GOVERNMENT TECHNOLOGY

VOL 21 ISSUE 08 SOLUTIONS FOR STATE AND LOCAL GOVERNMENT IN THE INFORMATION AGE AUGUST 2008

inside:

Campaign 2.0: Web levels political playing field

Finders keepers: RFID tracks Florida case files

plus:

Virtual security headache

DEBRA BOWEN, CALIFORNIA SECRETARY OF STATE

WHY CALIFORNIA'S TECH-SAVVY SECRETARY OF STATE **PUT THE BRAKES ON** TOUCH-SCREEN BALLOTS

E-VOTING UN-PLUGGED

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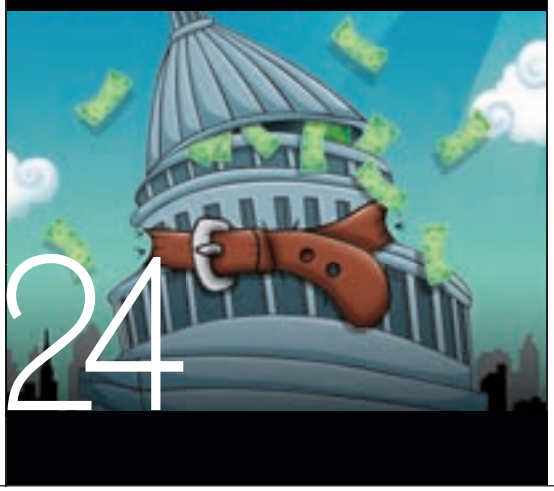

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High-Tech Highways
Intelligent transportation systems (ITS) don't herald a new age of '60s-era transportation futurism. There will be no flying cars or downtown monorails. What ITS can do, however, is make the current traffic situation more bearable. Find out how in the September issue of *Government Technology*.

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A Politician Who Gets 'IT'

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Is it ironic one of California's most technologically adept public officials essentially outlawed the use of touchscreen voting machines? Not really, according to Secretary of State Debra Bowen.

Bowen — who explains her e-voting decision in this month's cover story — set strict limits last August on the use of touchscreen technology, formally known as direct-recording electronic voting machines. In her ruling, she cited a number of troubling security flaws in the systems, which threatened the integrity of electronic balloting. The move forced counties to revert to older voting technology for the state's Feb. 5, 2008, primary and the upcoming November presidential election.

So what's the deal? Bowen has a long history of leadership on IT issues, starting with her efforts as a rookie state Assembly member to put state legislative information online in 1993. But in this instance, her technology experience raised a red flag.

"I found that the more time someone has spent on the inside of the software and computer industry, the more likely they are to express to me their concerns about relying on computers for tallying and recording the vote," Bowen said, adding that without her own IT background, she would have had a tough time understanding the issues at play.

Presumably the kinks in touchscreen voting eventually will be ironed out. But in the meantime, Bowen's ruling — which recently earned her a Profile in Courage award from the John F. Kennedy Library Foundation — illustrates the value of electing leaders who understand and are interested in technology. Given that technology is part of everyday life for most Americans, political leaders can scarcely afford to ignore these issues or shrug them off as the "IT guy's problem."

Another feature in this month's issue may hold a few clues to how well this year's political candidates — or at least their campaign staffs — understand the business use of technology. *Government Technology* Associate Editor Chad Vander Veen looks at how candidates at all levels are using Web 2.0 to raise money, engage voters and spread their messages. Perhaps most intriguing are several young candidates for local offices who have made low-cost, blog-intensive Web sites a key part of their campaign strategies.

As these 20-somethings work their way up the political ladder, IT-savvy leaders will become the norm, rather than the exception. And that'll be a good thing. GT

STEVE TOWNS
EDITOR

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BY CHAD VANDER VEEN
ASSOCIATE EDITOR

Should the Inside be Out?

As I write this I am feeling mixed emotions. I'm sure most of my fellow Sacramento Kings fans are as well. News broke that disgraced NBA referee Tim Donaghy, convicted of betting on games he officiated, claimed in court documents that a certain seven-game playoff series in 2002 was rigged for the league's benefit.

The only series from that year to go seven games was the fabled contest between the Kings and the vile Los Angeles Lakers. It just so happens that Game 6 of that series went down as one of the most shoddily officiated games in sporting history — so much so that observers across the country suspected it of being rigged to ensure a Lakers victory. In fact, it was so bad consumer advocate Ralph Nader filed a letter with the NBA demanding the league investigate the "notorious officiating."

This latest incident is another black mark for the NBA, a company that goes to great lengths promoting a fan-friendly image. And since the Donaghy scandal, the NBA says its operations have become more transparent. It's this transparency that league commissioner David Stern maintains is guarding against corruption.

But the truth is there have long been suspicions that NBA officials routinely and purposely alter the course of certain games. When it comes down to brass tacks, the NBA is a business enterprise first and an athletic competition second. That being the case, it certainly makes financial sense that large market teams like Los Angeles reach the league's pinnacle series. It also makes financial sense for high-profile series to be extended as long as possible. And from a business perspective, it makes no sense at all for the NBA to actually be transparent.

In government, there is a constant call for agencies to be transparent. Many people argue they should be able to see where money is coming from, where it is, and where it goes. After all, government is of the people, by the people and for the people, right? Earlier this year, *The Sacramento Bee* provoked outrage when it published a California state employee database that listed names, positions and salaries. The newspaper argued public employees' salary information is, in fact, public. However, many public employees were furious, claiming their privacy had been violated. Had it? Did it ever exist in the first place?

Despite the outrage, the question remains: Shouldn't the public be able to find out whatever it wants regarding government? As for the private sector, if business is on the up-and-up, there shouldn't be anything to hide. That's dangerous logic. Besides, it's far easier to not be transparent and probably more profitable too. Why would any organization be transparent if it doesn't have to be? Government could take a page from the NBA by simply appeasing the masses with an illusion of transparency. That must have been what Stern thought. That is, until a man he thought he'd seen the last of called foul. GT

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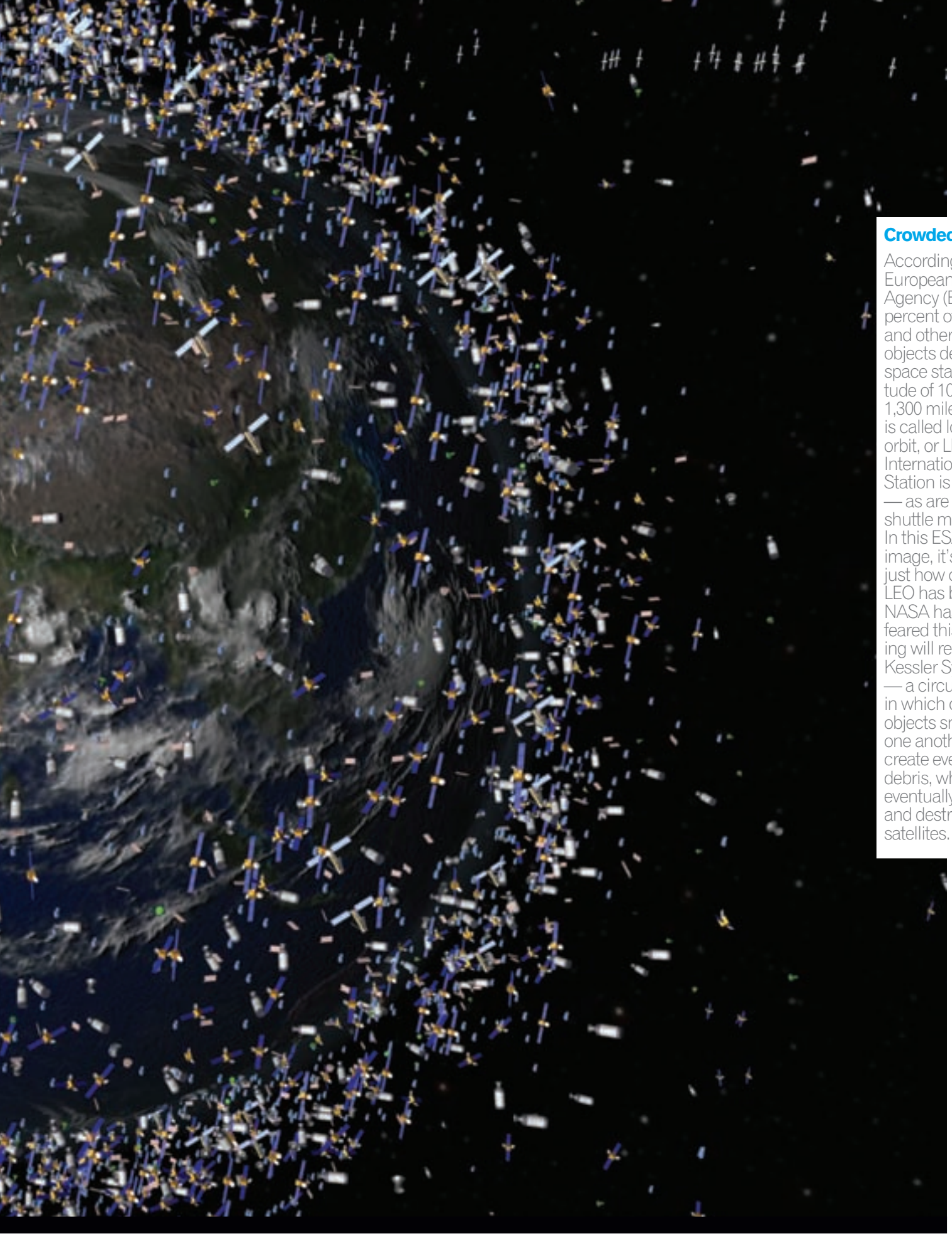

