

# GOVERNMENT TECHNOLOGY®

VOL 21 ISSUE 10 SOLUTIONS FOR STATE AND LOCAL GOVERNMENT IN THE INFORMATION AGE OCTOBER 2008

inside:

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Living in the cloud

Pinching Pennies:  
Low-budget  
applications

plus:

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Molly Rauzi

A GLOBAL  
PERSPECTIVE  
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National studies point to mixed results, but many jurisdictions are sold on the use of red light cameras. Cities across the nation are deploying red light camera — and even speed camera — systems to improve public safety and put some extra money in their coffers. In November we look at the results from these efforts.

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# October Surprise

A couple of months ago, athletes from around the world assembled in Beijing for the Olympic Games. Despite political undertones and a number of unsettling questions about the Chinese government, the games once again helped prove we share more in common than we're aware of. While few of us pay field hockey and trampoline gymnastics much attention in non-Olympic years, even these obscure sports show how a dream and determination can sometimes pay off.

In a similar spirit, this month's cover story is actually three stories about technology issues and how governments worldwide approach them. As different as cultures may

contributing writer Jessica Hughes tells the tale of South Bend, Ind., and how city officials equipped the sewer system with Wi-Fi to better control wastewater when major storms roll through.

Of course, the big story in October is the run-up to the election. Throughout the year, we've covered the technology side of campaigns and presidential politics. Now there is little to do but wait and see what happens. Regardless of who wins, this election will be a turning point in our nation's history. And more so than ever before, the eyes of the world will be turned toward America and who we choose to lead us into the next decade of the 21st century.

"In this age of globalism, what we do in November will **ripple around the world.**"


be, from Canada to Australia and South Korea, some challenges cross borders and language — and it's worthwhile to check in now and then to see what our international counterparts are up to.

Closer to home, fiscal realities continue to affect how governments conduct business. In this issue, Assistant Editor Matt Williams investigates how agencies can use open source solutions to achieve bigtime results without the bigtime price.

This issue also features the impressive account of one city's innovative approach to dealing with the dirtiest of problems. Con-

Just as the Olympics are a quadrennial reminder of our shared stake in the human condition, the election of our next president serves as a chance to right past wrongs and chart a new course. In this age of globalism, what we do in November will ripple around the world. And we just might find that the more things change, the more we're all the same. Wouldn't that be a nice surprise? **CT**

**CHAD VANDER VEEN**  
ASSOCIATE EDITOR

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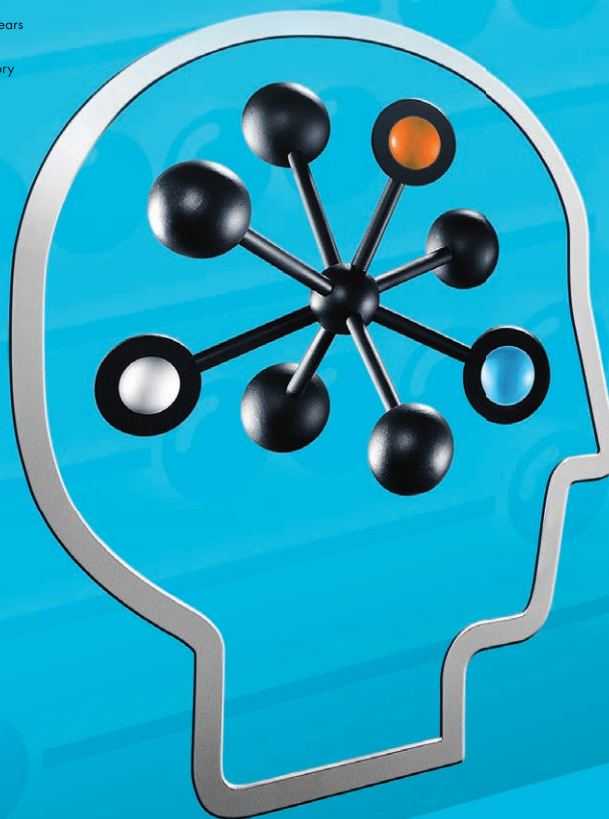


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\*Based on IDC, Worldwide Quarterly Server Tracker, February 2008. In Calendar 4Q '07, IDC reported worldwide HP ProLiant server shipments at 681,445 units, well ahead of Dell PowerEdge's 499,715 units at #2. IDC also reported ProLiant factory revenue at \$2,743 million vs. \$1,580 million for Dell's PowerEdge family. Prices shown are HP Direct prices; reseller and retail prices may vary. Prices shown are subject to change and do not include applicable state and local taxes or shipping to recipient's address. Offers cannot be combined with any other offer or discount and are good while supplies last. All featured offers available in U.S. only. Savings based on HP published list prices of configure-to-order equivalent (\$3125 - \$850 instant savings = SmartBuy price of \$2,275). 1. Financing available through Hewlett-Packard Financial Services Company (HPFS) to qualified commercial customers in the U.S. and subject to credit approval and execution of standard HPFS documentation. Prices shown are based on a lease of 48 months in terms with a fair market value purchase option at the end of the term. Rates based on an original transaction size between \$3,000 and \$25,000. Other rates apply for other terms and transaction sizes. Financing available on transactions greater than \$349 through September 30, 2008. HPFS reserves the right to change or cancel these programs at any time without notice. AMD, the AMD Arrow logo, AMD Opteron, and combinations thereof are trademarks of Advanced Micro Devices, Inc. ©2008 Hewlett-Packard Development Company, L.P. The information contained herein is subject to change without notice.

# on the scene



## GIS Love Fest

**SAN DIEGO** — Government GIS technicians recently traveled to the San Diego Convention Center for the 28th annual ESRI User Conference. ESRI representatives were eager to clarify the difference between ESRI's "professional-strength GIS" and "consumer viewers of geography," like Google Earth and Virtual Earth.

"Our presentation technologies, though they overlap with the consumer-focused ones, and can be used for consumer types of presentations, also enable people to connect directly to their GIS assets," said Bernie Szukalski, ArcGIS product manager of ESRI.

Those assets would be stores of information about the various locations on the government's map it can use to plan projects.

Special Achievement in GIS (SAG) awards went to several state and local



PHOTO COURTESY OF ESRI

agencies. The California Resources Agency got accolades for its project that lets citizens track where bond money had gone and how it was being used. Westchester County, N.Y., won a SAG award for Green Maps, its Web site directing citizens to the various green public and private projects happening in the county. Examples would be cell phone-recycling drop-off locations, retailers focusing on environmentally friendly products and green education centers.

## State and Local IT Officials Gather

**DENVER** — Several state and local government IT officials were on hand for the Center for Digital Government's Executive Summit, an event for agencies to interact with vendors. Vivek Kundra, chief technology officer (CTO) of Washington, D.C., boasted about his "stock portfolio" approach to managing IT projects. Traditional financial managers monitor those projects and report on them the way they would about Wall Street stocks. Kundra and Adrian Fenty, mayor of Washington, D.C., then analyze a stock-like portfolio of those projects, deciding which to keep or dump.

Peter Cooper, CTO of El Paso County, Texas, shared insight on his efforts to combine numerous agencies within El Paso County on one energy-efficient data center.

"Right now we have computer rooms. We do not have data centers.

Computer rooms are old closets down in basements and in conference rooms," Cooper said.

The county is still exploring how to consolidate all of the agencies.

Molly Rauzi, city and county CIO of Denver, discussed her role in preparing for the August Democratic National Convention in Denver.

"We created a backup 911 center. It [was] a matter of putting in the computers, telephones and things like that for the new Office of Emergency Management. A lot of these are things the city needed to do anyway," Rauzi said.



# Govtech.com Hot List

govtech.com

Here are the 10 most popular stories on Govtech.com from July 25, 2008 to Aug. 25, 2008.

**1 Site Reveals Salaries of New York State Employees** Conservative think tank launches Web site with comprehensive state financial data. [www.govtech.com/gt/articles/383701](http://www.govtech.com/gt/articles/383701)

**2 Obama and McCain on Technology and Government** Presidential candidates agree on technology's importance, but differ on how to use it. [www.govtech.com/gt/articles/384337](http://www.govtech.com/gt/articles/384337)

**3 Identity Theft Case Could be Largest and Most Complex Ever Charged in U.S.** Global case includes the theft and sale of at least 40 million credit and debit card numbers. [www.govtech.com/gt/385668](http://www.govtech.com/gt/385668)

**4 Money-Saving Strategies for Shrinking IT Budgets** SaaS, open source, energy efficiency and shared applications help CIOs stretch IT funding. [www.govtech.com/gt/380964](http://www.govtech.com/gt/380964)

**5 Keep Your Shoes On, TSA Plans to Relax Screening Requirements for Laptops** "Checkpoint friendly" laptop bags could ease travel frustration. [www.govtech.com/gt/386888](http://www.govtech.com/gt/386888)

**6 Why California Secretary of State Debra Bowen Pulled the Plug on E-Voting** Long-time IT advocate saw security flaws in touchscreen voting machines. [www.govtech.com/gt/articles/380945](http://www.govtech.com/gt/articles/380945)

**7 DHS Announces \$1.8 Billion in Grants for States, Urban Areas and Tribal Governments** Amount includes \$1.7 billion from Homeland Security Grant Program. [www.govtech.com/dc/articles/381098](http://www.govtech.com/dc/articles/381098)

**8 Business Continuity: Inadequate Planning Affects CIOs** Business continuity is no longer a luxury, but rather a necessity in the public sector. [www.govtech.com/pcio/articles/374117](http://www.govtech.com/pcio/articles/374117)

**9 Consumer Reports Warns Public About ID Leaks** Study shows government is among the biggest sources of ID leaks. [www.govtech.com/gt/385108](http://www.govtech.com/gt/385108)

**10 Cloud Computing: Public-Sector Opportunities** Public sector already sees advantages in cloud computing. [www.govtech.com/gt/387269](http://www.govtech.com/gt/387269)





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# big picture

PHOTO COURTESY OF TEXAS ADVANCED COMPUTING CENTER, UNIVERSITY OF TEXAS AT AUSTIN







### Power Ranger

In March, Sun Microsystems and the Texas Advanced Computing Center (TACC) announced the arrival of "Ranger," a supercomputer that boasts 500 teraflops of computing muscle.

The monster computer has 82 Sun Blade 6048 Modular Systems racks, with each rack containing 48 Sun Fire 6000 Blade Servers. Ranger includes 15,744 AMD quad-core processors, 1.7 petabytes of storage capacity, and 125 terabytes of memory. The supercomputer also serves as a link between two Sun data center switches with an average bandwidth of 110 terabits.

"Ranger is the most powerful general-purpose supercomputing system for research ever," said TACC Director Jay Boisseau.





# Four Questions

for Molly Rauzi  
CIO, CITY AND COUNTY OF DENVER



“Provisioning all of the support for the election is something we’ve been very focused on.”

AS CIO OF THE CITY AND COUNTY OF DENVER, MOLLY RAUZI COORDINATED GOVERNMENT IT SUPPORTING THE AUGUST DEMOCRATIC NATIONAL CONVENTION (DNC). GOVERNMENT TECHNOLOGY SPOKE TO RAUZI SHORTLY BEFORE THE CONVENTION ABOUT HER ROLE IN THE EVENT.

## 1 What role are you playing in the upcoming DNC?

There are three roles the CIO of Denver plays — one is supporting the host committee, which is a separate organization for the city that hosts the convention. We also support the individual agencies within Denver — our normal customers — in providing security [and] communications through the National Incident Management System. A lot goes toward improving our facilities for 911, the Office of Emergency Management, and shoring up our Web site because we really hope people will come and visit [Denvergov.org](http://Denvergov.org) to learn about the convention and the activities associated with it. Third, I was also invited to be on the DNC Technical Advisory Council. We got to help plan some of the technology that will support the event.

## 2 What types of technology will support the convention?

It’s an enormous media event, and we want to make sure the media have access to the technology they need. There is a lot of audio/visual. We’re beefing up a lot of the communications on the private side. AT&T is the sponsor, so we’re making sure their cell-on-wheels [mobile cellular network] and improved infrastructure are put in place.

## 3 What are some specific projects your staff is executing to support the convention?

We created a backup 911 center. It’s been a matter of putting in the computers and telephones and things like that for the new Office of Emergency Management. A lot of these are things the city needed to do anyway. We have a long election cycle this election year, so we had some early voting and then a primary at the same time. Provisioning all of the support for the election is something we’ve been very focused on.

## 4 Did you have to get extra funding for your preparation efforts?

The things that were specifically related to the DNC, that were security-related, were funded by a federal grant. We had a process where we applied internally for those monies against the grant. Where we had things that we needed to improve, we used 911 funds, and there were some general fund dollars expended to support the elections. [GT](#)

BY ANDY OPSAHL, FEATURES EDITOR



## Rocking the Vote

As the IT manager for a Southern California county department, I could not disagree more with your article [Rocking the Vote, August 2008] regarding the “essentially outlawed” use of touchscreen voting machines. I personally was called in (along with other IT staff) during the primary election, to help the Registrar of Voters (ROV) with the ballot counting process. The ROV was forced to use the outdated optical scanning machines as the electronic voting machines had been decertified. I found the process cumbersome, labor-intensive and time-consuming. Delays caused by slow batch processing and the volume of votes cast caused our county to be one of the last in the state to report the final vote tally.

As the IT manager for a Southern California county department, **I could not disagree more with your article [Rocking the Vote, August 2008]** regarding the “essentially outlawed” use of touchscreen voting machines.”

After working in the IT industry for almost 30 years, I find it very difficult to believe that the collective genius of industry leaders cannot develop devices that are secure, reliable and cost-effective. In my opinion, the industry has a philanthropic-type duty to society to assist with the development, testing, certification and implementation of a quality solution that can be depended upon for accurate and timely vote tabulation and recording.

If we are to engage current active voters, the disenfranchised potential voters and the edgy group — next-generation voters — then it is essential that current industry leaders develop and deploy a much-needed secure solution and help ensure the ongoing success of our democratic process.

**TIMOTHY S. MEYER**, BUSINESS APPLICATIONS MANAGER, INFORMATION SERVICES DEPARTMENT, COUNTY OF SAN BERNARDINO, CALIF.



### Raise Your Voice

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## Transparently Successful

I love your latest *Last Mile* column [Should the Inside be Out? August 2008] on government transparency. But I have a better example for you — my agency!

