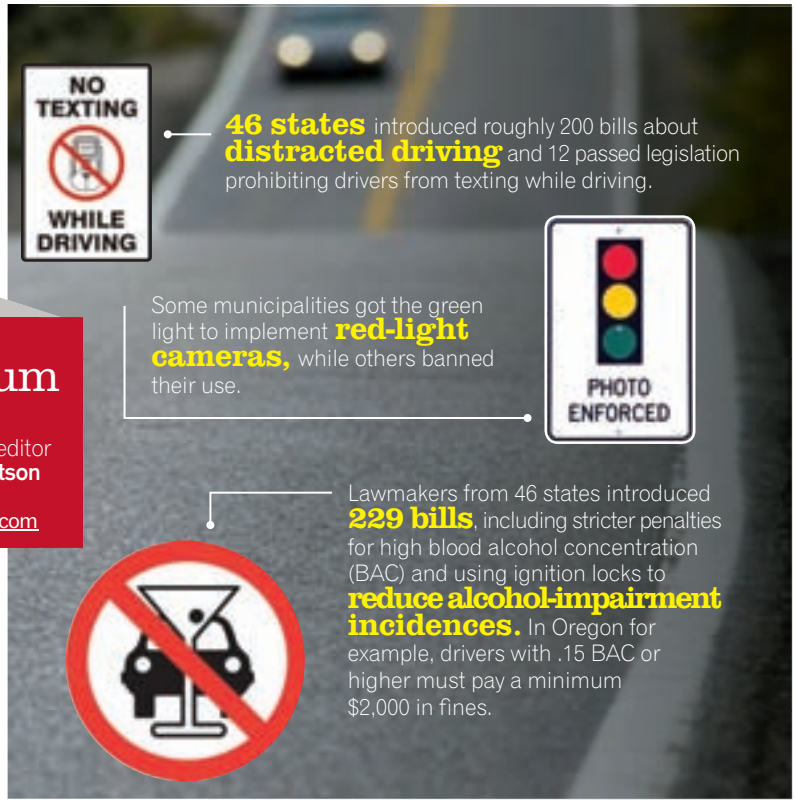
Arizona: Various localities like Pima County have bids out for traffic management systems, and traffic cameras have been deployed on several interstate highways using ARRA money.

Missouri got **$525 million** in federal funds and has used some on resurfacing streets, lane modifications, and bridge repairs and replacements.

PHOTO COURTESY OF THE MISSOURI DEPARTMENT OF TRANSPORTATION

Road Rules

According to a traffic safety and health report from the National Conference of State Legislatures in 2009:



46 states introduced roughly 200 bills about **distracted driving** and 12 passed legislation prohibiting drivers from texting while driving.

Some municipalities got the green light to implement **red-light cameras,** while others banned their use.

Lawmakers from 46 states introduced **229 bills**, including stricter penalties for high blood alcohol concentration (BAC) and using ignition locks to **reduce alcohol-impairment incidences.** In Oregon for example, drivers with .15 BAC or higher must pay a minimum $2,000 in fines.

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

Arial: A Big Loser?

Could simply changing the font in your documents reduce how much ink your printer uses? This theory was tested by Printer.com, a printer evaluating company, which found that Century Gothic is the most cost-effective font. The University of Wisconsin, Green Bay, expects to cut printer-cartridge expenses by as much as $10,000 annually by switching to the font.

Frequently used fonts that were tested:

FONT	SIZE	BUSINESS COST*
Century Gothic	10	$179.29
ecofont	10	$180.33
Times Roman	11	$183.97
Calibri	11	$198.00
Verdana	10	$236.45
Arial	11	$258.28
sans serif	11	$264.52
Trebuchet	11	$266.08
Tahoma	11	$270.75
Franklin Gothic Medium	11	$286.34

*Business cost refers to annual cost for a small business user to print using a Brother HL-2140 printer.

SOURCES: PRINTER.COM AND NATIONAL PUBLIC RADIO

FARMVILLE FAN FIRED: Dimitar Kerin, a councilman in Bulgaria, was voted off the Plovdiv City Council for playing FarmVille, an interactive game on Facebook, instead of doing the people's business. It turns out Kerin is one of several council members who received multiple warnings about using city resources to access games like FarmVille on social media sites during budget meetings.