Crowded Skies

According to the European Space Agency (ESA), 80 percent of satellites and other man-made objects delivered into space stay at an altitude of 100 miles to 1,300 miles. This zone is called low Earth orbit, or LEO. The International Space Station is in LEO — as are all space shuttle missions. In this ESA-created image, it's clear just how crowded LEO has become. NASA has long feared this crowding will result in the Kessler Syndrome — a circumstance in which orbiting objects smash into one another and create even more debris, which might eventually impact and destroy vital satellites.

on the Scene

Former Health IT Czar Speaks at California Forum

SACRAMENTO, CALIF. — Industry professionals and policymakers gathered in June to discuss California's health-care system and how it can be measured and improved. IT took a prominent place at the State of Our Health Forum sponsored by pharmaceutical company AstraZeneca.

Dr. David Brailer, who from 2004 to 2006 served as the U.S. Health and Human Services Department's national health IT coordinator, spoke about health IT's potential to improve care. Brailer said electronic health records are inevitable. The bigger issue that still must be addressed is interoperability. In a discussion following Brailer's speech, at least one panel member viewed interoperability

as achievable while another looked to the next challenge: avoiding data overload for caregivers.

Among other changes, Brailer predicts technology will conjure a more empowered consumer. Brailer said health-care professionals will find themselves pushed aside by search engines, as patients research their options and demand more say in their care. Panel members agreed that providers would have to adjust to a more informed and empowered patient.

— EMILY MONTANDON, ASSOCIATE EDITOR

Hot Topic: Climate Change

TORONTO — Climate change was a popular topic of discussion at the World Conference on Disaster Management in mid-June.

Northrop Grumman's **Karen Scott-Martinet** asked, "What if climate change is not 'disaster as usual?' What are the tipping points if some things happen quickly, and can we adjust?"

Scott-Martinet, an integrated systems sector contingency planner for the defense contractor, outlined several drastic measures humans could take to cope with climate change:

- implanting devices that will help them tolerate climate change;
- wearing suits that regulate body function;
- downloading themselves into computers for a virtual existence;
- turning entirely to engineered food products; and
- building spaceships and leaving Earth. — JIM McKAY, JUSTICE AND PUBLIC SAFETY EDITOR

Support for EMRs

SAN FRANCISCO — Accenture hosted in June the last of three town hall meetings here to gauge citizen viewpoints on health-care challenges and solutions. The gatherings — also held in Miami and Detroit — let Accenture and its partner, The Council for Excellence in Government, test citizen receptivity to a national electronic medical record (EMR) system. The possibility of U.S. government-supported universal health coverage could make EMR infrastructure critical to managing such a massive, complex system.

Meeting attendees were surprisingly open to EMR, said Ken Dineen, global managing director of Accenture's health industry practice. The company's poll showed **79 percent** support for EMRs among Miami citizens, **59 percent** in Detroit and **74 percent** in San Francisco. Privacy and security concerns about such a system are common objections.

— ANDY OPSAHL, FEATURES EDITOR

Govtech.com Hot List

Here are the 10 most popular stories on Govtech.com from June 2, 2008 to July 2, 2008.

1. **Cloud Computing, Microsoft Surface and Other Disruptive Technologies** Innovative approaches reshape interfaces, infrastructure and intelligence. www.govtech.com/gt/366260
2. **911 Systems Upgrade to Accept Text Messages and Video** IP-based networks help call centers move beyond voice communications. www.govtech.com/gt/365413
3. **Incident Management Team Helps Hospitals Respond to Disasters** South Dakota hospital system creates team of experts to deploy at affected locations. www.govtech.com/gt/articles/365419
4. **New York State Changes Rules on Use of Consultants by State Agencies** Governor orders new standards and study of consultant use by state agencies. www.govtech.com/gt/369865
5. **Five IT Security Trends to Watch** CIOs must stay on top of these security trends and strategies. www.govtech.com/gt/369900
6. **States Reduce Medicaid Costs with New Technology** Emerging state IT projects show how technology can cut health-care expenses. www.govtech.com/gt/366267
7. **Six Megatrends Reshaping Governments and Societies** IBM says simultaneous, inescapable forces are reshaping governments and communities. www.govtech.com/gt/371595
8. **Local Police Share Secure Wireless Network in Wisconsin** Joint commission runs the network and shared applications. www.govtech.com/dc/articles/366276
9. **Fusion Centers May Strengthen Emergency Management** Developed for counterterrorism, fusion centers gravitate toward all-crimes and all-hazards approaches. www.govtech.com/gt/365393
10. **L.A. City Councilman Lists Priorities** IT makes L.A. more livable — from easing traffic congestion to enhancing public safety. www.govtech.com/gt/366270

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Jim Querry
City of Philadelphia GIS Director

Philadelphia Uses ESRI GIS to Attract New Businesses

Philadelphia understands the need to attract new business investment to the city. It helps revitalize and strengthen neighborhoods and maintains a high quality of life for its citizens. The Mayor's Neighborhood Transformation Initiative looked to geographic information system (GIS) technology to help meets its business development goals.

The GIS Services Group at the City of Philadelphia Mayor's Office of Information Services selected ESRI® ArcGIS® Server to create a Web-based GIS business site selection tool and economic development decision-support application.

Employees across several departments use GIS to inform potential businesses of the economic development initiatives and to help them make informed decisions about potential sites.

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Four Questions for Dale Jablonsky

CIO, CALIFORNIA EMPLOYMENT DEVELOPMENT DEPARTMENT

PHOTO BY GMP DIGITAL

IN MAY, THE GOVERNMENT TECHNOLOGY CONFERENCE HONORED **DALE JABLONSKY**, CIO OF THE CALIFORNIA EMPLOYMENT DEVELOPMENT DEPARTMENT (EDD), WITH AN AWARD FOR INNOVATION AND VISION IN GOVERNMENT. JABLONSKY WAS RECOGNIZED FOR HIS WORK ON IT CONSOLIDATION AND CREATING AN ENTERPRISE ARCHITECTURE.

1

How is the EDD using technology to connect better with its constituencies?

One of the best examples is the federal/state employment tax system we developed with the IRS, several other states, Intuit (the makers of Quicken) and some large payroll companies. We came up with a new data format that's all XML/SOA based. Now businesses that are nationwide don't have to report differently state-by-state. That's an example of connecting the states, federal government and business community in ways that save businesses money by reducing the disparate formats and save states money because they're not handling media.

2

How is California's economic downturn affecting your department?

Our workload is going up, but our funding is going down. There are many examples of workload going up no matter what the drivers are. Security is a classic example. Compared to five years ago, the compliance activity has tripled in terms of keeping systems patched and monitoring resources for internal and external threats. All of those activities are now mandated, and there was no extra staffing to do that. So we had to go for internal efficiencies to meet the mandates of security.

3

How do new computing models, such as software as a service and cloud computing, fit into your future plans?

We've looked at several examples of software as a service. We see immediate applications and return on areas where data security isn't such an important factor. In our environment, we're starting the cloud internally; we're putting a lot of services in our intranet that are only available to our own applications. But it still reduces our application footprint significantly. As the security structure advances, we can move that same security outside of an organization into the cloud. We certainly want to take full advantage of cloud computing.

4

How will you use Web 2.0 applications?

The federal government is pushing us into a new role — more around economic development. We have a lot of employment, education and economic enterprise zone data the state wants to offer to stimulate businesses. We believe Web 2.0 is a great way to present all that disparate data in an intelligent format. GT

BY **STEVE TOWNS, EDITOR**

> "Our workload is going up, but our funding is going down."

WATCH GTtv'S INTERVIEW WITH DALE JABLONSKY AT WWW.GOVTECH.COM/GT/VIDEO

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NET GAINS

THE WORLD WIDE WEB is often dubbed this generation's wild, Wild West. It's a raucous, freewheeling digital expanse rife with every vice imaginable. And like the frontier, the Web is a showcase for an emerging society with its own ideas, goals and morals.

Using the Web in a campaign is a no-brainer. But savvy candidates bank on 2.0 to achieve victory.

BY CHAD VANDER VEEN | ASSOCIATE EDITOR
ILLUSTRATION BY TOM McKEITH

In the pioneering days of yesteryear, men who chose to run for office often traveled the nation by train on whistle-stop tours. In the virtual Wild West, where sex and piracy are still kings, the wooly Web has nonetheless emerged as a pivotal theater in which candidates for office must battle.