We are fully transparent in our operations, down to how much each project costs, what projects are delayed and mapping of the city-wide street network including the failures — but we cannot get press on this. Nobody is willing to take a look at our operations and say — this is the way every government should operate. What we get is — “Well, you are small, so it is easy for you to do what you are doing.” ... No it isn't. What we found is that once you operate

in a truly open environment, it is very easy to be transparent and show the public where their money is being spent.

I would like to challenge every government in the U.S. to be like our little agency, the Little Agency that Could.

Please, take a look at the dashboard on our Web site — [www.tib.wa.gov/performance/Dashboard](http://www.tib.wa.gov/performance/Dashboard) — and peruse what we have accomplished in only four years. Then tell me that other governments can't be transparent and open like we are.

**RHONDA REINKE**, CHIEF ADMINISTRATIVE OFFICER, WASHINGTON STATE TRANSPORTATION IMPROVEMENT BOARD

# for more crossi







# Three tech tales from around the world.



In the Information Age, technology helps erase traditional boundaries by bringing people together in ways never before possible. Now you can instant message a friend in China whenever you want. The Information Age gives rise to a global community in which we can discover and share new ideas that can be exchanged and augmented at a moment's notice.

*Government Technology* brings you the latest on technology and its impact across the public sector. Our content can be transmitted around the world. Conversely we too can examine IT from a perspective that reaches outside the United States. The issues you care about also resonate with your international counterparts. And so, from time to time, it's good to take a look at what's going on at all longitudes of the globe.

With that in mind, we present our look at three key public-sector technology issues from Australia, South Korea and Canada. It's an international story that's certainly relevant here at home.



# ng



Australia's national portal links citizens to an array of services and information, but the government plans even more comprehensive enhancements.

# The Australian E-Connection

**W**HEN A COUNTRY is as large as Australia, it's a big job to connect the nation's estimated 21 million people with public services. To inform its citizens about how their country can help them, the government created [Australia.gov.au](http://Australia.gov.au), a national Web site linking users to services and information to aid them at home, work and elsewhere.

As the go-to site for a nation of six states and 10 territories, [Australia.gov.au](http://Australia.gov.au) has much ground to cover — literally and figuratively. It's a repository of Web links to services and information that all levels of governments — state, federal, territory and city — have to offer. The portal features: an internal search engine; more than 800 links to public sites; separate directories of federal, state, territory and city sites and departments; travel information; weather updates; current and historical country information; an alphabetical list of government contact numbers by subject; an e-mail subscription service for news and media releases; and a really simple syndication (RSS) delivery option for news and podcasts. RSS enables people to receive news articles, headlines and other data via XML technology.

The United Nations (U.N.) ranked Australia No. 8 out of the top 35 countries on e-government readiness because of its national portal

in the E-Government Survey 2008 — just four places behind the United States. The U.N. designed the survey to gauge how nations deliver e-services to citizens. [Australia.gov.au](http://Australia.gov.au) impressed surveyors with its comprehensiveness, information, links to government resources and how it serves as the gateway to other integrated portals, such as the national job search site, [jobsearch.gov.au](http://jobsearch.gov.au), and the Centrelink citizen information and services portal, [www.centrelink.gov.au](http://www.centrelink.gov.au). Although the Australian portal is ranked slightly behind

the United States, the Aussies have an edge in the user-input department. The portal's user-feedback mechanism, the 60 Second Survey, is more comprehensive and a tad easier to find than a similar U.S. application. The link, "60 Second Survey," is located on the front page below the heading "Have Your Say," and takes users to a questionnaire loaded with buttons, dropdown menus and two input boxes. Users of [USA.gov](http://USA.gov) must click on the "e-mail usa.gov" link that takes them to a smaller feedback form with fewer input opportunities.





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## Designed to Impress

"The thing that makes it so successful is it's relatively straightforward. It's easy to understand, so it's very accessible," said Peter Alexander, branch manager of the Online Service Point Branch of the Australian Government Information Management Office (AGIMO).

Australia.gov.au is designed for usability and the lynchpin of its appeal is how the links to legions of government programs are arranged on pages. The home page features a menu of subjects to browse and a row of

of this original content comprises text describing where links will take users.

## Enhanced Service Delivery

But if, like Alexander said, Australia.gov.au is merely at the Web portal 1.0 stage, what will take it to version 2.0 and beyond? "In terms of functions, we're building accounts for citizens, so they can come to the site and build an Australia.gov account, which then personalizes their view of government," he said. The accounts would let users filter in

and my income is in [a certain] range,' we could give them more information specific to them," Alexander said.

Another enhancement AGIMO has planned is more online forms for electronic service delivery, which is outlined in Australia's 2006 *e-Government Strategy*, a strategic plan of IT projects to complete by 2010. On the back end, this means different agencies will use the same form-building technology and templates, and consequently the same standard for online document creation. They'll let users have a



**1** The U.N.'s E-Government Survey cited the Australia portal's links to major **job search**, business and citizen-information sites as a reason the portal ranked so highly compared to other national portals.

**2** Users can browse a **plethora of services** and information thanks to the simple site design that places browsable subjects on prime screen real estate roughly around the top center.

**3** The **"Information For"** section breaks programs down by user type. Shoppers, business owners, travelers, seniors, job seekers and numerous other sorts of browsers can find what they need.

tabbed links for more specific needs. Users who click on the "Info For" tab, can find information and services arranged by user type.

Information obtained by the 60 Second Survey includes users' connection speeds, opinions on various portal aspects and how they think the site could improve.

But even with all of these features, Alexander is modest about the site's offerings and works to improve it.

"What we've got at the moment with Australia.gov, we would phrase it as a Web portal 1.0; it's just a linking site that people can come to as a starting point and then go throughout the federal government agencies and get their services," he said.

He estimates that about 20 percent of Australia.gov.au's content is original. Much

of the services and let government agencies they prefer track their past actions.

This account through the main site could potentially then be linked to accounts users have with specific government agencies. And if Alexander and his team have their way, this would all be facilitated by a single sign-on feature so a user won't have to log on repeatedly for each account.

These improvements would be aided in part by a more sophisticated service directory. Say an account holder is a plumber from Sydney who is married with two children: Australia.gov.au could present him or her with services that might fit that particular profile.

"But then if they told us more information, such as, 'I have three children, I'm divorced,

more consistent experience when applying for services from agency to agency. The government decided on these enhancements to address citizen concerns after conducting multiple surveys — about one a year since at least 2004 — to gauge Australians' satisfaction with e-government.

AGIMO also plans to aggressively market the portal's availability to Australians, similar to how the United States has marketed USA.gov.

"We have never had an individual marketing campaign for it," he said. "We tend to still advertise individual government programs."

Alexander said AGIMO is deciding how to market the site over the next year. But even without aggressive marketing, Alexander estimates that Australia.gov.au has grown in popularity. He said the number of visitors increased from around 250,000 a month two years ago to more than 600,000 a month today.





SOUTH KOREA

## A city IT pilot in South Korea signals a new role for government and green IT.

BY ANDY OPSAHL | FEATURES EDITOR

**F**INDING GREEN IT projects in U.S. government or abroad that reach beyond rote “environmentally friendly” talking points is difficult. More often, green IT initiatives focus on reducing hardware’s electricity consumption to cut costs — and being green is a secondary goal.

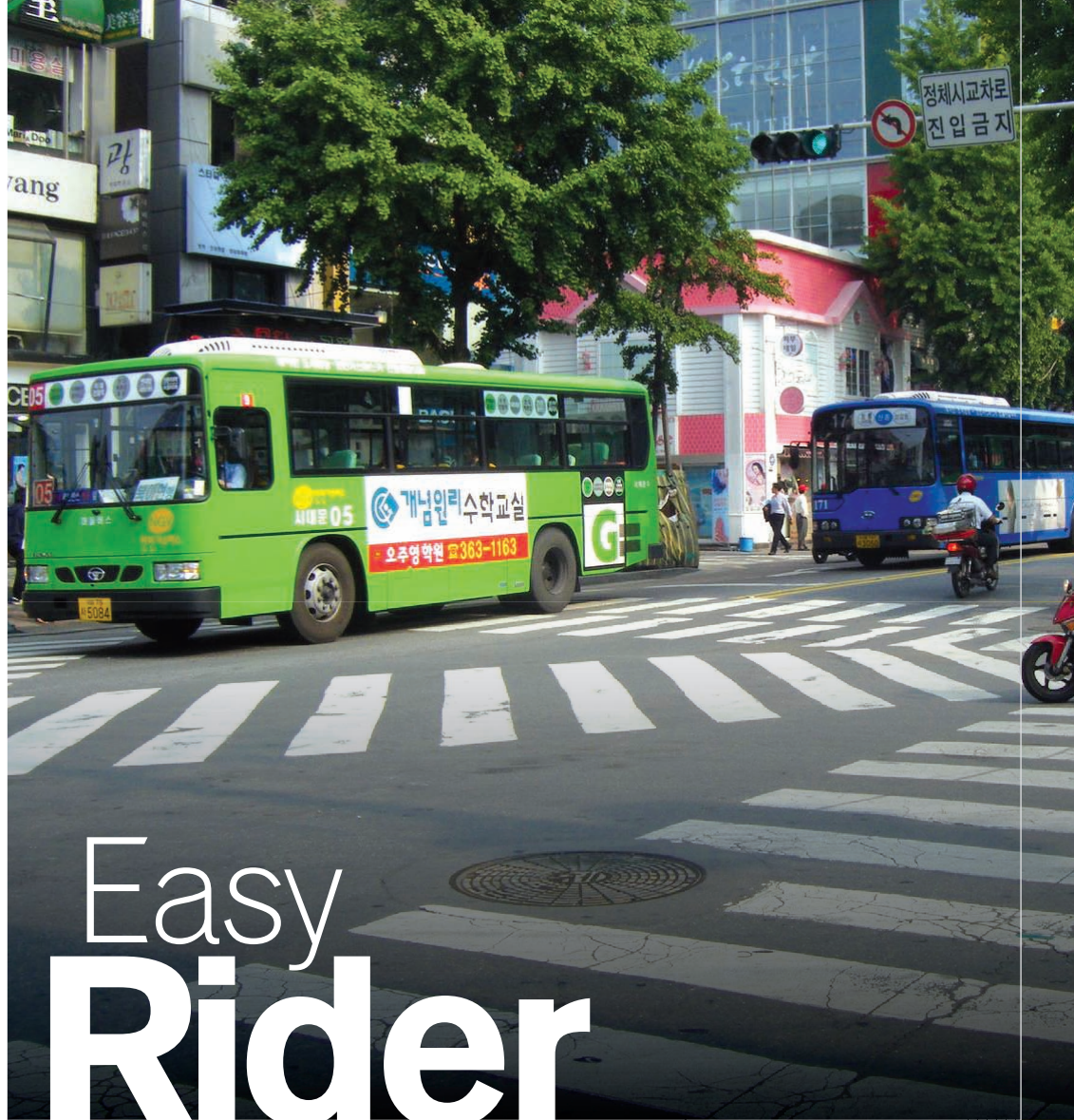
A prime example is data center consolidation, which currently is the largest green agenda item for state and local IT departments. Consolidation modernizes equipment, saves money and slashes energy usage. The latter outcome just so happens to reduce government’s carbon footprint — the measure of human-caused carbon emissions, which most scientists say is a contributor to climate

**“The first thing you need to do is connect all the buses and other transport assets so you can see where they all are and communicate with all of them.”**

**SIMON WILLIS**, SENIOR DIRECTOR, GLOBAL PUBLIC SECTOR INTERNET BUSINESS SOLUTIONS GROUP, CISCO SYSTEMS INC.

change. But it begs the question: Does government IT have a green role to play beyond energy-efficient hardware?

We may find out in roughly nine months. That’s when Seoul, South Korea, should be able to report conclusively on the progress and success of its Smart Transportation Program, said Simon Willis, senior director of the Global Public Sector Internet Business



Solutions Group for Cisco Systems Inc. (No English-speaking city representatives from Seoul were available to be interviewed for this story.) The transportation program aims to increase public transit ridership with flexible, distance-based fares and Web-based technology for determining public transit routes from any city location.

Seoul is one of seven cities enlisted in Connected Urban Development (CUD), a partnership with Cisco that commits those cities to creating IT projects that cut carbon emissions by reducing traffic congestion. The six other cities are Amsterdam, Netherlands; Birmingham, England; Madrid, Spain; Hamburg, Germany; Lisbon, Portugal; and San Francisco. Many of the cities plan to use IT to make public transportation more attractive to citizens, and Seoul’s project is the furthest along, Willis said. American metropolises tangled by traffic difficulties would be wise to keep an eye on Seoul’s progress.