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1

TABLET TWIST

The HP TouchSmart tm2 convertible notebook PC operates as a traditional notebook with a keyboard and touch-enabled display for input. Converted to a slate, the tm2 becomes a sketchpad with digital pen. The device features an Intel Core 2 Duo processor at speeds up to 1.6 GHz, an 800 MHz front-side bus, and 512 MB ATI Mobility Radeon HD 4550 graphics. The tm2 also has a 320 or 500 GB 7200 RPM SATA hard drive and 12.1-inch 1280x800 LED display.

WWW.HP.COM

2

DATA COLLECTOR

Leica Geosystems' Zeno GIS 15 offers a full QWERTY keyboard and a display in landscape format. An integrated digital camera links photos to feature locations to accurately map assets and infrastructure. The rugged device has dual-constellation (GPS/GLONASS) and SBAS tracking for higher productivity with satellites in urban areas.

WWW.LEICA-GEOSYSTEMS.COM

3

SPACE SAVER

Lenovo's all-in-one C200 has an 18.5-inch, high-definition, 16:9 widescreen display; an NVIDIA ION 256 MB graphics processor; and an optional single-touch touchscreen panel. It also features an Intel Atom Dual Core processor D510, and an integrated DVD reader/writer. A Bluetooth wireless keyboard and mouse are optional. Also included are a 6-in-1 media card reader and two integrated 3-watt stereo speakers. WWW.LENOVO.COM

SEND PRODUCT IDEAS
to product editor Miriam Jones
mjones@govtech.com

BY PAUL W. TAYLOR CHIEF CONTENT OFFICER

Confronting Malicious Transparency

The art of the possible, a catchphrase among boosters of the modern transparency movement, may be running headlong into practical necessities.

In late 2008, we cheered when the District of Columbia announced it had surfaced 260 data feeds that could be mashed up usefully by citizen coders. Apps for Democracy, an initial contest with modest prize money, is now a recurring D.C. event and has proliferated to San Francisco, Seattle and New York.

The idea was spread by the Sunlight Foundation in "helping citizens, bloggers and journalists be their own best watchdogs, by improving access to existing information and digitizing new information, and by creating new tools and websites to enable all of us to collaborate in fostering greater transparency." The foundation funded Code for America, which created a replicable model for data mash-up contests.

Sunlight cut its chops in this space with Apps for America, which encouraged the same kind of transparency in the federal government. The contest's second round, Data.gov Challenge, found talent to interrogate raw resources in the federal data repository, the holdings of which began with 47 entries and now approaches 120,000 data sets.

It's hard to dispute that information wants to be free, but — and it is an increasingly large "but" — somebody must pay to for the plumbing if transparency is to fulfill its promise.

It isn't that surfacing government data is bad, but it comes with a bow wave. The more data feeds, sets and sources that are surfaced, the larger the wave. Government sets the wave in motion for all the right reasons and now finds itself with an unpaid mandate of its own creation — providing context.

In a recent analysis, Daniel Castro, senior analyst of the Information Technology and Innovation Foundation, wrote, "Although websites like Data.gov provide tools for users to rate the quality of data sets, agencies responsible for maintaining data sets should take on more responsibility for noting any data quality issues. For example, agencies should make clear any known limitations of data sets, such as poor survey response rates, grossly inaccurate data or outdated information."

There are also the serious matters of data definitions, standards and architectures — the life's work of a small, unsung group of data professionals. They make the case for bringing old-school disciplines to these new pursuits. It's the kind of thing you can't get done by crowdsourcing alone.

Several states — Maine, Utah and California — have brought data sets (about 40 each, excluding GIS data) together in a single spot on their respective portals. Those relatively small numbers may prove advantageous as they and others ramp up for what comes next. In addition to raw data, states are packaging and presenting data in consumable ways — through stimulus tracking tools, searchable state checkbooks that show revenue and expenditures, and campaign finance disclosure services.

Whether done by governments or third parties (friendly or not), and 44 years after the dawn of the open government movement, we still may be closer to the beginning of the process than the end. Perhaps the greatest risk is the digital equivalent of malicious compliance — where government makes available huge volumes of "undisciplined" data in ways that can't be used to hold public agencies accountable, keep communities safe, fuel economic activity or some other public good. GT

index

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