The Web is both the small-town train depot and a platform for candidates to gain national exposure — even if the limelight is the last thing a candidate wants. Almost every modern office-seeker — regardless of the office sought — has taken advantage of the Web to some degree. On the national stage, the remaining candidates for U.S. president are investing millions of dollars in their digital campaigns. And on the local level, even city council candidates find that having a handle on Web trends, in particular Web 2.0, may mean the difference between being Wyatt Earp and staring down the business end of his pistol.


2·0
IN
2008

JohnMcCain.com features a number of interactive, Web 2.0 tools to enhance the user experience.

Many campaign Web sites make **online donations** as easy as a few mouse clicks.

Embedded video gives candidates a new platform to deliver their message.

McCain's Web staff has created their own **social networking** site called McCainSpace.

Grassroots Made Easy

As you may have heard, there are several people vying for the Oval Office. More than ever, the Web is a key component of the candidates' campaigns.

The Web has blossomed from a campaign novelty to an essential tool to reach voters. The difference during this election cycle for president is the advent of Web 2.0 applications; chief among these new applications are social networking sites, such as MySpace, Facebook and Flickr. By integrating these sites into their campaigns, presidential candidates create new avenues to reach voters.

Traditional campaign strategies — such as TV spots on broadcast networks — are labor- and cash-intensive and were consequently out of reach for most people who ran for local office. What makes Web 2.0 so attractive is that it's just as easy for a mayoral candidate to use as for a high-profile politician looking to move into the White House.

Both **John McCain** and **Barack Obama** present voters with some of the latest in **Web 2.0** technology. Much of it is low — or no — cost and as a result, candidates at the local level are using the technology to their advantage.

But for all the hoopla paid to campaigns and Web 2.0, one critical question remains: What exactly are candidates supposed to *do* with these tools? Barack Obama's Web site, for example, features 16 different links to social networking sites. Some of them are broadly known, such as Digg and LinkedIn. Others target specific demographics, such as FaithBase, BlackPlanet and AsianAve. Obama uses each of these sites to deliver a message tailored to a niche audience. The sites also serve as easy ways for voters to connect with the candidate and feel like they're part of the campaign.

John McCain's site, meanwhile, uses a different strategy. Instead of a roundup of social networking sites, McCain's team invested more heavily in blogs and video. His appearances on television can be easily accessed, and supporters can add videos to their blogs via a tool called McCain TV, where bloggers and webmasters copy a few lines of code into their own sites and help spread the candidate's video messages.

Though often the butt of jokes about age, **John McCain's** Web site suggests the candidate may be a Millennial at heart.

Another interactive feature common to both Obama and McCain is a widget that enables online donations. This is yet another tool that works just as well for the national candidates as it does for aspiring city councilors.

Online fundraising itself has become a 2.0 application. ActBlue, for instance, is like MySpace for Democratic fundraising. Democratic candidates can add the ActBlue widget to their Web sites, and users can donate to campaigns with a few simple clicks. The ActBlue site keeps a tally of funds raised and is a hub for anyone seeking information about Democratic candidates. Since launching in 2004, ActBlue has brought more than $45 million to various Democratic campaigns nationwide.

The Republicans' answer to ActBlue is a similar application called Slatecard, where Republican candidates also can add an online donation widget to their campaign site. Like ActBlue, Slatecard acts as a meeting place for anyone seeking data on Republican candidates. Slatecard "social networkizes" online donations by tagging each participating candidate with several "issue badges" that tab issue positions. For example, the Slatecard page for Candidate X might include badges for Faith and Values, Defeat Radical Islam, Conservation of Resources and Support Our Veterans. In addition, a candidate's Slatecard page features links, if they exist, to the candidate's pages on social networking and video sites.

Open Facebook

If the advantage of Web 2.0-enabled campaigns is enhancing a candidate's ability to reach voters, then shouldn't every candidate do it, regardless of the position he or she is running for? Surprisingly many candidates — especially candidates for local office — still

treat the Web as an afterthought, or worse, they don't think of it at all.

On the flip side, there are candidates of all ages from all walks of life running for office who use Web 2.0 as a tool to connect with voters and win. From city council races in Roanoke, Va., and Fresno, Calif., to campaigns for the Idaho Senate and the U.S. Senate seat in Minnesota, Web 2.0 is changing the local election process from top to bottom.

Fresno City Council

Michael Karbassi is making headlines in the local paper. The attention he's received doesn't only stem from the fact he's running for a city council seat; what interests people is that he's 24 years old. With a population of nearly 500,000, Fresno is the sixth-largest city in California, meaning a win for Karbassi would be an impressive achievement for the precocious, first-time politician.

Part of Karbassi's campaign strategy is to lean on his appeal to voters both young and old. Part of doing that is taking advantage of what the Web has to offer, Karbassi said.

"They say younger people, like myself, use Facebook and MySpace. That's all well and good, but a lot of people, even the older generation, know how to use the Internet a lot more. Young professionals are a big voting bloc as well," Karbassi said. "You can only knock on so many doors. The Web offers you a semi-personal way to communicate with a candidate and ask questions, and there are some important questions out there."

Michael Karbassi's campaign for Fresno (Calif.) City Council came up short, proving that even Web 2.0 doesn't make politics a sure thing.

Karbassi's competitor, 34-year-old Andreas Borgeas, is also young by political standards. Neither candidate's site is as refined as a national candidate's, but both use video where and when they can.

Besides clips from the local news, Karbassi's site is home to his personal blog. While blogs certainly aren't new, his opponent doesn't have one, which could give Karbassi an upper hand in reaching voters.

"I think the ultimate question is: What differentiates the two candidates?" Karbassi said. "It's about issues and who the people are. The Web offers that opportunity because it gets the bio out and we get our issues out there. There's an issues page; people can see where we stand. I know that on my page I actually have my stance on issues. The other candidate does not have a specific stance on issues. I have a blog; the other candidate does not. I do donations, the other person doesn't. Everyone has their own style. I just feel like the Web is a very important tool for getting information out to people."

Roanoke City Council

On the other side of the country, Roanoke, Va., residents just elected Court Rosen as first-term city councilman. Rosen bested incumbent Brian Wishneff in a race rife with controversy. A day after Rosen won by a narrow margin, *The Roanoke Times* revealed that Wishneff may have violated state election laws by using a false name to purchase advertisements attacking Rosen.

But before the results — and the scandal — became public, Rosen spoke about the role the Web played in his campaign.

"I've got a list of about 700 people, which is not a lot," he said. "But in the scheme of things, when you e-mail somebody and they forward the e-mail on, or they start talking to folks, it starts multiplying. I've been using e-mail to direct people to YouTube, where I've put all my campaign commercials for people to see. So while they may not see them on TV, everyone by and large these days has access to the Internet either at work or at home. By directing people to YouTube and asking them to forward it on, there's no telling how many folks have seen the ad."

Rosen's Web page is modest; in fact, it's just a blog on the BlogSpot network. Rosen shared his views and opinions on his blog and included a link to his Facebook site.

Court Rosen, a candidate for Roanoke (Va.) City Council, built his site entirely in blog form. Though not flashy, blogs can be informative and are often free to create.

Rosen readily admitted he wasn't well known in the community when he decided to run for city council. That reality motivated him to enlarge his online network of associates by expanding his presence on Facebook.

"The Facebook page has been very useful," Rosen said. "There is a network, and so joining the network opens up my Facebook page to hundreds of people who then share it. These folks are sharing it with their friends."

But it isn't all sunshine and puppy dogs for Rosen. He believes older voters aren't going to connect to his campaign through the Web, hence the blog-based home page. He also said tech-savvy younger voters found him through Facebook, so he didn't need to invest donated funds into a high-end Web site.

Court Rosen's successful run for Roanoke City Council incorporated a Facebook page and blogging.

"A lot of the older folks — the middle-aged to more elderly — aren't going to by and large go to my Web site anyway," he said. "So I just didn't think that there was a huge need for one, given that the people who would get online and visit are as likely to go to my Facebook page or my blog."

colemanforsenate.com
Well funded sites like Norm Coleman's help voters quickly learn about a candidate, though there's still no substitute for shaking hands and kissing babies.

If you need up-to-the-minute candidate information, Coleman will send **Norm Alerts** to your mobile phone.

Blogs continue to play a role in the modern candidate's campaign and give potential voters another outlet to interact with the candidate.

Many candidates create their own YouTube channel, such as Coleman's **Norm TV**.

Idaho State Senate

In Idaho's 14th District, professor and attorney Saundra McDavid is running for state Senate. McDavid once ran for mayor of Eagle, Idaho, but otherwise has no history as an elected official. But she has a background in technology and runs her own technology consulting firm in Eagle.

McDavid's Web site is as polished as any campaign site. Donations can be made online via credit card and PayPal. Her blog is frequently updated. She has links to voter registration forms and polling places. The site links to all recent news items about her campaign and local news video reports. And McDavid has both a MySpace and Facebook page.