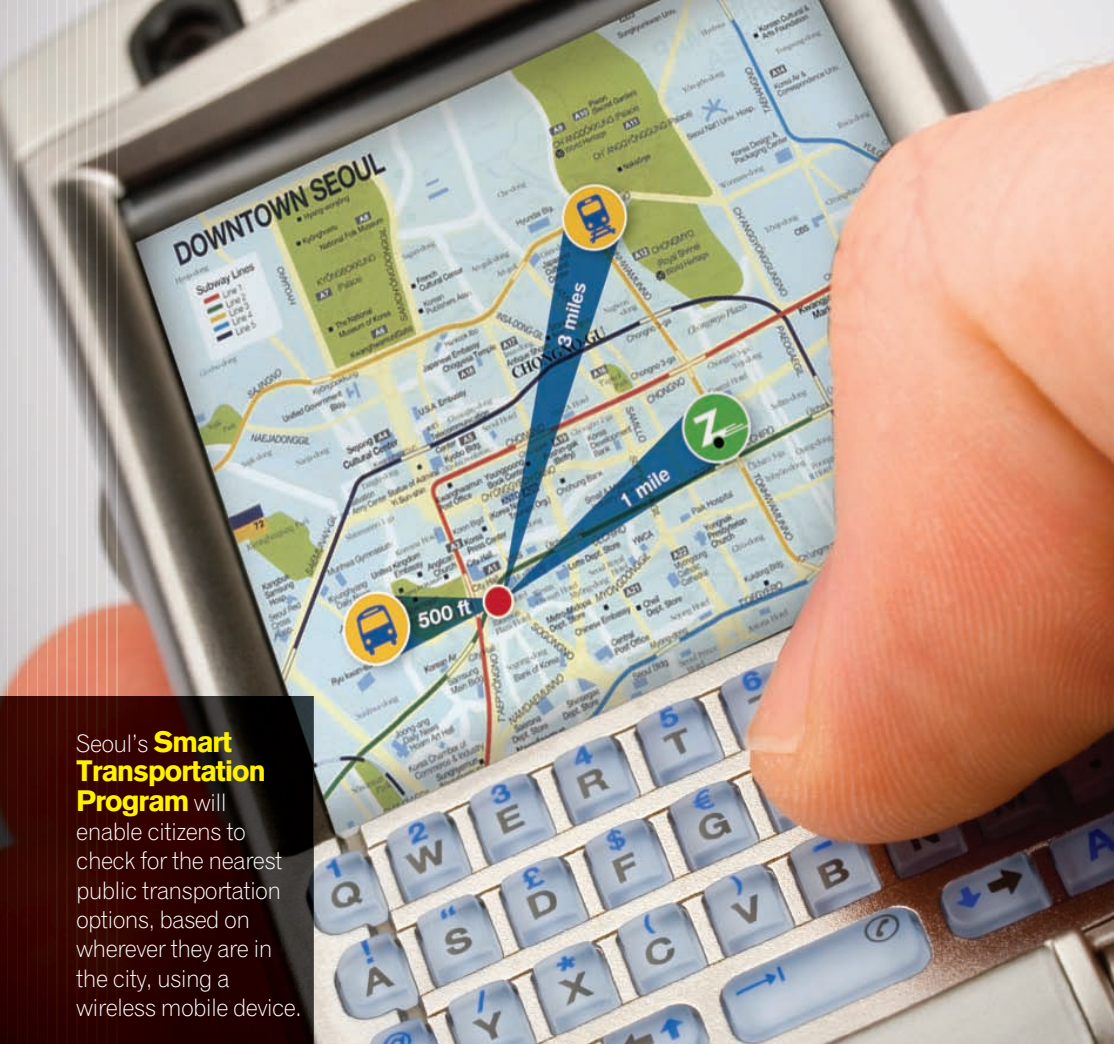
The project is moving from the planning stage to execution, according to Cisco. “It’s pretty early in the project,” Willis said. “This is cutting-edge stuff.”

### Convenient Public Transit

If you work in a big city and don’t use public transportation, there’s a good chance that’s because it’s a hassle to use. Seoul wants to make its system more accommodating.

The city will create a platform of Web-delivered software, in conjunction with several vendors, which will combine information from the city’s various transportation fleets and the Korean National Railroad. The platform will offer real-time traffic information and determine a user’s most efficient public transit route based on wherever he or she happens to be located in the city. The platform will combine different modes of public transportation, such as trains and buses, and it will analyze traffic on each route and the





Seoul's **Smart Transportation Program** will enable citizens to check for the nearest public transportation options, based on wherever they are in the city, using a wireless mobile device.

information on bus and train routes, traffic congestion and parking availability will each transmit that data to private-sector partners charged with building the technology. As is true of local agencies in America, coordinating all of those silos for a centralized project is a cumbersome task, said Willis. Most IT workers who have participated in multi-agency IT projects can attest to the importance of a "higher" government power mandating them. Cisco always sells a city's mayor on a CUD plan first to establish a clear mandate that agencies can't ignore.

One long-term goal for Seoul's Smart Transportation Project is futuristic. Someday the system might be able to automatically route buses and trains where riders are waiting, and bypass vacant stops, Willis said. Citizens would use their smartphones or on-site bus stop devices to alert the system they need a ride. Willis said that could shorten waits.

"The whole routing of buses would become a more flexible and demand-affected process.

available parking. The user will be able access the system from an iPhone, BlackBerry or wireless-Internet connected laptop.

Seoul's project targets everyday drivers as well as public transit commuters. For example, imagine a driver is stuck in a traffic jam on his route to work. That driver could access Seoul's Web-based traffic platform from a smartphone and quickly learn that a nearby train or bus routed toward his destination was picking up passengers near the traffic jam, Willis said. The system could also report whether the corresponding train or bus station had available free parking.

Willis said the next version of Seoul's traffic platform also might enable citizens to remotely book seats on trains and buses. In addition, users will be able to access the system while riding public transit to find out the expected wait times at connecting bus or train stations.

Seoul officials expect riders to value these new features because it would empower them to more accurately organize their days around public-transit schedules. But not all users will have laptops or smartphones handy, so the city is considering installing devices



Seoul's new system combining information on the various public transit routes may also list Zipcar availability. Zipcars are vehicles people can rent by the hour and are found all over the city.

for accessing the system at bus stops and train stations.

The travel data necessary for Seoul's unified platform sits in agency silos, as it does in many U.S. cities. IT departments in Seoul's various agencies that maintain

The first thing you need to do is connect all the buses and other transport assets so you can see where they all are and communicate with all of them. Even that step has not been taken by most cities yet," Willis said.



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CANADA

BY CHAD VANDER VEEN | ASSOCIATE EDITOR



With in-depth rules and a progressive vendor, the Canadian federal government aggressively confronts the challenge of records management.

# Northern Exposure

**W**E AS A SOCIETY may never entirely escape the crinkly clutches of paper, but we are converting more of it to digital format. More importantly, we are also creating many more documents today that are born digital. As such, records management is an issue of growing prominence and mounting concern.

Every public-sector agency should be thinking about a records management strategy — at the very least making plans to handle e-discovery requests. As daunting a task as making sense of thousands of unstructured digital documents may seem, you are not alone. Records management is a challenge governments around the world must confront, including our neighbors to the north.

## Docs, Docs, Docs

The Canadian federal government is more centralized than the United States. As a result, Canada is better positioned to roll out poli-

cies and procedures that are implemented across the board. In the United States, states govern themselves to a higher degree than Canada's provinces. Though still a federation, Canada's government is structured similarly to the United Kingdom, in which power is largely consolidated at the federal level.

Document management is one area where greater centralization may be an advantage. In Ottawa, government officials have been working hard on a national strategy for managing electronic documents. The cornerstone of the strategy is documenting how to manage digital records and disseminate that information — and the associated training — to all government employees, according to Stephen Walker, senior director of information management strategies for the Chief Information Officer Branch from the Treasury Board of Canada Secretariat.

Already, Walker said, federal employees are being trained on what Canadians call information management, or IM — not to be confused with instant messaging.

"First of all, there's a document, which has already been published and departments are responsible for implementing, which is on roles and responsibilities for IM specifically," he said. "It speaks to what every individual level of employee within a given organization is responsible for respective of IM. There's a new document to be delivered this fall called *IM Basics*, which again, breaks down those rules of responsibilities to the day-to-day operational requirements for every government in the country."

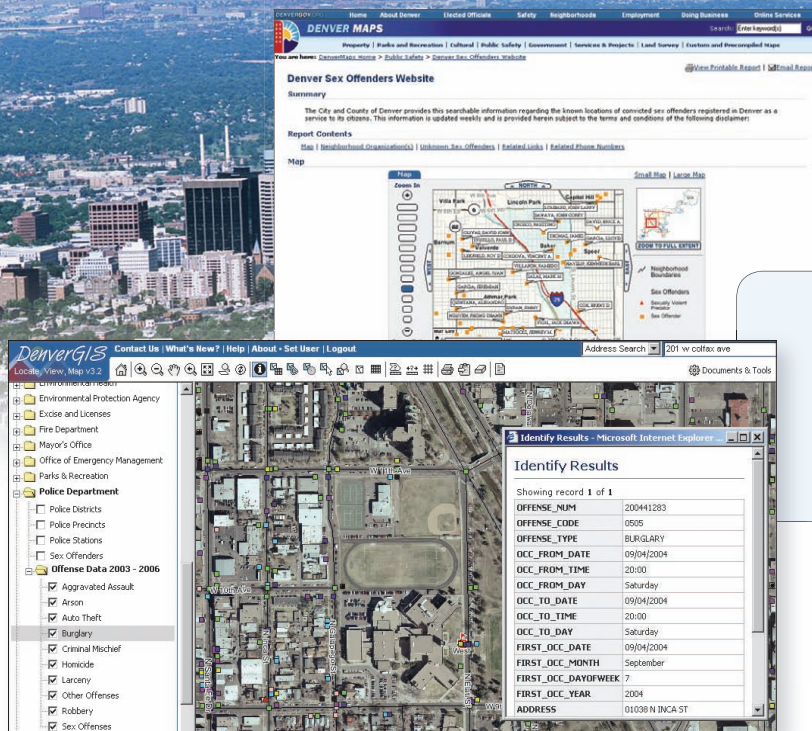
Accompanying the documentation is a government-backed training and development program, which educates employees on IM, with additional training for task-specific agencies and agency managers.

Training and documented policies are good, right? But how do such policies get set, and who decides what kind of training employees ought to have? Walker said the federal government has been working with provincial governments and the Public Service CIO Council — a body made up of

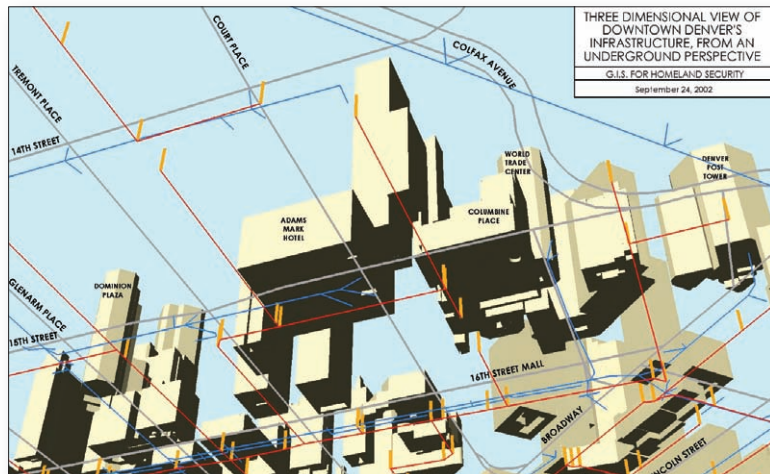


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**David Luhan,**  
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CIOs from the federal and provincial level — to determine the best way to train employees on IM.

But training employees on IM can be difficult for the same reason so many U.S. agencies struggle with technology projects — it's often more difficult to change people than to change hardware.

"Today we're still dealing with challenges associated with independent models and solutions that have been defined by independent organizations that are still transitioning toward a common framework for record keeping," Walker explained. That's a polite way of saying everyone is still doing their own thing and until everyone is on the same page, no amount of policies and training will help Canada better manage its electronic documents. Walker said the long-term strategy is to instate a director of record keeping. But until then, the unstructured nature of electronic documents will continue to cause headaches.

"It certainly creates other challenges for IM. As you know, we are not able to get rid of anything. Things do pile up," Walker said. Meaning in e-discovery cases, agencies must be certain their mountains of digital data can be quickly sorted through. "From an e-discovery perspective, the practice within organizations today ... is one of defining the search scope, the search parameters, and documenting the procedure and the search parameters. That becomes an audit-ready function in itself. We're obligated and organizations are obligated to drive out the maximum amount of information that may be relevant to litigation exercises."

## Enterprise Management

Since 1998, the Canadian government has worked on strategies to deal with the coming hordes of digital documents. Back then, the government contracted with Toronto-based Open Text to help create a new system for dealing with electronic records. Recently this contract was renewed. Open Text specializes in enterprise content management — software designed to manage digital data across an enterprise.

"The government recently signed an enterprise contract with Open Text for the




ongoing maintenance and support of its record document IM system, which has been available to departments since 1998," said Jirka Danek, director general of the Product Management Team from Public Works and Government Services Canada. "RDIMS, as we call it — which stands for Record Document IM Systems — is a suite of products composed of Open Text

components specifically addressing the retention disposition of electronic and paper information."

In use for more than a decade, the Open Text solution has grown and adapted to meet changing needs. Some of the significant changes recently have been giving employees the ability to apply tags to documents and store documents in a hosted data center.

"That solution goes back to 1998," Danek said. "But it's broadly implemented. Recently one thing we've done to help the various departments is we've created a centralized hosted environment — consider it an electronic warehouse if you want — where all the back-end tools are available for storage, classification, metadata tagging, searching and so on. It's stored in a data center for them, and the data is backed up for whatever length of time that is required."

The Canadian approach to records management may be a bit piecemeal. Such may be the nature of records management in the digital age. But because Canada has a more centralized government, there typically aren't 50 different solutions to the same problem. With governmentwide policies and training, as well as a long-term vendor partnership, the Canadian records-management strategy may be worth looking into, eh? 





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# Technology on the Cheap



**Synopsis:** Many are skeptical that government IT can work on a \$5,000 budget.

**Agencies:** Open Source Lab, Oregon Department of Human Services, U.S. Department of Defense.

**Technologies:** Plone open source content management system, SugarCRM, SurveyMonkey, MySQL.

**Contact:** Deborah Bryant, public-sector communities manager, Oregon State University Open Source Lab, 971/533-8050, [deborah@osuosl.org](mailto:deborah@osuosl.org).

BY MATT WILLIAMS | ASSISTANT EDITOR

Chris Anderson, editor-in-chief of *Wired* magazine, made a name for himself among technologists by questioning conventional wisdom. Whether it's his indifference to the Net neutrality debate or his thesis in the book, *The Long Tail*, that there's profit to be made in niche markets if obscure products are given large enough distribution.

So it was little wonder Anderson stirred the pot at a Connected Government symposium during the Conference on California's Future last spring in Sacramento, Calif., when he said government could do business much more cheaply than it typically does.

"We're talking about how to introduce these [Web 2.0] technologies more cheaply without having to go through the whole procurement process, and someone told me — this may be true in terms of the state [California] as a whole — that there was a \$5,000 limit," Anderson said. "Anything above \$5,000 had to go through a [procurement] approval process. I think that's a fantastic opportunity. What can you do for \$5,000? What can you do for \$4,999?"

"You can start a company ...," he began.

"Not much," deadpanned California Secretary of State Debra Bowen, answering Anderson's question.