McDavid said the Web makes her campaign easier for voters to access, in terms of learning about where she stands on issues and giving people a simple way to contribute.

"It's important for all politicians to get their issues across to the people in their district," she said. "These types of Web tools are a great way to interact with the people who will be voting for you. The easier you make it for people to contribute, the more likely they are to contribute. With credit cards, if you give them that opportunity, more people will likely contribute than they would if they had to write a check."

Even with a polished Web site, some messages don't resonate, as Idaho Senate candidate **Saundra McDavid** discovered after coming in third in her race for office.

As a technology consultant, McDavid said she's well aware that reaching younger voters means going beyond the scope of traditional campaigning, which is why she expanded her campaign to MySpace and Facebook. Initially these forays into social networking haven't generated much interest — only one visitor to her site has become a Facebook friend and no one has asked for friend status on MySpace as of press time. But McDavid is convinced her efforts to reach out to younger voters will pay off with time.

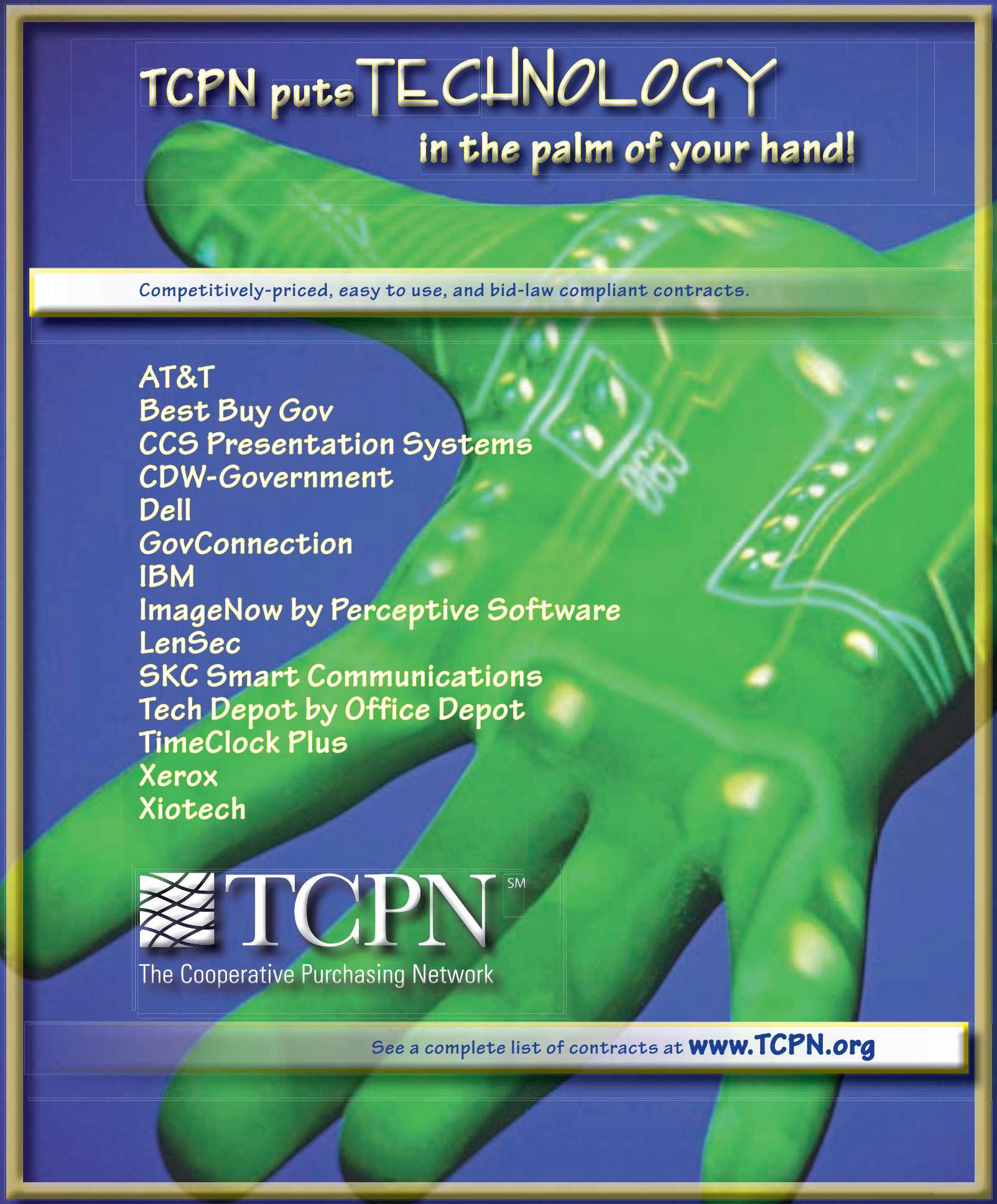
"The key to reaching the younger voters is to go online. That's their world," she said. "I have a lot of younger people contacting me that have said they viewed my site and like it. It was important to me to get as much information out to the voters as possible, so that they can know me and make an informed decision. You're not going to get from a flier in the mail the same kind of personal touch that you can get using the Web site, blogs and 2.0 technologies — where you are actually bringing your voters or people who are interested in hearing about you into your world."

The next step, McDavid said, is to post campaign videos on YouTube. The candidate hopes this will open more avenues for voters to connect with her campaign.

"You definitely don't want to give the message that you're not interested in interacting with your constituents," she said. "By allowing them to communicate with you [via the Web] it gives the impression that you are approachable and open-minded."

U.S. Senate, Minnesota

It makes sense that the higher up the political food chain, the more resources campaigns have. But the Web helps to level the playing field. Even though Minnesotan Norm Coleman's re-election bid for U.S. Senate includes a top-notch Web site, the candidate promi-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nently features links to popular Web 2.0 applications, such as YouTube, Facebook, MySpace and Flickr. Coleman also has links to newer applications such as Utterz — a tool allowing him to post voice, video and text to the Web via a mobile phone — and Sprout, an application that lets users embed Coleman-related news and video on their own sites with just a few mouse clicks.

Coleman's campaign manager, Cullen Sheehan, said these tools help the candidate reach people in new ways.

"Social networking tools and sites are a good opportunity to reach out to supporters with creative and innovative approaches to campaigning," Sheehan said. "There's no doubt the Web is influencing politics, and we've made a commitment to reflect that in our e-campaign. Between e-mail, text messaging, social networking and embedded video, we communicate with thousands of people every day. These are people that might not normally be exposed to information about Norm or about what's going on in the campaign, so it's having a tremendous impact."

Web video gives campaign staff the opportunity to formulate more targeted advertisements that might not play well on TV in front of a large audience. Such video also allows the campaign to create content that's edgy and original.

Of course like any candidate, Coleman is after the elusive youth vote. Sheehan said she believes the effort being put into the Coleman e-campaign will resonate with the younger generation and will encourage them to vote.

"Younger people see the energy we're creating via Web technology and are more likely to get involved. We hear all the time that creative Web videos and messaging are reaching more and more people as word spreads. Our goal is to take the next step in mixing Internet technology with campaigning. Given the feedback we get from supporters, members of the media and people who are new to politics, we're succeeding."

To keep his seat Norm Coleman must stand up to a comedian. Only this time, no one's laughing (well, maybe a few people). Running against the Republican incumbent is *Saturday Night Live* alum and Rush Limbaugh arch-nemesis **Al Franken**. Franken follows in former Gov. Jesse Ventura's footsteps as an entertainer entering Minnesota politics. Interestingly, at press time, Ventura is rumored to be considering Coleman's seat as well. The former actor/wrestler has been polling well, despite not having officially announced a candidacy.

Perhaps the most important element that Web 2.0 brings to a campaign is the chance to paint a more intimate portrait of a candidate.

"Social networking sites, like our Facebook and MySpace pages, are geared not only to the issues and legislation that Norm fights for, but also to him as a person — information about him and his family that gives people a chance to learn more about him personally," Sheehan said.

"Flickr is a sort of photo journal of the campaign thus far. People can look at Norm's travels around the state and what the campaign has been up to. Given its adaptable nature, YouTube might be the most powerful Internet tool we use. On our YouTube channel, **www.youtube.com/colemanforsenate**, we try to mix traditional messaging with creative Web videos that discuss issues affecting the campaign on a daily basis. The advent of the Web video as a viral tool has a daily effect on local and national campaigns."

Digital Democracy

Campaigns discussed here differ in size, scale, resources and goals, yet each shares a common element — the clever application of mostly free Web 2.0 tools to better reach voters.

None of these candidates are — or were — ensured victory simply because they were savvy enough to leverage the latest Web technology. Some Web 2.0 tools may have questionable usefulness, but most are delivering a considerable return on minimal investment.

Many people bemoan that snaring an elected office is too often prohibitively expensive. But Web 2.0 might just help put politics back within the reach of any citizen who wants to serve.

"Especially for a smaller campaign that may not budget for a lot of paid media, earned media via the Internet is a cost-effective way to garner serious attention," Sheehan said. "Put some energy into it, and you'll see a definite impact in terms of spreading your message and reaching out to more and more people." GT

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GOVERNMENT

TIGHTENS ITS BELT

FIVE STRATEGIES FOR MAKING DOLLARS WORK HARDER IN AN ERA OF SHRINKING IT BUDGETS.