"Well, I disagree," Anderson replied. "I've started two companies for less than that, each that are doing 1 million page views a month. Open source, hosted software — you can do an amazing amount for less than \$5,000."

Anderson's provocative claim is food for thought, because as some governments like California brace for deep budget cut-backs, cost-effective projections are certainly attractive.

With the growth of open source and hosted applications, a little money might go a long way.

But is keeping costs below the procurement threshold a realistic aim?

## Beware the Back End

How do you do something for next to nothing? Governments are turning more to open source software, according to Deborah Bryant, public-sector communities manager of the Open Source Lab at Oregon State University. Though she said there isn't a quantifiable way to measure the trend, the evidence is anecdotal. She cited a few examples among many:

The Oregon Department of Human Services deployed SugarCRM, a mature, open source customer relationship management (CRM) software suite that's much cheaper than most CRM systems.

Some government-run Web sites, including that of Lowell, Mass., are based upon Plone, an open source content management system.

The U.S. Department of Defense (DoD) uses open source extensively, Bryant said. The DoD has underwritten studies of open source and an open technology road map.

There are other commonly used open source programs that are considered to be reliable and mature: Open Office, an office suite that includes a word processor, spreadsheet and presentation software; the Mozilla Firefox Web browser; the Linux Kernel operating system; GIMP, a bitmap image editor that some users claim rivals Adobe's ubiquitous Photoshop; and MySQL, an open source database.

Open source software, at first glance, appears to be a viable option to do things

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on the cheap: It's collaborative, constantly updated and most important — free of charge. Or is it? Bryant said the notion is fading that open source means free.

"IT professionals have become pretty sophisticated about understanding the free [concept], and open source software has to do with flexibility from traditional licensing constraints, but not cost-free," Bryant said. "Everything — every procurement process, every acquisition, every implementation — has some kind of cost associated with it, whether it is proprietary or free. So there are opportunities to use this kind of software, and I think that increasingly you're seeing agencies going into this with their eyes open."

That's because though most open source software doesn't have a licensing fee associated with it, costs accrue over time related to staff training, support and maintenance. Bryant said the documentation included with some open source software is inadequate for users, which inevitably tacks on unforeseen costs to the customer.

"No software is free," said Mark Driver, a Gartner research vice president and open source analyst. "The complexity and scale to which you are using the software for mission-critical solutions is going to, at some point,

challenge that government do business less expensively. "Theoretically government is well organized and unique in that there is not a tremendous focus on intellectual property. You don't worry about an agency being competitive with another agency, for example. The enterprise itself is owned by the citizens anyway. So the ability to share code is very high."

Driver said one way to move toward the \$5,000 target would be to practice "community sourcing," which is a relatively new term that refers to collaborative work — in the case of state and local government, Driver applies it to similar agencies that have partnered on new software projects. If you find enough partners, the total acquisition cost could significantly lower the cost barrier to the point that software acquisition could conceivably cost less than a preset amount that kicks in a legislatively mandated procurement process.

Voilà! Your agency would be more agile and bypass the bureaucratic procurement channels. Of course, it's not nearly that simple.



PHOTO COURTESY OF WIKIPEDIA

**Chris Anderson**, editor-in-chief of *Wired* magazine, is working on a new book called *Free* in which he expounds upon his belief that a "gift economy" is emerging that falls outside the bounds of what we think of as traditional capitalism. Anderson has said publicly that he believes all digital services, such as software and storage, must eventually become free.

begin to look at open source as a viable technique there. Second, I would look and say, 'Is this a custom piece of software that we need to write ourselves? If so, is there an effort out there that we can collaborate? Or would it be worth the effort in leading this process?'"

Meanwhile, Bryant said she would never draw up a list of projects with a \$5,000 cap in mind, but if that's all the money she had in the budget, she would look closely at hosted solutions with minimal licensing fees, such as Google Apps — a Web-based suite of products that features a document manager, chat client, e-mail and storage, and calendar. Bryant, former deputy CIO of Oregon, said if she were in charge of IT operations for a small city with a business user that needed to do a survey, she would turn to SurveyMonkey — a popular Web site for hosting customizable survey questions. "Those kinds of things, I think, are underutilized," Bryant said.

Anderson said the corporate world is effecting a change that will likely trickle down to government. "Increasingly as we're moving to more and more Web 2.0 technologies, more hosted stuff, more open source software — very light development tools — these things cost nothing," he said during a keynote speech at the Conference on California's Future. In Anderson's worldview, it's culturally difficult, but possible, to shift away from return-on-investment memos to a just-go-for-it attitude.

"There aren't financial risks anymore," he explained.

That's true, at least upfront, according to open source experts Bryant and Driver. **GT**

"I would certainly ask myself for **every single piece of software in every category** that I was acquiring and managing, 'Is there a suitable open source solution in this space?'"

Mark Driver, vice president of research and open source analyst, Gartner

require someone dedicated to the process. Even if I get the software for free, if that same agency ends up having to support the code all themselves — and having to have programs and becoming a software company, then they're not really saving any money. So it requires a sort of critical mass, and that really hasn't happened yet."

In simpler language, Bryant said open source is almost free on the front end, but will end up costing money later on.

## The \$5,000 Question

"So the big picture here is one of an academic, theoretical possibility versus execution," Driver said when posed Anderson's

The concept of spreading the costs out among agencies within states, towns and the whole United States — or even internationally — is mostly untested. Driver said "community source" shared software would require that business processes be identical among the collaborating states or municipalities (e.g., identical driver's license application processes in Florida and Oklahoma). Those sorts of obstacles could be politically untenable.

"I would certainly ask myself for every single piece of software in every category that I was acquiring and managing, 'Is there a suitable open source solution in this space?' It's largely measured in terms of [software's] maturity," Driver said. "Some spaces, when it comes to databases and applications, I would



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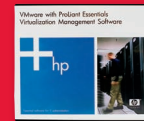
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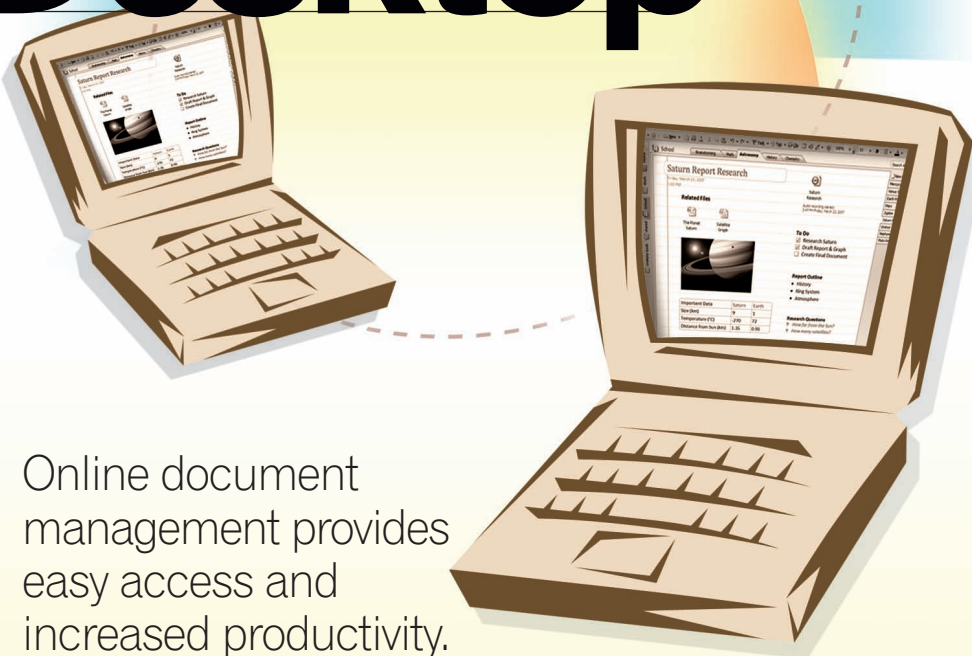


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# Ditching the Desktop



Online document management provides easy access and increased productivity.

Imagine accessing documents from any computer with an Internet connection and not worrying about misplacing a USB flash drive or hauling around a laptop. Web sites have emerged that allow just that, with the added bonus of document storage, collaboration and sharing without the hassle of e-mail attachments. Not only can users free themselves from hard drives, they also can work together on documents in real time.

Online document management sites — Acrobat.com, Google Docs and Microsoft Office Live Workspace — allow seamless partnership among programs similar to the ones used every day by government agencies. They can provide cost savings, collaboration, document creation and storage, and eliminate the need for portable storage devices. The sites let users access documents from any computer

with an Internet connection and a standard browser without downloading anything.

“The drivers of moving online are: I want to access this stuff from two different machines, I want all of my things searchable or I want to share them with a set of people,” said Jonathan Rochelle, project manager of spreadsheets for Google Docs. “We’re finding that institutions are finding it easier to share, which is a much more relevant action within a group these days.”

## D.C. Deploys Google

The District of Columbia was planning to spend \$4 million on a new intranet deployment but killed that project and launched Google Apps, a suite of Web-hosted collaboration services, such as Google Docs, Google

Talk (an instant messaging and voice over Internet protocol tool) and Gmail.

This move saved the district more than \$3.5 million.

Abandoning the original intranet project was a logical business decision for the district, said Vivek Kundra, the District of Columbia’s chief technology officer. “I said we could do that in a very low-cost fashion using Google Apps to drive collaboration, move us to real-time sharing of information and drive adoption, in terms of technologies people are already familiar with,” he said. The decision to deploy Google Apps aligned with Kundra’s three core drivers: being good guardians of taxpayer dollars, getting the greatest value from technologies and providing solutions quickly.

The district’s Office of the Chief Technology Officer (OCTO) deployed Google Apps in October 2007 for its approximately 700 employees. “We literally just turned it on, so it wasn’t like we had to deploy software and spend seven months architecting it,” Kundra said.

Following OCTO’s successful deployment, Kundra decided to launch Google Apps for the district’s entire government — about 38,000 employees — beginning July 24, 2008. The goal is to move all government information to the intranet via Google Apps.

Kundra’s advice for others looking to move online: “I would say look at the power of the consumer-market forces. Don’t underestimate that, because when you’re deploying applications for millions and millions of users, the demand on that infrastructure compared to a small enterprise is very different.”

## Cloud Collaboration

Google Docs provides online storage, creation and collaboration of presentations, word processing and spreadsheet documents. When sharing a document, the owner can invite users, who are given a read-only copy or assigned

**Synopsis:** Online document storage and collaboration offer new tools to governments.

**Agency:** District of Columbia’s Office of the Chief Technology Officer.

**Technologies:** Google Docs, Acrobat.com, Microsoft Office Live Workspace.

**Contact:** Vivek Kundra, chief technology officer, Washington, D.C., 202/727-0062, <http://octo.dc.gov>.





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editing privileges. The site permits users to make documents public by publishing them as Web pages or posting them to a blog.

Google's Rochelle said the collaboration portion of the applications is what makes a difference. "That is what varies significantly and lets people turn the corner on productivity," he said.

When documents need to be edited or proofed by multiple people, online document management allows smooth transitions. "The problem with attachments and e-mails is that they really just proliferate versions," Rochelle said. "The first difference really is in the single-version control. There is a single place where this document lives, many people can edit and access it, and it's all online in one version. You can get prior versions as they are edited, but there's literally one document."

Rochelle said Google Docs is secure through a single sign on and, unless a user makes a document public, documents are only shared with the people specifically invited to view or edit them.

Google Apps Team Edition might benefit organizations that need a custom e-mail address and an intranet system, in addition to the other services provided. Applications included are: Google Talk; Google Docs; Google Calendar, for arranging meetings and coordinating schedules; a start page; and Google Sites, group Web sites for sharing information.

Agencies looking for further customization can now add programs onto the spreadsheet application. "One of the things we launched recently was gadgets in Docs, which is specifically meant for spreadsheets right now, but we could see that expanding," Rochelle said. "That allows people to write specific third-party programs that actually allow them to visualize and see their data and interact with their information in Docs in their own way."

## Flash Fusion

When it comes to online document creation and management, governments have a few options to choose from. One choice is Adobe's Acrobat.com, a hosted suite of online services that includes file sharing and storage, a PDF converter, word processing and Web conferencing. The suite is now available as a free beta version and was launched in June 2008.

"One of the real secrets to Acrobat.com, and to practically all of our online services that we're making available, is the fact that we're leveraging Flash Player," said Bobby Caudill, government solutions manager of Adobe. "Regardless of where you are in the world, regardless of who you are in the world, you pretty much have the technology already on your machine to be able to leverage the services that we're making available."

Adobe's online word processor, Buzzword, allows real-time collaboration, and users can be given full editing, comment-only or read-only privileges.

ConnectNow, a Web conferencing tool, lets users create a meeting room and supports audio and visual communication, remote screen control and screen sharing, among other features. In the complimentary version, only three people can meet at once. Organizations seeking a wider implementation might consider purchasing Acrobat Connect Standard or Acrobat Connect Pro, in which users are granted 5 GB of space and can share documents with an unlimited number of people.

"As of right now, the physical security is handled all by Adobe," Caudill said, "so we certainly take the physical security very seriously."

The online security runs in an encrypted session, and currently a user name and password are required to sign on. "But at some point, I could see us being able to strengthen that and harden it down some more," Caudill said.

## Bridging the Gap

Another option available to governments is Microsoft Office Live Workspace. Called a "companion" to Microsoft's software, it is currently available as public beta. Users are given a workspace, which is an online place to save, access and share documents. However, users still need a registered copy of Microsoft Office software because new documents cannot be created online. Users can save files from Microsoft Office programs directly to their online workspace.

Microsoft SharedView enables real-time collaboration by allowing users to work together on the same screen. Users can share files with up to 100 people and are allotted 500 MB of storage, though each document can't exceed 25 MB.

## How Safe Is Your Data?

Online document management sites seem like an attractive option, but how secure are they?

Dan Lohrmann, chief information security officer of Michigan, said most government security experts are reluctant to use these sites for storing essential information. The main concern is putting important data outside of the government's control.

"I think the challenge that people feel is for mission-critical information; you don't know where it is," Lohrmann said.



Dan Lohrmann

"With no service-level agreement [SLA] or no level of control over where data is being stored, it doesn't provide the controls that you need."