Stagnant revenue and rising costs are putting a stranglehold on many state and local government budgets, which poses a dilemma for government CIOs. Applied wisely, IT can increase efficiency across the enterprise. "In many cases, we're actually seen as an enabler to help cut costs," said Randi Levin, chief technology officer (CTO) of Los Angeles and general manager of the city's Information Technology Agency (ITA). But in times like these, it's hard to pry loose enough dollars to maintain the status quo, much less make new technology investments.

Although tax revenues across the United States rose slightly in 2007, inflation actually left governments with less buying power, said Robert Ward, deputy director of the Nelson A. Rockefeller Institute of Government in Albany, N.Y., whose latest report on state tax revenues was released in March.

According to the U.S. Bureau of Economic Analysis price index for state and local governments, costs rose by 6.2 percent in 2007's fourth quarter — 3.6 percent more than the U.S. inflation rate. "That means states and localities have to spend significantly more just to provide the same level of services," Ward said.

Tough times demand creative responses. State and local governments are exploring various of strategies to stretch IT dollars. Here are five that are finding success.

BY **MERRILL DOUGLAS** | CONTRIBUTING WRITER | ILLUSTRATION BY **TOM McKEITH**

1 DON'T BUY — SUBSCRIBE

When it's time to implement a software application, the software-as-a-service (SaaS) model offers a way to spread the costs over the solution's useful life and possibly reduce them. Under SaaS, instead of licensing software and installing and maintaining it in-house, the user pays a fee to access the application via the Internet. It's like paying the city to pump water to your home instead of drilling your own well.

SaaS is one of two models the North Central Texas Council of Governments (NCTCOG) is using to help small and medium-sized governments acquire software for basic business functions. NCTCOG signed a contract with Tectura of Redwood City, Calif., to provide three applications to interested government member. The applications are: Microsoft Dynamics GP for financials, StarGarden for human resources and payroll, and software from Cogsdale Corp. for functions including utility billing, permitting and work order management.

A government can opt to license one or more of these packages and host it internally. Or it can pay Tectura a subscription fee based on the number of users. Tectura arranges for a third party to host the system.

STRATEGY: SOFTWARE AS A SERVICE

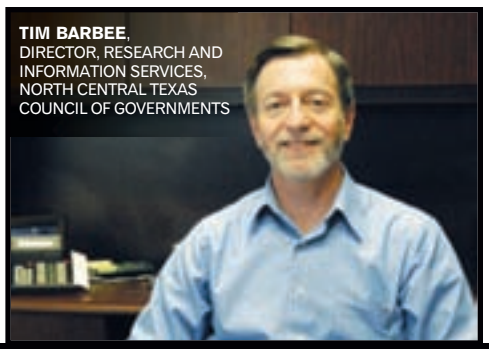
WHO'S USING IT: NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS

WHY THEY'RE USING IT: SAAS MODEL ELIMINATES THE UP-FRONT COST OF PURCHASING AN ERP PACKAGE, AND USERS ELIMINATE INTERNAL SYSTEM MAINTENANCE COSTS.

The latter approach builds an implementation fee into the subscription for the first three years. "And then the annual costs go down, of course," said Tim Barbee, director of research and information services for NCTCOG in Arlington, Texas.

Although the SaaS model eliminates making a major upfront investment, as the government continues paying the monthly fee, eventually the accumulated costs will exceed the one-time cost to buy the software outright. Where the two lines cross depends on which packages the government buys and how many people use it, Barbee said.

When weighing the benefits of SaaS versus licensing, governments also must consider the internal expenses they eliminate when a third party hosts the software, Barbee said. "You have the cost of your hardware. You have the cost of all the people who you have to run the system, the network administrators and those kinds of people," he said. "And you may have additional security measures you have to take, depending on what kind of software you have."

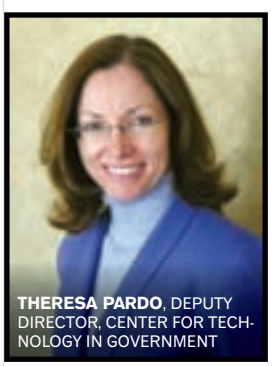


TIM BARBEE, DIRECTOR, RESEARCH AND INFORMATION SERVICES, NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS

2 KEEP IT OPEN

Open source software offers another method to control IT costs. For tight budgets, the good news is that much of this software is available for free.

Ben Berry, CIO of Oregon's Department of Transportation (ODOT) and former chair of the CIO Council, has found that open source solutions can be just as effective as proprietary solutions, as long as they provide good value and meet one of the state's seven different procurement rules.



THERESA PARDO, DEPUTY DIRECTOR, CENTER FOR TECHNOLOGY IN GOVERNMENT

The council determined that obtaining an open source software package falls under Oregon's rules for purchases with price tags up to $5,000; procurements in that category don't require competitive bids.

The most significant instance of open source software at ODOT is the Linux operating system on the mainframe used to process drivers' licenses. "We got the Linux environment for free, along with the IBM mainframe," Berry said.

Elsewhere in Oregon state government, there's a push to use open source software where appropriate. For example, the state data center uses open source system software and monitoring tools. "One of their stated goals is to use more open source software to keep the cost down," Berry said. Oregon's Department of Human Services uses the open source SugarCRM solution for customer relationship management.

But government officials must step carefully when assessing the cost of an open source solution, Berry cautioned. Although the software itself might cost little or nothing, if the agency needs help implementing it, that could push the cost into a different category.

In Oregon, a procurement requiring integration services would hit a threshold if the integration services cost more than $5,000, which inevitably they would, Berry said. "Then the initial procurement should have been for the software and systems integration," he said. Even though the software is free, the agency must conduct a competitive procurement — and the total price could, in some cases, come out higher than the price for implementing a closed source software package.

STRATEGY: OPEN SOURCE

WHO'S USING IT: OREGON DEPARTMENT OF TRANSPORTATION

WHY THEY'RE USING IT: FREE OPEN SOURCE SOFTWARE HELPS ODOT AVOID SOFTWARE COSTS IN SOME INSTANCES.

Similarly the use of open document format promises to cut costs for preserving government records in electronic form, said Theresa Pardo, deputy director of the Center for Technology in Government in Albany, N.Y. A government that archives materials in proprietary formats — such as Microsoft Word documents or Adobe Acrobat files — must buy the same software brand or convert files to new formats as the old ones become obsolete, she said. That wouldn't be the case for a government that stored documents in an open format. "It essentially liberates a lot of the purchasing for today, tomorrow and beyond from these kinds of proprietary requirements," she said.

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3 USE LESS JUICE

Sometimes the simplest way to cut costs is to use less of something. Virginia saves millions of dollars simply by using less energy to run its information systems.

As part of a 10-year contract with Northrop Grumman to modernize the state's information infrastructure, the Virginia Information Technologies Agency (VITA) is replacing 60,000 workstations and monitors used by state employees. The new hardware, which complies with federal Energy Star guidelines, consumes less power than the old technology. VITA further optimizes performance through configuration techniques, such as standardizing the computers' transition into sleep mode when not in use.

"All those things make a big difference in energy consumption," said Lem Stewart, CIO of Virginia. By June 2009, when the state expects to finish refreshing its desktop systems, VITA should see the cost of powering those systems shrink by $12 million a year. "That's about a 35 percent energy reduction," he said.

LEM STEWART, CIO, VIRGINIA

Virginia's modernization program includes plans for continuous hardware replacements. "Every four years, we should be replacing everything," Stewart said.

VITA expects to boost its energy efficiency even further as it moves from its existing data center to two new ones, which also are designed and configured to consume less energy. One major project involves replacing 3,000 servers with 1,000 Energy Star-compliant machines running virtual servers.

"I think our total environment is going to land somewhere between $15 million and $20 million a year [in energy savings]," Stewart said.

Of course, replacing old technology with more efficient boxes requires a considerable investment, and it was more than VITA could afford to pay up front. The state solved this problem by having Northrop Grumman supply the needed funds. "We repay that investment over time through the benefits of what we're achieving in modernization, the first of which is energy," Stewart said. Once the state has used its savings to repay Northrop Grumman, it will keep the further savings that accrue.

STRATEGY: ENERGY CONSERVATION

WHO'S USING IT: VIRGINIA

WHY THEY'RE USING IT: BY REPLACING OLD COMPUTERS AND MONITORS WITH MORE ENERGY-EFFICIENT MODELS, THE STATE OF VIRGINIA ANTICIPATES $12 MILLION IN ENERGY SAVINGS WHEN IT COMPLETES ITS REFRESH CYCLE IN 2009.

4 SHARE AND SHARE ALIKE

In California, about 70 local governments and parking authorities save money by buying parking citation processing services from the city of Inglewood. More than 20 years ago, Inglewood developed its mainframe-based Inglewood Citation Management Service (ICMS) in-house for its own use. "But it was really good," said Michael Falkow, Inglewood's assistant city administrator and CIO. So good, in fact, that several nearby cities asked to use it. Gradually the service grew to serve municipal customers as large as Oakland, San Diego and Sacramento.

If ICMS didn't exist, most of those cities would have outsourced the job to a commercial citation processing vendor rather than buy their own software, Falkow said. As a nonprofit entity, ICMS could offer better pricing than private-sector competitors. Also, cities could do business easily with Inglewood, since they didn't have to conduct competitive procurements if they gave their business to another government agency, he said.

Since running a mainframe system with in-house staff no longer made good business sense, Inglewood recently outsourced its citation processing work to one of its private-sector competitors, Duncan Parking Technologies of Harrison, Ark. Although it lost a few customers in the move, around 70 cities, airport authorities and universities now pay ICMS for the service.

As a consortium buying services through ICMS, these customers still get a better deal than they would contracting with Duncan directly, Falkow said. "We have about 2.2 million citations that we command across these 70 some-odd agencies," he explained. "They were able to give us an amazing price — a price that probably even Oakland, the biggest of our customers, would not likely have received if they had just gone separate."

ICMS also brokers other third-party services for its citation processing clients, including document imaging for parking tickets from Continental Data Graphics in Cypress, Calif., and collection services from Law Enforcement Systems Inc. in New York.

In Virginia, VITA also is banking on shared services to cut costs. The state agency has invited local governments to use its IT facilities, including its data centers, disaster recovery center and telecommunications networks, said Stewart.

The cost of running a data center is the same no matter how many users it supports, Stewart said. The more users there are, the lower the bill to each state customer. "And the theory on the other end is that those whom you're providing the service to pay less because they're in a much larger, leveraged environment than they are as individuals," he said.

STRATEGY: SHARED SERVICES

WHO'S USING IT: INGLEWOOD, CALIF., AND OTHER PUBLIC ENTITIES RESPONSIBLE FOR PARKING ENFORCEMENT

WHY THEY'RE USING IT: WORKING WITH INGLEWOOD'S CITATION MANAGEMENT SERVICE, APPROXIMATELY 70 ENFORCEMENT AGENCIES RECEIVE BETTER PRICING ON CITATION PROCESSING, DOCUMENT IMAGING AND COLLECTION SERVICES THAN THEY WOULD INDIVIDUALLY.

5 STRENGTH IN NUMBERS

Just as several jurisdictions can save by sharing a common technology service, a single government can boost its purchasing power when different agencies buy technology through common contracts.

When Levin became CTO of Los Angeles last year, she noticed the city had many contracts with technology vendors. "We're not leveraging the pricing that we could be


RANDI LEVIN

"WE KNOW THERE IS **A LOT OF MONEY** OUT THERE TO BE SAVED." Randi Levin, *CTO, Los Angeles*

getting," she said. "There's a need to consolidate those contracts and really tap into the total buying power of the whole city."

To that end, ITA is taking stock of the technology contracts in place throughout city government. The agency is calculating the collective spend and projecting how much the city will spend on technology in the next two to three years. ITA is also examining various contract vehicles it can use — including contracts negotiated by the city, county, and in some cases, the federal government — to determine which ones offer the best rates. Then, city officials and vendors will explore how the city can obtain better volume discounts. "We sit down and have some discussions about moving to more enterprise licensing," Levin said.

STRATEGY: STRATEGIC SOURCING

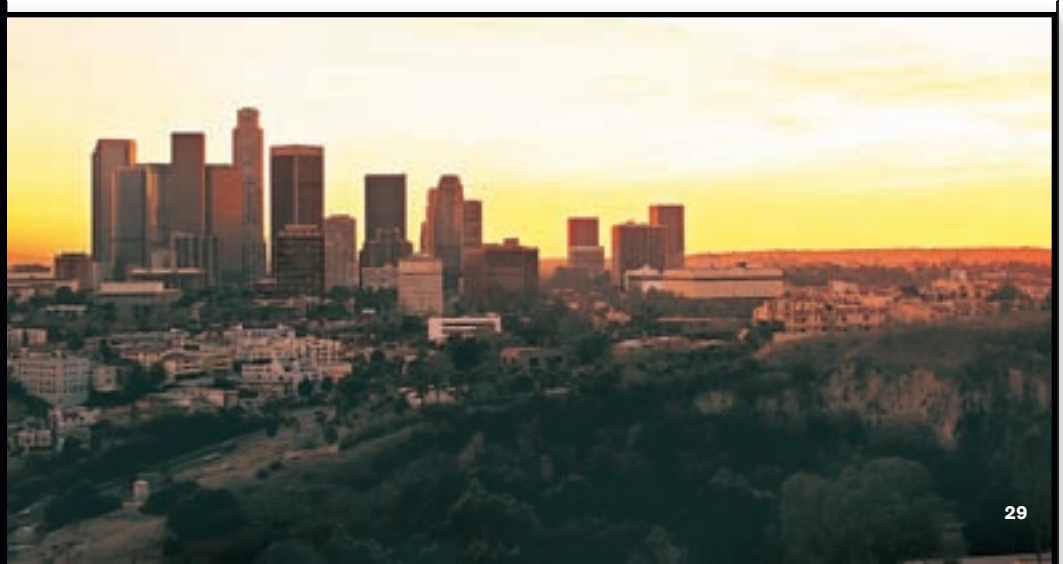
WHO'S USING IT: LOS ANGELES

WHY THEY'RE USING IT: LOS ANGELES IS WORKING TO CONSOLIDATE CONTRACTS TO STRATEGICALLY POOL THE CITY'S PURCHASING POWER AND COMMAND BETTER DEALS ON TECHNOLOGY PURCHASES.

As of late April, ITA had completed this process with two vendors and was working to do the same with six more, she said. Because it's not easy to calculate the total amount agencies have spent in the past with individual vendors, Levin said she couldn't predict how much money this process might shave off the city's technology costs. "But we know there is a lot of money out there to be saved," Levin said.

Strategic sourcing is just one of several lines of attack ITA is pursuing to control costs as Los Angeles heads into a new fiscal year with a deficit of about $406 million. In another related strategy, ITA is examining the software applications in use throughout the city government and trying to reduce that number.

"As you reduce the portfolio, you generally reduce the number of vendors, contractors or other parties that are involved," Levin said. "By doing that, we would reduce our costs." GT



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BY STEVE TOWNS | EDITOR

ROCKING THE V

EARLIER THIS YEAR, California Secretary of State Debra Bowen received the John F. Kennedy Profile in Courage Award for her decision to sharply limit electronic voting machine use in her state. The award, presented by the John F. Kennedy Library Foundation, recognizes public officials who make tough decisions without regard to personal or professional consequences.

In August 2007, Bowen set strict limits on the use of e-voting technology known as direct-recording electronic (DRE) voting machines, citing troubling security flaws in the systems. The move angered e-voting machine vendors and sent California counties — which had invested $450 million in new voting hardware — scrambling to prepare for the state's Feb. 5, 2008, presidential primary election.

At first glance, Bowen is an unlikely opponent of DREs, which typically allow citizens to vote via touchscreen. Since being elected to the California state Legislature in 1992, Bowen has helped pioneer the use of Web technology to interact with voters and promote government transparency. She was elected secretary of state in 2006.

Bowen talked to *Government Technology* about her e-voting decision and the future of electronic voting. She also discusses some of the other technology challenges facing California.

DEBRA BOWEN HOLDING THE JOHN F. KENNEDY PROFILE IN COURAGE AWARD

PHOTO BY GERRY McINTYRE

VOTE

CALIFORNIA SECRETARY OF STATE DEBRA BOWEN, A LONG-TIME TECH-NOLOGY ADVOCATE, EXPLAINS WHY SHE **PUT THE BRAKES ON E-VOTING.**

GT: How did you arrive at your e-voting decision?

Bowen: When I took office, I commissioned a top-to-bottom review of all our voting systems: paper-based optical scan systems, as well as the e-voting or touchscreen systems. The University of California took the lead, and it involved universities and private-sector people from around the country. I have about 700 pages of documentation that are publicly available on my Web site, and I had another private security report that was released only to me and the people involved because it has secrecy issues. It was really clear that there was no way we could guarantee existing equipment in the field had not already been compromised, and that we could not prevent compromises from affecting future elections. It was also clear that there was no [method] people felt was trustworthy to audit something where the vote was stored electronically. So we simply went to an older, tested technology that we've had billions of pages of experience with: the optical scan system.

Every county in California has optical scan capability because 41 percent of our voters in the last election voted by mail. The only way you can handle a vote-by-mail election of that size is with high-speed optical scanners. It was critical to make these decisions before the February primary because we didn't want county elections officials or voters having to change voting equipment between the February primary, the June primary and the November general election.

GT: As a California state lawmaker, you had a reputation for understanding and using technology. How did that experience color your approach to the e-voting issue?

Bowen: I found that the more time someone has spent on the inside of the software and computer industry, the more likely they are to express to me their concerns about relying on computers for tallying and recording the vote. People who have been inside know all the things that can go wrong.