He said the situation is similar to requiring employees

who work remotely to use government-owned laptops instead of their home PCs. "Once it's outside our jurisdiction, we have no control over that, and the problem becomes how then do you track it, how can you confirm that there was not a breach when it's not in your control?" he said.

Still, online document storage and management has plenty of potential, he said.

"I think there are a lot of benefits," Lohrmann said. "With SLAs and with agreements and special contracts with the likes of Google Apps or whatever, I see that as an emerging trend. But the challenge is going to be the sensitive and mission-critical documents."

No downloads are required, but Microsoft provides an Office Live Update to ensure easy access to the site's components.

Files are secured by virus protection from Microsoft Forefront Security and can only be accessed with a password and a Windows Live ID. 



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The U.S. Library of Congress uses technology to give online and on-site visitors a more engaging experience.

If you had the chance to see Thomas Jefferson's hand-edited draft of the Declaration of Independence up close and personal, how much do you think you could take away from the experience? Simply viewing the dimly lit rough draft on display at the Library of Congress in Washington, D.C., could amount to little more than words scrawled on a very old page. To really learn about the document, visitors would have to speak onsite with a guide or independently research the document.

The library is working to create a completely different experience, however, by deploying new technologies that enrich the exhibits for both on-site and online visitors, allowing anyone in the world to learn more about many of the treasures displayed at the library.

In April, the library unveiled the "Library of Congress Experience," computer kiosks in selected locations that let users virtually flip through and examine artifacts that are too delicate for handling, such as Jefferson's Declaration of Independence draft, George Washington's copy of the U.S. Constitution, John Beckley's Bill of Rights, the Gutenberg Bible, the Giant Bible of Mainz, Martin Waldseemüller's 16th-century world maps, and more.

## Reaching Out to the Nation

The move online and onto computers was part of the library's strategy to be more accessible to the American public, according to Matt Raymond, the Library of Congress communications director. He said reaching more people in a meaningful way is a goal of Librarian of Congress James Billington, who sets policy and directs the library's programs.

PHOTO BY CHRIS CARLSON



# Heightening the Experience

"We've been known as a scholarly institution, and that will always remain at the center of our mission, but we are the nation's library as well as Congress' library," Raymond said. "This is about opening ourselves up and creating some lifelong users along the way."

Using the kiosks, visitors can also get a detailed view of architectural elements of the Great Hall within the library's Jefferson Building.

The library commissioned photographer Carol Highsmith to take numerous high-resolution photos of the spectacular Great

Hall, which were used to create the digital displays available to visitors. "We were able to scan them and merge them with the technology to create an immersive experience," said John Sampson, director of federal government affairs for Microsoft, which provided the kiosks.

Kiosk users also can decipher hard-to-read handwritten documents by overlaying typewritten text, and they can zoom in on the areas that interest them.

"This is not the final, finished, pretty version that you see over at the archives. This

**Synopsis:** Federal library deploys interactive technology to engage both on-site and online visitors.

**Agency:** U.S. Library of Congress.

**Technology:** Kiosk and online interactives.

**Contact:** Matt Raymond, communications director, [mray@loc.gov](mailto:mray@loc.gov).



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is the product of creativity,” Raymond said, referring to Jefferson’s Declaration of Independence rough draft.

“It’s a way that you can touch history,” he continued, noting the visibility of the parchment paper’s fiber and the repairs and edits made to the document by literally cutting and pasting.

Visitors can flip electronically through books from Jefferson’s library, turning pages with their fingers as they would a printed book. Where necessary, users also can overlay a typewritten translation if the original text is in a foreign language.

For the text displays and architectural elements, kiosk users can call up additional information, such as other written works that helped form the documents on display and explanations of the symbolism found in architectural elements.

“The Great Hall of the Jefferson Building of the Library of Congress is truly one of the most amazing buildings in Washington, D.C., if not the country,” said Sampson. “Yet, if you walked in and weren’t lucky enough to have a curator at

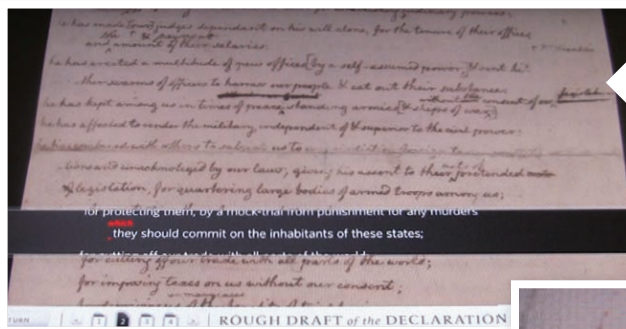
“We have an entire generation of people who have grown up not knowing a world without the Internet. They are **used to this** kind of interaction, and **they’ve come to expect it.**”

Matt Raymond, communications director, U.S. Library of Congress

your side to help you interpret all the amazing artwork and carvings, you certainly would know that you are in the presence of something amazing, but you wouldn’t really understand it. What we are able to do with the kiosk is help people to understand what they are seeing and some of the symbolism around them.”



Kiosks in the Great Hall of the Library of Congress’ Jefferson Building let visitors zoom in on the hall’s architectural elements and provide information on their significance.

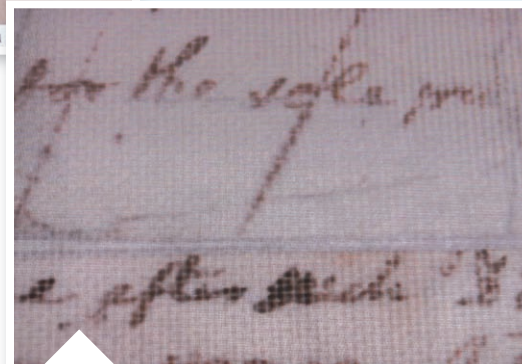


A kiosk provides a close-up of Thomas Jefferson’s rough draft of the Declaration of Independence with typewritten overlay to make the original handwritten text and edits easier to read.

That new understanding extends to Web visitors too. Images and interactive material similar to the library kiosks also are available online. In fact, there’s more to be done on the Web at [www.myloc.gov](http://www.myloc.gov) even if a visitor has already spent time at the library.

## The Online Experience

Like on-site visitors, online visitors can look at and zoom in on exhibit photographs. In addition, they can view the original versions of historic documents and typewritten transcriptions.



Using the kiosk to zoom in, visitors can see where the Founding Fathers patched paper over the original text while editing.




The real document lies under glass next to the kiosk.

to solve riddles and puzzles associated with the bookmarked items.

According to Raymond, the Library of Congress Experience has been a hit with the younger generation of learners who visit the landmark library.

“We have an entire generation of people who have grown up not knowing a world without the Internet. They are used to this kind of interaction, and they’ve come to expect it,” he said.

The Net generation gets more out of the interactive technology than from “dry, old textbooks,” Raymond said.

“When you go through the Experience, you will see young people going right to the interactives and moving the documents and manipulating them, and it opens their eyes to the actual artifacts and history that is all around them.” 

Several interactive learning activities are available exclusively online, including games and activities that help children in grades three through 12 comprehend the displayed materials. Lesson plans for grade school educators are also available on the site.

In addition to the current offerings, Raymond said, the library will soon offer a “Passport to Knowledge” with a bar code that will allow users to create a personalized online collection.

“People can swipe the bar code on an exhibit or an artifact that they like,” he said, “and it will build a Web site personalized for them on the back end where they can really create their own collections.”

With their personalized collections, users can bookmark artifacts for further research, share with others or play a game called Knowledge Quest — at the library or at [www.myloc.gov](http://www.myloc.gov) — that challenges visitors

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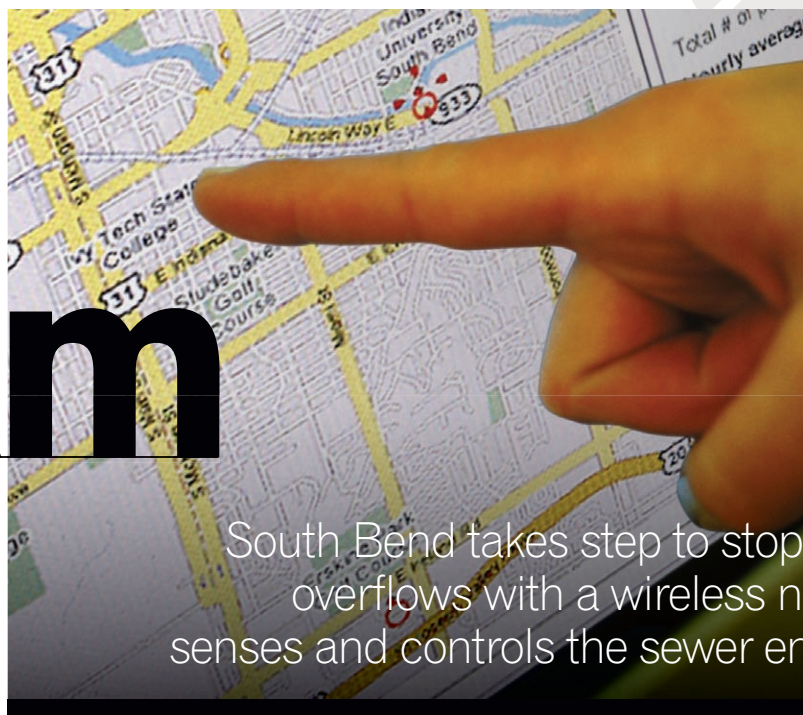
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# Pipe Dream



**Synopsis:**  
South Bend, Ind., works with Notre Dame and Purdue universities to design a wireless sensor actuator network that abates troublesome and costly wastewater overflows.

**Jurisdiction:**  
South Bend, Ind.

**Technology:**  
Wireless sensor actuator network called CSOnet.

**Contact:**  
Gary Gilot, director,  
South Bend Public Works, 574/235-9251,  
ggilot@southbendin.gov.

South Bend takes step to stop its sewage overflows with a wireless network that senses and controls the sewer environment.

Each year, 850 billion gallons of raw sewage overflow into U.S. streams and rivers. If that amount was poured over New York City, it would create a pool 9 inches deep, said Luis Montestruque, CEO of EmNet, a startup designer of wastewater control systems.

Much of the overflow is caused by combined sanitary and stormwater sewer systems, which are prone to floods during storms; the channels for sewage and storm water runoff are only partially separated. South Bend, Ind., one of more than 700 U.S. cities grappling with the issue, is implementing a unique solution to direct sewage and rainwater to unused parts of its sewer system, preventing unnecessary spills.

The system, called CSOnet, is a "cyber-physical system" because it integrates computation with control, said Michael Lemmon, University of Notre Dame professor of electrical engineering. It watches and alters its own world, similar to how a traffic controller monitors traffic congestion and orchestrates light timing. "Probably what's unique about this is it includes actuation, so that we're actually controlling something," Lemmon said.

Engineers from Notre Dame, Purdue University, EmNet and the city of South Bend began work in 2004 to create a wireless sensor actuator network (WSAN) for the city's wastewater system.

"The advantage of CSOnet is that the intelligence is distributed throughout the system," Montestruque said. "This allows CSOnet to use local data more efficiently and robustly than conventional centralized systems."

A computer network communicates over wireless radio and is integrated into system

components called "nodes" — flow sensors, pressure sensors and smart valves that act in a feedback loop to efficiently store sewage and rainwater.

The system incorporates engineering innovations and is garnering interest for its cost-effective control of wastewater overflows. "It is arguably the largest permanently installed urban-scale wireless sensor network and one of the first cyber-physical systems in the world," Montestruque said.

## Storm Surge

During a storm, sensors in manhole covers detect high water levels and calculate the amount of available sewer storage space, Montestruque said. The system sends a command signal to valves, pumps and gates to prevent overflows and maximize conveyance capacity. When the storm passes, sewage is slowly released into a wastewater treatment facility.

CSOnet's citywide installation was completed in February 2008 and has 110 wireless sensors installed throughout almost 40 square miles of South Bend. "This will allow the city to understand the details of the inner works of the sewer in preparation for the control phase," Montestruque said.

The real-time sensor information is collected by an EmNet server, for monitoring and archiving purposes, and is regularly accessed on the Internet by work crews that

inspect for sewer changes or node malfunctions, said Gary Gilot, South Bend's director of public works.

EmNet will install 10 smart valve controllers to reduce dry weather overflows and flooding, and maximize storage in basins. That project is slated for completion in summer 2009. Beyond that, control may be extended to 30 other sites, he said.

The projected cost for CSOnet is \$4 million, Gilot said.

## Unfunded Mandate

Sewage overflows into nearby streams and rivers often occur during heavy rainfall, when excess water floods pipes in combined sewer systems. The resultant discharge, imbued with biological and chemical contaminants, is called a combined sewer overflow (CSO) event.

The overflows are toxic and can result in hefty fines for cities. Under the Clean Water Act of 1972, the U.S. Environmental Protection Agency (EPA) requires cities to monitor and reduce sewer overflows, and prepare long-term control plans. Fines are levied for not implementing and following a plan, or because of overflow events.

"It's a huge problem; it's basically like a federally unfunded mandate that all these cities are trying to address and are not sure how to," Lemmon said.



South Bend Mayor Steve Luecke estimated in his 2008 State of the City address that the city would need to spend \$200 million to \$400 million over 20 years to meet EPA guidelines — and that's in addition to the \$120 million now being spent on South Bend's long-term sewer plan.

However, the city could save \$110 million to \$150 million of that mandate with the use of CSOnet, Luecke said.

Though many newer areas of South Bend have segregated sewer systems, the water and sewage is inevitably combined upon entering the city's older sewer network.

In normal circumstances, the mix is treated at a wastewater treatment plant before its release. But wet weather can put the plant at full capacity. Even dry weather can cause overflows when storm debris plugs sewer lines, thereby flooding other pipes, Gilot said. The resulting EPA fine is \$27,500 for each incident. With the monitoring system in place, Gilot said the city has already detected and corrected many potential dry weather overflows.

He said public works estimates that 2 billion gallons of sewage per year empties into South Bend's waterways, which includes the St. Joseph and Wabash rivers. Cities like South Bend drain the sewage mix into natural waterways to prevent it from backing up into homes and businesses.

The EPA estimates that reducing CSO events by 85 percent nationwide would cost \$50 billion using traditional technology, Montestruque said. Traditional fixes include building new separated sewer systems, expanding wastewater treatment plants and building large reservoirs, or holding tanks, to temporarily hold sewage, as was done in Chicago.