GT: Without that experience, you may not have spotted deficiencies in e-voting?

Bowen: There's no question. When I first read the initial reports on security and electronic voting, I was very disturbed. This was before I ever even thought about running [for secretary of state]. I read them, and I knew that technologically what I was reading was real and that you could hide your tracks pretty readily if you had the ability to tamper with systems. People have focused on voters tampering. The bigger concern is insiders, either in the company that makes the systems or in an election. We don't background test. We don't have any independent means of verifying the software, and that's the reason I have chosen to beef up California's post-election auditing standards. We now have the original record that the voter created, but

"WHEN I FIRST READ THE INITIAL REPORTS ON **SECURITY AND ELECTRONIC VOTING**, I WAS VERY DISTURBED."

GT: What's the status of e-voting for the November general election?

Bowen: The touchscreen machines, which I think are what people think of as e-voting machines, were recertified, but only to allow one per precinct in counties where that was the means of providing access to disabled voters, and for early voting with a 100 percent count against the paper trail. Counties that were using exclusively electronic voting machines have switched back to optical scan.

Debra Bowen: CHANGE AGENT

Elected to the California Assembly in 1992, Debra Bowen wasted little time establishing herself as one of the state Legislature's most tech-savvy members. In 1993, she authored a bill that put California legislative information online — a first in the nation. The measure allowed citizens to access bill text, committee analyses and lawmakers' voting records. It also set off alarms among veteran lawmakers.

"The concept was fairly new. It was very scary," Bowen said. "I had other legislators tell me that no one would use it and that my voting record would be hacked to make it look like I voted for all the tax increases."

That same year, Bowen ran into another fight when she sought to become the first California lawmaker with an official e-mail address. She was successful, but only after winning special permission from the Assembly Rules Committee.

"It's inconceivable now that you would have an elected official who doesn't have an e-mail address, but that was the norm," she said. "Our expectations about how people are going to do things have changed dramatically, and I think government has gone along with that."

Bowen chalked up other IT-related breakthroughs over her 14-year legislative career. She was the first California lawmaker to have a Web site and post her campaign finance reports online. In 1995, she authored the California Digital Signature Act, pioneering legislation that allowed state agencies to accept digitally signed documents.

As secretary of state, Bowen has tried to use technology to engage young voters. Working with California's superintendent of public instruction, Bowen launched MyVote California, a Web site that let students cast votes in a mock presidential primary one week before California voters went the polls in February. (Democratic presidential candidate Barack Obama cruised to victory with 56 percent of the vote.) Students will get another chance to cast presidential ballots during an Oct. 30 mock general election.

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unless we know when we should go back to that and use it, it's just so much paper sitting in a warehouse.

GT: The current presidential race seems to be capturing more interest from young voters. Are you using technology to engage those voters?

Bowen: The candidates this year are doing a greater job of raising the interest in voting than any secretary of state could do. I do have a Facebook page and have worked to look for new means of engaging younger voters. I have an advisory group — we call them the "edgy group." They're looking at what the future will be, not just of voting, but of engagement and how young people will get information about candidates and how they will get active. Facebook is one way that they do that with the groups and events.

The **Profile in Courage Award** is a sterling silver ship lantern that symbolizes humanity and pays homage to John F. Kennedy's naval career.

I think the generation that spends all of its time texting each other will likely take on the challenge of finding a more convenient way to vote. It will be a challenge because you have the problem of verifying who's actually voting. In most of the technology that we have right now that allows someone to vote remotely, they're given an access code, which could easily be sold. So that's not a technological problem, but it is an issue. The other problem is suitability because the vote, unlike any other transaction on a normal basis, has to be private. So the minute we sign a voter in, from there on we can't know anything about what it is they have done. That's what makes auditing from a system perspective so challenging.

GT: Ten years ago you said it was unlikely that people would be voting over the Internet. A lot has changed since then, but you still can't foresee the day people will vote on cell phones or online?

Maintaining a **Facebook** page is one way California Secretary of State Debra Bowen stays connected with young voters. Among other things, the site lists Bowen's favorite movies, books and music — revealing that Bowen "couldn't live without Motown and the Philly sound."

Bowen: I can't foresee it, but that doesn't mean it won't happen. Right now the challenges of identifying who is actually voting and making sure that there hasn't been a compromise in the system is too great. I think most people think, "I'd love to be able to vote from my home computer." But then they think about all the spam they get, and then they think about their antivirus software and how hard they have to work to keep something nasty from coming in. So I think we're just not there at this point.

GT: Internet voting is happening in some countries. How do they handle it?

Bowen: The number is fairly small. I do know that in Switzerland, which has Internet voting, the vote is not private. So if you aren't voting privately, you eliminate a lot of concerns because you personally can check if your vote is recorded correctly, but so can your neighbor, boss, spouse or grandma. We in this country have valued our ability to walk into the voting booth and not have anyone know how we voted.

GT: Government IT professionals complain that many legislators don't understand technology issues. As a former state lawmaker, what's your opinion?

Bowen: I'm probably not the right person to ask that question because I've spent so much time on the inside of the technology questions. The difficulty is that you really need a fair amount of technical background to understand project architecture and the basic kinds of things CIOs deal with. It's not a sexy subject-matter area for a legislator. Your constituents don't say, "I'm so glad you spent all of those hours making sure the Department of Corrections health-care automation system is on track."

GT: What's the biggest technology issue you're dealing with now?

Bowen: In the Secretary of State's Office, we have a lot of basics to do still. Most of the business filing system is still done on paper. I was fairly horrified after I took office to learn that my public access counter consisted of six microfilm readers — there's almost nothing I can provide to people remotely. That will change over the next few years.

We just went through a major challenge with the Uniform Commercial Code [UCC] filing system where we learned again, to our dismay, we had Social Security numbers on about a third of the UCC filings. We had to pull the Web site down and provide access manually for a while. We just completed the redaction; I don't believe we have any Social Security numbers [online]. We probably still have one or two someplace creative, but I think going forward people's expectations about privacy and what's on public documents are also changing. GT

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Synopsis: State agency launches portal to help residents find health-care plans.

Agency: Commonwealth Heath Connector Authority.

Technology: Massachusetts Health Insurance Portal.

Contact: Bob Nevins, CIO, Connector Authority, bob.nevins@state.ma.us.

Massachusetts' Health Insurance Connector Authority took only four months to procure, develop and roll out a portal offering citizen health insurance plans.

High-Speed Portal Project

BY ANDY OPSAHL | FEATURES EDITOR

Aside from some low-income exceptions, not having health insurance is illegal in Massachusetts. Given that most state citizens face tax penalties of up to $912 if they don't acquire health insurance, the state aids their insurance selection process through a Web portal. The Legislature passed the insurance mandate in April 2006 with an effective date of July 2007. To give citizens a few months to shop and complete paperwork before the July deadline, however, the state needed to begin aiding the insurance shopping process by May 2007.

The law established the Commonwealth Health Insurance Connector Authority, a clearinghouse for insurance plans and payments from private insurance providers. The agency also runs Commonwealth Care, which fully subsidizes health insurance for citizens below the federal poverty line and partially subsidizes insurance for those who have incomes up to three times the poverty line.

After the seven months it took to establish the Connector Authority, only four months remained to find a vendor, develop and roll out a Web site. The Web site premiered on time with the first of three phases: offering unsubsidized health insurance plans online.

"This was the fastest rollout I have ever seen, and it was for something that was mission-critical," said Dhiraj Goklani, senior account executive for Vignette Corp., the Connector's portal vendor.

For the second phase, the site provided its "voluntary plan," which allows employers that aren't required by law to subsidize their employees' health insurance to enable their employees to partially pay for health insurance with pretax earnings. State employers in Massachusetts with 11 or more employees must contribute to employees' health-care costs. In July 2008, the agency will complete the site's third phase: offering employer health insurance plans. Since going online in May 2007, the state has enrolled more than 340,000 citizens into health insurance plans. That's more than 5 percent of the state's population and more than half of its uninsured population.

Drawing Board

The Commonwealth Connector didn't have an implementation strategy for the Web portal when it hired Computer Sciences Corp. (CSC) in December 2006, said Bob Nevins, CIO of the Connector Authority.

"We put a procurement out on the street asking for a company that could help us think through the strategy of what needed to be included in this Web site — what it should look like and what we should copy from other successful Web sites. That same company was charged with helping us implement it — writing the code, the logic and hosting it — while we got it up and running," Nevins said.

Vignette supplied the portal software, but CSC was the overall managing vendor of the project.