"These solutions are highly unpopular because this is taxpayer money," Montestruque said. Taxpayers can't use or see sewer improvements, so it's hard to justify spending money on them, he said.

A 2005 estimate for totally segregating South Bend's sewage and storm water was \$650

"It's very unique in that it doesn't require any structure to be in place beforehand. It's **usable the moment it is installed.**"

Luis Montestruque, CEO, EmNet

million, Gilot said. Water rates would have to rise 80 percent to amass the necessary capital.

## Research and Development

CSOnet originated when Lemmon and Jeffrey Talley, an associate professor of civil and environmental engineering at Notre Dame, began discussing South Bend's water management needs with city officials.

In 2004, Talley led a research and development team to create a sensor and control prototype for stopping the city's sewer overflow problem. After he landed a \$1 million grant from the Indiana 21st Century Research and Technology Fund, Purdue University and environmental engineering firm Greeley and Hansen joined the project. Granger, Ind.-based EmNet was founded in 2004 to commercialize the research from Notre Dame and Purdue.

Successful test runs at St. Mary's Lake near Notre Dame paved the way for a pilot in November 2005. The pilot, a small retention basin deployment with six sensors and one controller, prevented an estimated 6 million gallons of sewage from entering the St.

Joseph River that month and increased the basin's capacity by 110 percent for about 1 cent per gallon, Montestruque said.

A subsequent study conducted by environmental engineering firm Malcolm Pirnie determined that a citywide installation would reduce CSOs up to 30 percent, Montestruque said.

## System Intricacies

Although there's been an occasional node malfunction, Gilot said, the system is robust because there's no single point of failure.

"We could see this had potential early," Gilot said. "[The pilot] showed that real-time control logic and communications worked and that the system was robust under tough, real-world conditions."

Battery-operated nodes and wireless communication make for fast implementation and less up-front cost. "It's very unique in that it doesn't require any structure to be in place beforehand," Montestruque said, "It's usable the moment it is installed."

Node-to-node communication that's linked to a hierarchical information structure lets the electronically simple system consume less power. The nodes also rely on highly efficient hardware and middleware to synchronize sleep and awake cycles, extending battery life to two to three years. Purdue is working on the ability to reprogram the nodes wirelessly.

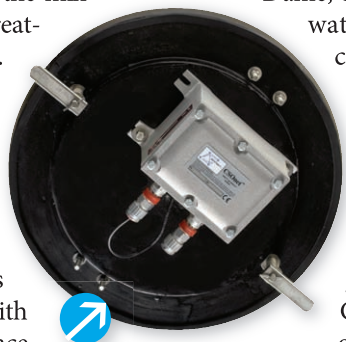
Additionally algorithms help optimize CSOnet's functions. "One allows communication using mesh network technology; another algorithm is responsible for utilizing sensor information to determine the optimal set points for the valves that control flows; yet another is responsible for energy management," Montestruque said.

The mesh network technology lets neighboring nodes communicate using many paths, thus bypassing obstacles.

The composite fiberglass manhole cover used to house the antenna and sensor adds to CSOnet's sturdiness by enabling radio signals to propagate easily from inside the sewer system. Another advantage of the retrofitted manhole cover is its easy installation.

There's already been interest in South Bend's CSOnet, including from places as far as India, Lemmon said. Gilot predicts interest will increase after the control phase ends and CSOnet can display its full value.

"There's a big potential here for this to have significant impact that goes beyond the horizon of academics," Lemmon said. **GT**



**This manhole cover** is identical to those used in South Bend. When storm waters overtax the city's sewer system, the sensors detect high water levels and calculate the amount of available sewer storage space. The system then sends a command signal to valves, pumps and gates to prevent overflows and maximize conveyance capacity.

JESSICA HUGHES IS A REGULAR CONTRIBUTOR TO GOVERNMENT TECHNOLOGY. SHE ALSO CONTRIBUTES TO EMERGENCY MANAGEMENT AND TEXAS TECHNOLOGY MAGAZINES.



# Falling Between the Cracks

Agencies work to remove online obstacles for individuals with disabilities.

**M**ost of us love e-government. We're discovering that in many cases, no one can serve us better than ourselves. Customer service expectations have less and less to do with human-to-human interaction and more to do with human-to-technology interaction. Automated back-office processes and tools enabling citizens to interact online with government have yielded revolutionary conveniences.

However, it's easy to forget that government's IT advances can create special challenges for people with disabilities. Sometimes programmers unintentionally design Web portals in ways that are difficult to decipher for software designed to read text aloud to visually impaired citizens. Also, how are the blind supposed to know what graphics convey? Many state and local governments have ambitious video streaming initiatives connected to their

portals. What good are those videos to the deaf? Some portal designers are strategizing ways to include readable text.

But IT obstacles for disabled citizens involve more than portals. In 2007, the Indiana Family and Social Services Administration (FSSA) used IT to end its practice of assigning individual caseworkers to food stamp recipients. Any caseworker answering the phone now uses a centralized IT system to help all clients. The American Civil Liberties Union (ACLU) of Indiana insists citizens with disabilities often require interaction with caseworkers who are accustomed to dealing with their particular disabilities. Can IT be adjusted to address those exceptions?

Consulting firms specializing in the Americans with Disabilities Act (ADA) help governments and businesses comply with that federal law. When governments modernize their

technology infrastructures without taking the ADA into consideration, projects aimed at easing citizen burdens occasionally make those burdens heavier.

## Common Oversights

Austin, Texas, IT workers frequently discover obstacles to accessing the city portal for disabled people. The Austin Department of Communications and Technology is redesigning its portal using an open source content management system called Plone. The agency can program Plone to prevent those obstacles to accessibility from entering the portal in the first place.

Problems are usually caused by code that wasn't written with screen reader software in mind, said Chris Florance, public information officer of Austin. The software reads Web text aloud for visually impaired people. Difficulties often involve the site's HTML code. For example, in the past, the city's Web team didn't always end each text paragraph's HTML code with a "closed tag," which tells the software that a paragraph has ended. Without the closed tag, the reader software spews out the text without the necessary breaks in speech, making it difficult for listeners to understand. Programmers should also pay extra attention to HTML when creating tables of text, said Florance.

"Let's say you have a table of cities and populations," he said. "If you're using good ADA-compliant HTML code, the reader software will read it as 'Kansas City, Mo. — population 1 million; Jefferson, Mo. — population 200,000; Austin, Texas — population

**Synopsis:** State and local governments work to remove the special obstacles that IT advances create for individuals with disabilities.

**Agency:** Austin Department of Communication and Technology, Indiana Family and Social Services Administration.

**Technologies:** Screen-reader software Web portals.

**Contact:** Christopher Florance, public information officer, Austin, Texas, 512/ 974-2980, [christopher.florance@ci.austin.tx.us](mailto:christopher.florance@ci.austin.tx.us).



a million and a half.’ But if the HTML was set up a different way, it might look OK on the page to a viewer, but the reader software might read it as ‘Austin, Texas, Kansas City, Mo., Jefferson, Mo.,’ and then it would start reading the populations. It could mess up the sequence.”

Dynamic portals — which combine several forms of programming content for creating text, graphics, video and interactive functions — pose another accessibility challenge. When the portal combines these functions, the underlying code may be interconnected in ways that confuse the reader software. Simply put, the reader software can’t parse the text

PDF. Reader software can’t decipher JPEGs or PDFs of JPEGs. This led to hours of labor creating a new document in Microsoft Word for PDF conversion, said Florance.

Government portal designers also must keep colorblind people in mind. For instance, a table with a light red or green background could be hard for these citizens to read, said Florance.

As video streaming becomes the rage among government portal designers, Web teams must establish strategies for incorporating readable text with those videos for people with hearing disabilities. For streaming City Council meetings, Austin plans to include a

**“We understand there are going to be challenges people with disabilities face when accessing the page. We don’t want to create any kinds of extra barriers.”**

*Chris Florance, public information officer, Austin, Texas*

code, which it’s supposed to read, from other code that it should ignore. Remedies exist for this, said Matthew Esquibel, Austin’s Web supervisor. For example, his team will program the text using XML, enabling the reader software to distinguish the text code from the rest.

Often city portals use photos and graphics to communicate messages not described by text. For example, a Web page about city parks might show a park is well suited for soccer by displaying a photo of a soccer game held there. How is a visually impaired person supposed to receive that visual communication? Florance said Austin’s forthcoming content management system will ensure all graphics and photos on the site have metadata, which gives the reader software hidden, readable text describing the images.

Florance said the content management system’s ability to flag content with potential accessibility issues is critical. Portal content comes from numerous employees working in the city’s 30 agencies, and it can be difficult to ensure all the diversely sourced material is ADA compliant. For example, an Austin agency once posted a PDF document relevant to blind people that, for some reason, had been converted from Microsoft Word to a JPEG image before being converted to a

link to the meeting transcript. The city uses a California-based transcription service for transcribing the council meetings that are broadcast on Austin’s local cable TV channel. Florance said the city also is considering a mechanism for putting those transcripts into on-screen subtitles.

“We understand there are going to be challenges people with disabilities face when accessing the page,” Florance said. “We don’t want to create any kinds of extra barriers.”

## Automation Obstacles

While many bid good riddance to government’s “human touch,” some individuals with disabilities, especially cognitive disabilities, rely on it. The Indiana ACLU recently filed a lawsuit against the Indiana FSSA. The ACLU contends that the agency’s automated system kicks citizens off food stamps for non-compliance without explicitly telling them why they are noncompliant. The ACLU also insists the automated system disenfranchises the disabled by removing their specially assigned caseworkers.

Gavin Rose, attorney for the ACLU of Indiana, said previously the caseworkers serving clients with disabilities could monitor those clients and jump to action if a necessary form wasn’t filed.

“Dementia, schizophrenia and other mental [disorders] make it all but impossible to communicate with someone who doesn’t already know about that [disorder] or doesn’t know what’s going on in the client’s given situation,” Rose said.

Mitchell Roob, secretary of the FSSA, dismisses as myth the idea that caseworkers monitored files and watched their clients’ backs before the automation.

“It’s a nice idea; I wish it had happened,” Roob said. “I wish we operated the system really well, but we didn’t. When I became the secretary, we were first in child deaths and last in Welfare to Work [a program designed to help welfare recipients transition to jobs]. Under any measure, we were an unmitigated disaster.”

“We literally had caseworkers with cases of files containing 500 and 600 cases. In most instances, they didn’t have any ability or time to help that disabled person,” he said.

Before automation, the agency was plagued by inefficiencies and incompetent customer service, Roob recalled. The FSSA hasn’t yet quantified how automating the caseworker process has improved that situation. The project is still in the pilot phase with only 52 of the state’s 92 counties participating. The FSSA hopes to roll the project out completely by the end of 2008.

Roob recommends citizens who need specially assigned caseworkers visit their local FSSA offices and develop relationships with caseworkers there.

“We have caseworkers in all of our county offices today. We haven’t closed a one,” Roob said.

Rose said the solution might not be that simple. He said he has a client in Indiana with severe nerve damage in her ears who visited an office when the phone option didn’t work. The office was staffed with just two busy workers. It might be hard to develop a caseworker relationship in that environment, he said.

Roob pointed out that the FSSA has a few special divisions that disabled citizens could call for help instead of the agency’s main line — either the FSSA’s Division of Disability and Rehabilitative Services or the Division of Mental Health and Addiction, depending on the particular disability.

Roob wasn’t sure if the FSSA’s automated system enables caseworkers to refer disabled citizens to these programs. **GT**

## Florida Division of Emergency Management spearheads new statewide GIS strategic plan.

**S**ometimes out of a crisis comes opportunity. The active Atlantic hurricane seasons of 2004 and 2005 — eight hurricanes impacted Florida, killing 208 residents — spurred government officials to improve everything from weather forecasting to the Federal Emergency Management Agency's chain of command.

In Florida, post-storm data analysis illustrated how better statewide coordination of geospatial information during the hurricanes likely would have saved more lives and enhanced emergency managers' efforts to evacuate part of the state's 19,500 square miles of coastal zone. The Florida Division of Emergency Management (FDEM) initially took the lead in formulating a statewide GIS strategic plan.

"Our director, Craig Fugate, has a pretty simple charge: In the absence of leadership, become one," said Richard Butgereit, GIS administrator of the FDEM.

In 2007, the Federal Geographic Data Committee awarded the FDEM a grant to develop strategic and business plans for statewide geospatial data coordination in support of the National Spatial Data Infrastructure's (NSDI) Fifty States Initiative, an effort to mesh states' coordinated efforts with the federal government. To put together the strategic plan, the FDEM hired Fugro EarthData Inc., a geospatial products and services company, which reached out to 1,000 Florida GIS professionals for input. The final version of the strategic plan was published in April.

"I was surprised about the almost ubiquitous support for coordination activities because I expected some resistance from the GIS community," said Fugro EarthData Vice President Martin Roche.



PHOTO BY MARK WOLFE/FEMA

**Synopsis:** The Florida Division of Emergency Management (FDEM) organizes a strategic plan for statewide GIS coordination. Florida is "lagging behind" other states' efforts, but it has widespread regional efforts and a large base of GIS professionals.

**Agency:** FDEM.

**Technology:** GIS.

**Contact:** Richard Butgereit, GIS administrator, FDEM, [richard.butgereit@em.myflorida.com](mailto:richard.butgereit@em.myflorida.com).

Though there's broad support for cooperation, the state's strategic plan indicates Florida still lags behind other states' coordination efforts. In addition, the state won't be able to implement the strategic plan's recommended goals without sustained funding from the Florida Legislature.

### Playing Catch-Up

If implemented programmatically, Florida's statewide GIS coordination plan urges several major improvements, including: creating a new Geospatial Programs Office staffed with a full-time GIS coordinator; expanding upon geospatial data "stewardship" programs; and

creating a statewide Geographic Information Council made up of respected professionals.

In addition, the plan calls for sustaining and expanding the state's public data clearinghouses that are currently located at the University of Florida and Florida State University. As it now stands, there's confusion within Florida's GIS community about where to find specific data layers, and the structure needs to be formalized and consolidated, Butgereit said. As he explained it, Florida should hang onto its existing resources and build "a new lobby" to access the data.

"Some of the state agencies are providing data online," Butgereit said. "Some universities are definitely working to provide data



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— Florida International University has positioned itself as the provider for lidar [light detection and ranging] and elevation data. The Central Florida GIS Users Group has done a really good job of providing a lot of data available in their region.

With the improvements in place, Al Hill, Volusia County's GIS manager and chairman of the Central Florida GIS Steering Committee, said Florida agencies could contribute to programs such as Imagery for the Nation, a federally driven plan to provide 1-foot resolution for aerial imagery that would be updated regularly via flyovers. He added that better coordination would also help local jurisdictions find federal grant money.

"It's not practical to expect the federal government to coordinate with a half-dozen agencies, especially when some of them are less formal than others. So I can understand their approach is, 'We've got 50 states; there should be 50 points of contact.' We don't have that in Florida," Hill said.

The strategic plan isn't the first time Florida has tried to consolidate and centralize GIS coordination. Over the last 20 years, the state has made at least three efforts to form organizing bodies, such as the Growth Management Data Network Coordinating Council and the Base Mapping Advisory Committee. The most recent iteration came in 1999 with the Geographic Information Board's formation, but it lasted only one year and was defunded.

"That's what we're hoping to do with this new plan, get us back on our feet," Butgereit said. "I believe that when push came to shove, we operated very well when Florida most needed it — during our active hurricane seasons in 2004 and 2005. With this coordination in place, we would have done an even better job responding to those needs," said Butgereit, who became a *de facto* champion of statewide coordination through his role as Florida's delegate to the National States Geographic Information Council (NSGIC).

Florida ranks 49th among states for GIS coordination, as defined by the NSGIC's benchmarks. Of nine criteria, Florida has implemented only two: The federal government works through the statewide coordination authority, and responsibilities for developing the NSDI and the state clearing-house are assigned. In other categories, Florida lacks the necessary criteria, including a politi-

cal "champion," a statewide coordination office linked to the state CIO, a full-time paid coordinator position and sustainable funding sources to meet program needs.

"Strategically I think we need to promote the use of GIS information and analysis to improve decision-making," Butgereit said. "Here at the state emergency operations center, we see these data and analyses through decision-making and affecting our citizens' health, safety and welfare. I think the same data and analysis, can be used to support our environment and economy."

## Local Coordination Thrives

Though Florida trails other states in coordination metrics, the state certainly has a strong foundation of GIS expertise in its work force: The GIS Certification Institute has certified more GIS professionals in Florida than any other state.

Furthermore, the new strategic plan concluded that regional, volunteer-driven user communities, such as Central Florida GIS, the Seven Hills Regional User Group and county-level organizations enhance the state's GIS capabilities by organizing workshops and hosting portals.

"Unfortunately it's like a lot of the [U.S. presidential primary election] voting that goes on in Florida — we're not a counted group because we weren't included," Hill explained. "If the survey was looked at based on regional groups, the state is actually doing quite a bit."

Several collaborative GIS projects are in progress in Florida. The FDEM is revamping its regional evacuation plans using precise elevation data created using lidar. According to the strategic plan, several agencies, including the Florida Department of Transportation, the Department of Revenue and regional water districts, are providing aerial photography for the project. The U.S. Geological Survey (USGS) is providing the state with funding through "cooperative assistance awards."


The Florida Department of Revenue recently posted parcel data online, Butgereit said, and other projects for roads, hydrography and orthoimagery are under way.

But there's the looming problem of funding. The Florida Legislature is expected to cut the state's budget in fiscal 2009. The cost

## National States Geographic Information Council's GIS Coordination Success Criteria:

- A full-time, paid coordinator position is designated and has the authority to implement the state's business and strategic plans.
- A clearly defined authority exists for statewide coordination of geospatial IT and data production.
- A statewide coordination office has a formal relationship with the state CIO.
- A "champion" is involved in the geospatial coordination process.
- Responsibilities for developing the National Spatial Data Infrastructure and state clearing-house are assigned.
- The ability exists to work and coordinate with local governments, academia and the private sector.
- Sustainable funding sources exist to meet project needs.
- GIS coordinators can enter into contracts and become capable of receiving and expending funds.
- The federal government works through the statewide coordination authority.

of these GIS improvements is unclear until a business plan is finished. If the strategic plan isn't funded, the strategic plan's steering committee would need to rely heavily on funding from the USGS to get the job done. According to Alexis Thomas, project director for the University of Florida's Geo-Facilities Planning and Information Research Center, securing funds from the federal government may be just as difficult.

"I definitely hope it carries through. This is a bad budget year for not only the state, but the feds as well," he said. "I'm cautiously optimistic." 

FOR MORE INFORMATION ABOUT FLORIDA'S STATEWIDE GIS COORDINATION AND TO DOWNLOAD THE STRATEGIC PLAN, GO TO [WWW.FLORIDADISASTER.ORG/GIS/CAPGRANT](http://WWW.FLORIDADISASTER.ORG/GIS/CAPGRANT).





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# It's a... Car?

**S**an Francisco police officer Rich Lee vividly remembers the first time he tested the Rumbler in real traffic conditions.

It was a day when the manufacturer, Federal Signal, was in town to show off the Rumbler (or if you prefer, the Intersection Clearing System) to officials in various city departments and there was a photo session scheduled near the Golden Gate Bridge. It also happened to be budget week for the city and a day when the San Francisco police chief was at City Hall procuring dollars.

On his way to the Golden Gate Bridge for the photo session, Lee's BlackBerry alerted him. It was the chief at City Hall requesting Lee's attendance.

"I said, 'Can it wait 20 minutes?'"

The answer was no.

Lee knew what he had to do.

He tapped his horn, activating the Rumbler. On went the siren, red and blue lights flashing, and then the unique feature of the Rumbler — the high-output speaker and subwoofers bounced low-frequency sound waves off buildings and vehicles.

"I'm watching people two and three blocks ahead of me, frozen with their hands covering their ears," Lee said. "Cross traffic was at a standstill as I went back to City Hall. They were stopping to see what was going on. If it had been a regular siren, people would have pulled in front of me like, 'What do you want?' but everyone got out of the way."

That day Lee knew the Rumbler would work as needed during a crisis.

Now San Francisco has two 2008 Ford F-450s equipped with the Rumbler, which consists of a slave amplifier, a timer that's activated when the driver taps the horn, two



The vibrating Rumbler clears the way for cops on busy streets.

speakers that operate like subwoofers and a mounting bracket. The list price for the whole shebang is \$685, according to Carlee Sanchez, senior district sales manager for Federal Signal.

"It's an additional tool to combat distracted drivers, whether they have the stereo on, air conditioning, cell phones or general ambient noise," Sanchez said. "It just provides a contrast to the typical high-frequency siren. It mimics the tone but it's done at a much lower hertz level. That alone gets attention, but then you will actually feel it. It's not an overwhelming violent shaking, but a subtle feeling like a freight train kind of a rumbling."

According to manufacturer specifications, the Rumbler interacts with 100/200-watt siren amplifiers and provides a secondary, low-

frequency tone. The low-frequency tone can penetrate and shake solid materials, allowing anyone nearby to actually feel the sound waves and perhaps even witness their rear-view mirror shake.

The Rumbler's are being tested or used in a few cities across the country, including New York, Washington, D.C., and Elk Grove, Calif. Californians are just now getting a taste because of more stringent vehicle codes concerning light output and sound that had to be addressed. California agencies were free to use the Rumbler as of December 2007.

San Francisco purchased the trucks and equipped them with the Rumbler in case the need arose to haul equipment through city streets during a disaster. For example, the

**Synopsis:** A new, vibrating siren helps clear the way for police on patrol.

**Agency:** San Francisco Police Department.

**Technology:** Intersection clearing system.

**Contact:** Rich Lee, officer, [richlee@sfgov.org](mailto:richlee@sfgov.org), 415/553-1221.



medical examiner has a mobile morgue and trailers that would need to be towed by a heavy-duty vehicle. "We have trailers with weapons of mass destruction chemical suits and medical equipment ready to haul, but we had no way to tow them," Lee said.

"We are a target," Lee explained. "The Golden Gate Bridge is a target, and we have other buildings that are considered high-risk and are targets."

San Francisco's trucks are equipped with the Rumbler and a light bar with two modes, one for police and one for other city personnel, including the medical examiner. Police have a special key that activates the red and blue lights and the siren. Other city officials use the amber-colored lights. Other than that, the trucks look like a regular city vehicle; they're white with city decals.

"The concept of these trucks is to be available citywide for any employee who needs to get in the truck and tow trailers full of equipment," Lee said. Since it was

a homeland security grant that yielded the funds, the police department was tasked with purchasing and maintaining the vehicles so it asked that they be vehicles police could use, Lee said, thus the red and blue light bars.


The two trucks were purchased in March with the grant, and Lee said the city plans to buy two more, one for crime scene investigation and another for the SWAT team.

There's really nothing for the officer to learn, except that when he taps the horn, it produces 10 seconds of rumbling, and if he wants 10 more seconds, he taps the horn again. "Traditionally when the officer taps the horn, the siren would change tone," Sanchez explained. "It would change from a wail to a yell, so a faster pattern, and then the light bar pattern would speed up. Now when the horn is tapped, the Rumbler will kick on and the light bar will speed up and go into intersection clearing mode.

"It's a low frequency, so — in addition to providing a contrasting sound where

you have a high-low — it's actually a sub-woofer, so there's actually tactility as well as sound," Sanchez said. "You actually feel this as you would feel the bass coming from a vehicle."

The Rumbler's intensity depends on the surroundings, Sanchez said. "It was designed for urban areas. The ideal performance is in a very heavily congested area where there's something to reverberate off of, such as heavy traffic, a road with K rails [concrete barriers], in between buildings, semitrucks, when there is something for that sound to actually bounce off of, it becomes more effective. The more concentrated the area, the more you pick up on the feeling of it and not just the sound," Sanchez said.

"It doesn't blast your ears when you're inside because the speakers are on the front," Lee said. "But it's a different feeling." 

 VISIT [WWW.GOVTECH.COM](http://WWW.GOVTECH.COM) TO SEE THE RUMBLER IN ACTION.

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# Digital State of the Art

BY STEVE TOWNS | EDITOR

Utah topped the Center for Digital Government's (CDG) 2008 Digital States Survey after delivering the clearest evidence yet that electronic delivery of government services has matured.

To reduce energy costs and carbon emissions, Utah Gov. Jon Huntsman Jr. announced in June that most state offices would be closed on Fridays. With more than 800 state government services online — many boasting high user adoption rates — Utah could close physical offices statewide without inconveniencing citizens.

Paul Taylor, chief strategy officer for the center and a member of the Digital States judging panel, said Utah's move signals a tipping point for electronic government services.

"Utah demonstrates that you can close offices on a normal office day, and people can still conduct real business with their government," said Taylor. "This is what the ATM did for the banking industry. It reduced branch hours, but cash was still available. Ten years later, we're reducing government office hours, but government's still available."

Utah's winning performance in this year's survey — conducted biannually by the CDG — caps a steady rise in the state's rankings. Utah finished eighth in 2004 and fourth in 2006.

Two of the survey's most consistent performers trailed Utah this year. Michigan finished second after topping the survey in 2004 and 2006. Virginia — this year's third-place finisher — took second in 2006 and third in 2004.

The 2008 survey measured state governments' progress on an array of citizen self-service technologies — including Internet portals, applications and Web 2.0 features like blogs, wikis, social networks and mash-ups. The survey also evaluated state IT programs overall, with measures of the alignment of architecture, infrastructure, policy, planning, methodologies and organizational maturity.

## Focus on Service

Deploying e-services has been a long-term goal for Huntsman, said Utah CIO Steve Fletcher.

"Our governor really has been focusing on trying to provide not just better IT, but also better services for our citizens," Fletcher said. "He's also very concerned about energy consumption and being green. So our performance in the 2008 survey is the culmination of a lot of things."

The popularity and availability of e-government services were key in Huntsman's decision to implement a four-day workweek for most state operations. "The only way he could pull that off is if we have enough online services so that citizens still had access to government," Fletcher said.

Utah — which claims to have more online services than any other state — has steadily moved common government transactions online. The Web is now the state's default delivery channel for everything from fishing and hunting license purchases to various law enforcement and social service transactions.

And unlike e-government's early days when electronic services struggled to gain traction, online interactions account for most transactions for many Utah state services.

For instance, 64 percent of eligible Utah drivers renew drivers' licenses online, versus 31 percent by mail and 4 percent at a DMV office, according to the state. In addition:

- **Seventy-one percent** of hunting and fishing licenses are purchased online.
- **Sixty-seven percent** of criminal background checks are performed electronically.
- **Eighty-three percent** of vehicle identification number validations performed by law enforcement agencies are done online.
- **Fifty-four percent** of birth, marriage, divorce and death certificates are ordered via the Web.
- **Seventy-eight percent** of adoption and foster parent applications are submitted electronically.
- **Eighty-eight percent** of business registration renewals are done online.

Fletcher attributes the high adoption rates to several factors, the foremost being close attention to the business motivations for putting a particular service online.

"It's not about just putting a bunch of stuff online," he said. "You really need to work the business agencies to determine what you're trying to accomplish. If the business really drives the process and sees value in providing a service, then you get a much better adoption rate."

In addition, Utah boasts a computer-literate population that's hungry for e-government transactions. "We have a very willing



audience; they're capable and don't mind going online to get services," Fletcher said.

## National Snapshot

The long-running Digital States Survey provides a national benchmark for states' progress on doing business electronically.

"Since our inaugural survey in 1997, we've seen a steady advance in quality of technology solutions implemented by state governments for their citizens," said Cathilea Robinett, executive director of the CDG. "The bar is constantly being raised by public-sector technology leaders creating top-notch services."

The 2008 survey — which was sponsored by Verizon Business — reviewed all 50 states and shows several e-government offerings reaching maturity.

More than 80 percent of states provide online transactions for business and individual tax filing and payment, unemployment insurance applications, professional license renewals, motor vehicle registration renewals, and Uniform Commercial Code (UCC) searches and filings. Deployment rates for most of these services have changed little since the 2006 survey, indicating these offerings are almost fully built out nationwide.

In contrast, online customer care applications grew significantly, as state governments responded to citizens' desire for after-hours help with e-government-related problems.

"These customer care applications are there to make transactions go right," Taylor said. "They can handle problems with credit card numbers and technical glitches. For governments, it's the new cost of doing business."

States also are putting considerable effort into Web 2.0 applications, according to the 2008 survey. More than one-quarter of states created wikis for sharing collaborative information. Ninety percent of states use really simple syndication (RSS) feeds to broadcast information to interested users and 72 percent use podcasts within executive branch agencies. Half of the states use text messaging, 46 percent use mash-ups and 44 percent use blogs.

## Behind the Scenes

Along with measuring electronic service delivery, the 2008 survey also evaluated states


on planning and policy issues that are critical to digital government success. Among the findings:

- **Eighty-three percent** of states report having a strategic IT plan that's been updated in the last two years.
- **Seventy-three percent** of states are considering review or reform of their IT-related procurement policies and practices in the next year.
- **Seventy-eight percent** of states have project review mechanisms and project management processes in place.
- **Eighty-two percent** of states have an existing shared services strategy, but only 46 percent have proven the concept through successful pilots and production-level services.
- **Thirty-nine percent** of states report having at least one production-level use of software as a service (SaaS).

For the first time, the 2008 survey also benchmarked states' green IT and sustainability activities. Environmental issues drew growing attention from political

The Top 10		
2008	2006	2004
1. Utah	4	8
2. Michigan	1	1
3. Virginia	2	3
4. Arizona	5	5
5. California	16	26+
6. Washington	16	2
7. Kentucky	8	12
8. South Dakota	7	6
9. Maryland	12	15
10. Tennessee (tie)	10	7
10. Pennsylvania (tie)	20	24

leaders this year, a factor that was reflected in the survey results.

Half of the states said their IT strategies and practices are well aligned with the state's environmental sustainability program. Furthermore, 98 percent of survey respondents said they have consolidated and virtualized data centers and servers. Although consolidation initiatives usually aren't undertaken for strictly environmental reasons, they tend to deliver green benefits like lower energy consumption. 

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## What's in the Water?

The U.S. Environmental Protection Agency (EPA) has created a Web-accessible database for water-quality assessments and total maximum daily pollutant loads.

The new site, [www.epa.gov/waters/ir](http://www.epa.gov/waters/ir),

improves access to state and local data and increases county leaders' ability to make informed water-quality decisions, according to Carrie Clingan, National Association of Counties community service associate.

The site lets users view dynamic, continuously updated tables and charts that summarize state-reported information for the whole nation, for individual states and waters, and for the 10 EPA regions.

—NATIONAL ASSOCIATION OF COUNTIES

## Ranking Government Readiness

Respondents to a recent survey ranked governments more prepared for crises than commercial businesses or nonprofits. The survey was conducted for a crisis-readiness study published by New York University's Center for Catastrophe Preparedness and Response and the Public Entity Risk Institute. Results are based on 468 responses from readers of *Governing*, *MIT Sloan Management Review* and *Chronicle of Philanthropy*.

### Crisis Readiness by Sector

Sector	Very ready	Somewhat ready	Not ready
Government	51%	44%	15%
Business	20%	21%	29%
Nonprofit	29%	34%	56%

## Tower of Power

Construction is expected to start soon on the rotating Dynamic Tower in Dubai, United Arab Emirates, which will use wind and solar power to generate more power than it consumes. Forty-eight wind turbines will be sandwiched between the tower's 59 independently rotating floors. Each turbine will create 0.3 megawatts of power, and the structure's roof will be covered by solar panels, adding to the overall power production. The tower's designers say it will produce 10 times the energy it needs. A second Dynamic Tower is expected to be built in Moscow. — *Blorge.com*

## Protecting Your Palate

European researchers developed a system for quickly spotting food-borne pathogens and contaminants in the field. A prototype of the new technology is designed to test food for campylobacter and salmonella — the most common culprits of food poisoning — in less than an hour. Researchers intend to test the device — described as a “lab

on a chip” — in Danish poultry farms.

The technology is a product of the European Union-funded OptoCard project, an initiative to create chips that spot pathogens and contaminants in food and water supplies, as well as test human blood for cancer, hepatitis, AIDS and flu. The new test chip uses microelectromechani-

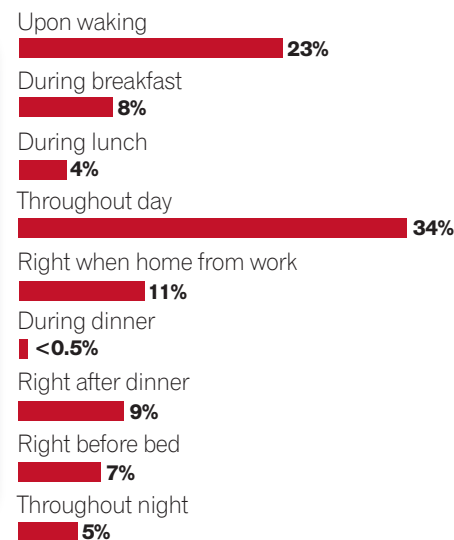
cal systems, including sensors, fluid channels and optical components.

— DAILY TECH

## You've Got Mail

With the increase in broadband and wireless technology, it's easier to connect to the Internet and appease users' obsession with e-mail. The following shows what time of day users check their e-mail.

Source: AOL e-mail addiction survey: *Final Report*.



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## Travel Ease

The **Targus** Zip-Thru 15.4-inch Corporate Traveler laptop case is designed to eliminate the trouble of removing laptops from their case when going through airport security. The divided case isolates the laptop on one side to allow for clear X-ray scanning. The case includes a padded shoulder strap with nonslip coating to keep the case in place. It's made of durable ballistic 1680 denier nylon, measures 16.93x6.5x13.98 inches and weighs 3.74 pounds. [targus.com](http://targus.com)



## Niche Mouse

**Newton Peripherals'** MoGo Presenter Mouse PC combines a wireless mouse and presenter that stores and charges in a laptop's PC/PCMCIA card slots. The business card-size mouse operates like conventional optical wireless mice, with scroll, right click and left click. A button converts the mouse into a presenter remote so users can manage PowerPoint presentations — advance slides, start/escape and blank screens — from 30 feet away.

[www.newtonperipherals.com](http://www.newtonperipherals.com)



## Chameleon

**Dell's** Studio Hybrid PC can be personalized with six optional, external jewel-tone color or bamboo sleeves. The PC contains up to 320 GB Serial ATA hard drive (5,400 RPM), up to 4 GB 667 MHz dual channel DDR2 SDRAM memory and comes with either Intel Pentium Dual-Core or Intel Core 2 Duo processors. The Studio Hybrid's options also includes a Blu-ray disc drive for watching high-definition video and a tuner that lets users watch, pause and record live TV. [www.dell.com/hybrid](http://www.dell.com/hybrid)



## Click Clack

**Das Keyboard's** Professional keyboard features German-engineered gold-plated mechanical key switches that create a distinct "click" with each keystroke to make typing more crisp, decisive and fast. The N-key rollover function registers 12 key presses simultaneously without keys jamming. The keyboard includes two high-speed USB 2.0 ports and a 6.6-foot USB cable. The Professional has traditional QWERTY markings on its keys, and a blank-key version — the Ultimate keyboard — is also available. [www.daskeyboard.com](http://www.daskeyboard.com)



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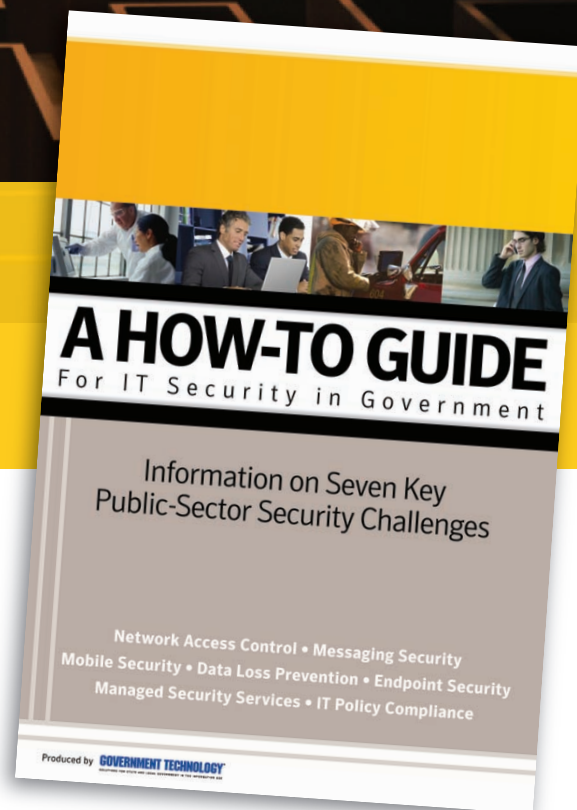
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## K.I.T.

The Verizon XV6900 broadband smartphone with touchscreen.

I can see the smartphone's appeal. Trapped at the airport during a layover — short or long — I may as well try to touch base with the world. Send an e-mail. Check the latest news to see what political or literal hurricanes have occurred lately. It wouldn't matter how small the available device's screen is.

Verizon's version of HTC's Touch smartphone comes in white with a screen that measures 2.8 inches diagonally, which calls for some squinting at first. In comparison, the more recently launched Apple iPhone 3G measures 3.5 inches diagonally. The XV6900's total dimensions are 3.98x.56x2.35 inches. But again, if my choice is utter boredom or an attempt to connect to the world, I could easily spend several hours on this thing. Mobile Reuters gives the top news including photos. My local five-day weather forecast is readily available, with extended AccuWeather predictions another click away.




The touchscreen works OK using my fingers, and even better if I used my fingernails, but the stylus is much more precise for typing on the virtual keyboard. There's a wide range of ways to enter text: a block recognizer, virtual QWERTY keyboard, letter recognizer — which recognized my printing very well — touch keyboard (a 20-key keyboard version), touch keypad (a 12-key version of the keyboard) and the transcriber — an excellent decipherer of printing, cursive or my sloppier mixture of the two.

For contacts, among the heaps of information I could enter, I could attach a picture, list company name, work and home addresses, job title, IM, e-mail addresses, assistant, manager, birthday, anniversary, spouse and children. And then I could hand-write notes in addition to all this data.

On the home screen, upcoming date, time and appointments reminders appear. Logs of recent incoming text messages, e-mails and phone calls also show on the home screen, as well as easy access to weather, an application launcher and ringtone controls.

The 2-megapixel camera isn't the best. The effects include grayscale, sepia, cool (meaning "blue") and negative. Choosing "none" gave me some rather orangey photos. And it's best if subjects remain perfectly still. There's a little delay between pressing the button and getting the shot. Photo capture formats include H.2663, 3GPP2, MPEG4 and Motion JPEG. There are settings for white balance, brightness, self-timer, contrast, saturation, hue and sharpness, but there just isn't much point to all that work. There's a video recording option, too.

In the end, it's a fine package, but don't expect things like Verizon's V CAST Mobile TV or Music. Your favorite IM software — AIM, Google Talk, etc. — won't be there either. This is a business device after all. But there's plenty to keep a person productive. 

## specs

- EV-DO, 1X RTT Capable
- Memory: 128 MB RAM/256 MB ROM
- microSD memory support (up to 8 GB)
- Standard battery 1100 mAh lithium-ion. Usage time up to 210 minutes or standby time up to 250 hours
- Windows Media Player 10
- Internet Explorer Mobile
- Windows Mobile 6 Professional, including Word Mobile, Excel Mobile, PowerPoint Mobile and OneNote Mobile
- Adobe reader LE 2.0
- Weight: 3.95 ounces

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The New York City Technology Forum includes the much anticipated Excellence in Technology Awards Program (ETAP), saluting NYC's IT professionals and managers for their dedication and hard work.





# Blurring the Lines

“I wouldn’t say that it is Microsoft making its peace with the open source community,” said my friend Stuart McKee, national technology officer of state and local government at Microsoft, “but it is a microcosm of an awakening and maturing on all sides.”

We were talking about Open eGov, the open source content management software developed by Newport News, Va., and subsequently merged with PloneGov, a repository of sharable software, with the participation of 55 other government organizations around the world.

“I agree with Stuart. It is a sign of maturity in the software market,” said Andy Stein, IT director of Newport News and champion of the Open eGov collaboration. “It is the responsible thing to do.”

Stein takes seriously his responsibility to expand capacity, share broadly and advocate for what he calls “fair and equitable cost sharing.” That is all consistent with the tenets of the open source movement, but none of it is inconsistent with close ties — organizationally and architecturally — with commercial software providers. In fact, Stein said the next big project for Open eGov is to integrate the platform with Microsoft technologies, such as SharePoint and Active Directory. “Andy is astute on sharing and leveraging platforms that people want in creative ways,” McKee said, noting that almost half of the 130,000 open source projects at SourceForge.net are built on Microsoft’s platform.

The intersection of Microsoft, open source and public-sector IT hasn’t always been this civil. Remember the high-stakes, career-defining dispute between Microsoft

and Massachusetts just a few short years ago? It’s too easy to attribute the changes to a shift from a set of quasi-ideological drivers in the open source movement (Massachusetts) to more pragmatic concerns (Newport News).

The blurring of the lines between commercial and open source software has accelerated in the interim. Consider that respected industry watcher Mark Anderson of the Strategic News Service said that at a post-Bill Gates Microsoft, Chief Software Architect Ray Ozzie is charged with finding the company’s role in cloud computing — where shrink-wrap is no longer king. Consider too that Microsoft now has an open source strategist and he is reportedly proposing a WAMP (Windows, Apache, MySQL, PHP) stack that can be used independently or as a platform for other components, but runs on Windows.

Stein said Open eGov is moving toward a WAMP stack too, but the collaboration needs Microsoft’s help to make the integration work through access to SharePoint and other application programming interfaces — the same stuff the average Microsoft business partner or independent software vendor relies on.

While he is waiting, Stein said Newport News has begun hosting Open eGov as a service for Franklin County, Va., at \$260 per month. Simultaneously the collaboration has extended its membership to Waynesboro and Staunton, Va., and started merger talks with Plone-using Albuquerque, N.M. That leaves him with precious little time to bask in the reflected glory of the J. Robert Havlick Award for Innovation in Local Government, which Newport News picked up from the Alliance for Innovation in spring 2008. [GT](#)

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