The Connector team tapped the Consumers Union, an advocacy and research nonprofit, for input on how consumers rank priori-

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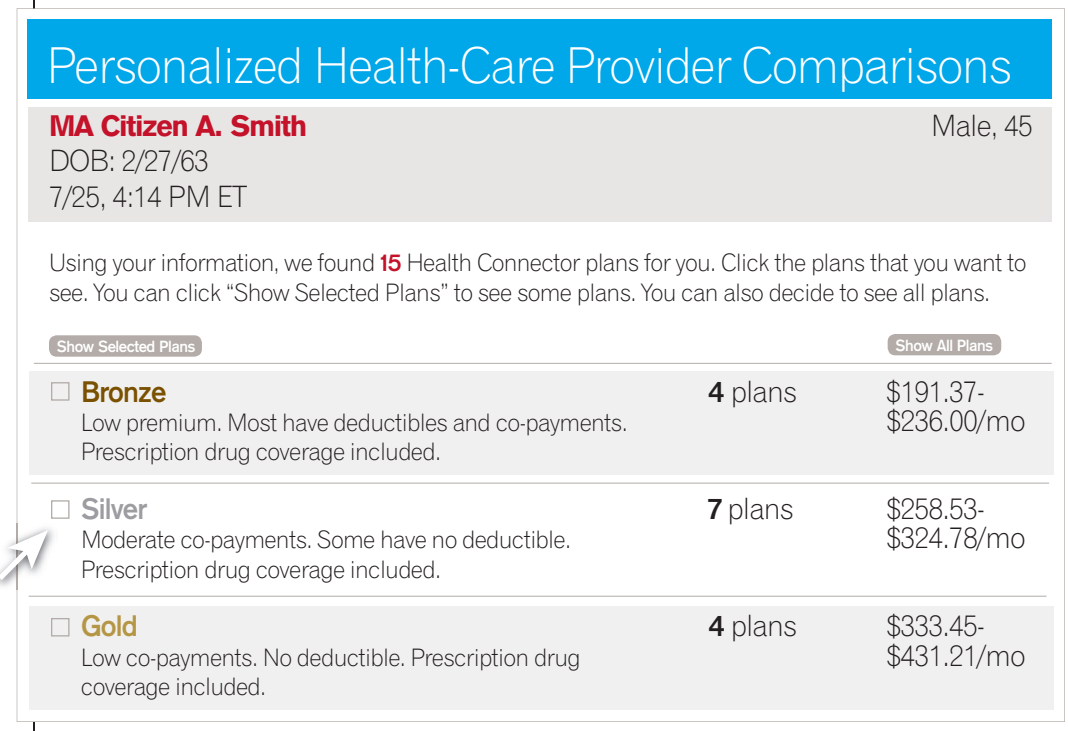

Personalized Health-Care Provider Comparisons

MA Citizen A. Smith Male, 45
DOB: 2/27/63
7/25, 4:14 PM ET

Using your information, we found **15** Health Connector plans for you. Click the plans that you want to see. You can click "Show Selected Plans" to see some plans. You can also decide to see all plans.

Show Selected Plans | Show All Plans

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☐ **Silver** Moderate co-payments. Some have no deductible. Prescription drug coverage included.	**7** plans	$258.53-$324.78/mo
☐ **Gold** Low co-payments. No deductible. Prescription drug coverage included.	**4** plans	$333.45-$431.21/mo

ties when selecting health insurance. That research helped determine where on the site the Connector placed various pieces of information. For example, data showed citizens consider monthly premium amounts before anything else.

"That's the first thing we show next to the name of the policy," Nevins explained. "Then they want to know the deductibles. After that, what are the co-payments for doctors, prescriptions and emergency room visits? What's the deal with hospital stay costs and choosing doctors? If they want more details, they can click 'view plan.'"

The site displays each plan in row form with information in the aforementioned order. Providers offer various plans that fall within the Web site's "gold, silver and bronze" price and service categories. Citizens can do side-by-side comparisons of different providers' plans.

"Say you don't have to go to the doctor that much, but you want to have catastrophic coverage," Nevins said. "You want to be sure you're covered if something bad does happen. You don't want to pay a lot per month. We wanted [providers] to offer a product in that category. We wanted them to offer a product in a middle tier, which we call 'silver' — a balance between the monthly premium and the co-pay amount. We also wanted them to offer a more comprehensive package that might interest families."

The Connector contracted with six insurance providers, representing roughly 90 percent of the state's health insurance industry, according to the Connector.

"This was the first time consumers could really do this comparison across different health plans," Nevins said. "If you go to Harvard Pilgrim [a provider in the state], they wouldn't tell you what their competitors charge — it doesn't really serve their interest. Because we're an independent state authority, and because our charge is to help people purchase affordable health insurance, we're able to do this."

Back-End Operations

Citizens get locked into a rate for 12 months once they purchase a plan through the Connector site. However, providers change the promoted rates on a monthly basis. Those operating the back end of the site's operations must stay up-to-date on current prices.

The Connector pays the Small Business Service Bureau (SBSB), a private company, to receive providers' current rate information and run the Connector's insurance plan phone bank. The Connector considers the SBSB its "subconnector." The subconnector submits current rates to the Connector Authority via XML messages.

"It's a big dance going on between us, our subconnector and the carriers to make sure everybody is satisfied that what we're selling is, in fact, what the providers are offering," Nevins said.

The Connector initially paid the CSC $700,000 for the solution over six months. Since then, the agency has paid that amount twice more for two six-month extensions of CSC's help at running the site.

Nevins said the Connector will likely extend its contract for an additional six months from July to December 2008. "Then we're pretty much done with them. We'll operate the thing on our own," Nevins explained, adding he would likely add a few more IT staffers to keep information current on the site.

The Connector agency is fine-tuning the site's features that it didn't have time to perfect during the initial implementation. For example, it's changing the Java code powering the site to a "components-based" model, which would simplify site programming, said Nevins. The components-based approach would enable programmers to fashion "modules" of ready-to-use code they could apply elsewhere on the project.

Heads-Up to Others

States considering health insurance laws similar to Massachusetts' could learn from challenges Nevins faced during his quick rollout. For example, a state should plan to accommodate a larger number of uninsured residents than it initially estimates. The Connector's initial estimate put the number of uninsured at 370,000. The true number, according to Nevins, was closer to 550,000. Costs rose higher than the Connector planned. The agency expected roughly 136,000 of the uninsured to sign up for Commonwealth Care. Instead, 176,000 people enrolled in the program.

The Connector also had to carefully craft communications when soliciting involvement from insurance providers. Insurance providers didn't want to appear to not support the state's health-care reform effort, said Nevins.

"On the other hand, here we were, having an impact on the market and creating more competition. We had to approach that gingerly," Nevins said. GT

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Synopsis: RFID helps state attorney's office quickly locate case files.

Agency: Florida State Attorney's Office.

Technology: RFID and case tracking software.

Contact: Barry E. Krischer, state attorney, Florida, StateAttorney@sa15.state.fl.us.

On Track

Florida State Attorney's Office uses RFID to track case files.

BY KAYT SUKEL | CONTRIBUTING WRITER

In the Florida Office of the State Attorney's 15th Judicial Circuit in Palm Beach County, an attorney needs to find a file that's pertinent to a case she'll be prosecuting in court later that day. It can't be found in any of the likely places, and the attorney needs it immediately. A year ago, that need would have precipitated bedlam in the office.

"What was happening is that when a file was not easily found, panic would ensue," said Dan Zinn, CIO of the 15th Judicial Circuit. "E-mails would go out; it would be broadcast to the entire building; and everyone would drop what they were doing to help people find a single file." The file might be handled by a different division, in transit through the mailroom or be sitting in any office in the three-floor building.

Today, after the addition of a new radio frequency identification (RFID) capability to the office's proprietary case-tracking system, an attorney can open a computer application, enter the case number, press Ctrl-I and see the location of the file on a building floor plan. The process saves time, money and prosecutions.

The Need for Tracking

The 15th Judicial Circuit employs approximately 100 attorneys and 200 support staff members who process tens of thousands of case files annually.

"We review roughly 16,000 to 20,000 cases at the intake level," said Barry E. Krischer, state attorney. "We file 70 percent of what walks in the door. That's around 14,000 felonies and 70,000 misdemeanors this fiscal year alone."

Although the office had set up workflows to handle the vast number of files, some were still falling through the cracks. "Misplacing a file would happen many times during any given week," said Zinn. "And it was costing us a lot in lost time, as well as potentially putting cases in jeopardy because we were unable to get those case files to court in a timely manner."

With this business need in mind, Krischer and Zinn, as early as 2003, started discussing potential solutions to help track files.

Choosing RFID

Many industries have handled asset tracking with bar-code solutions. However, both Krischer and Zinn knew that it was unfeasible. The added step of scanning bar codes each time a file was opened or closed would put too much burden on office staff.

"I've been working in this office, with the mindset of this office, for 26 years," Krischer said. "I know what they are willing to do and what they are not. And with the sheer volume of cases, you can't ask for that extra step. It's just not going to happen."

Zinn agreed: "Trying to use bar coding is labor intensive. You have to scan the files continually, and given our workload, it was likely that any files we were looking for would be missing because they weren't scanned when they were supposed to be. So we'd still have that panicked file search problem."

Zinn paid careful attention when RFID started making headlines in early 2004. "We had started reading about some of the things that Wal-Mart was doing with RFID and started to explore the concept," he said. Zinn contacted RFID system provider PanGo about implementing RFID at the office.

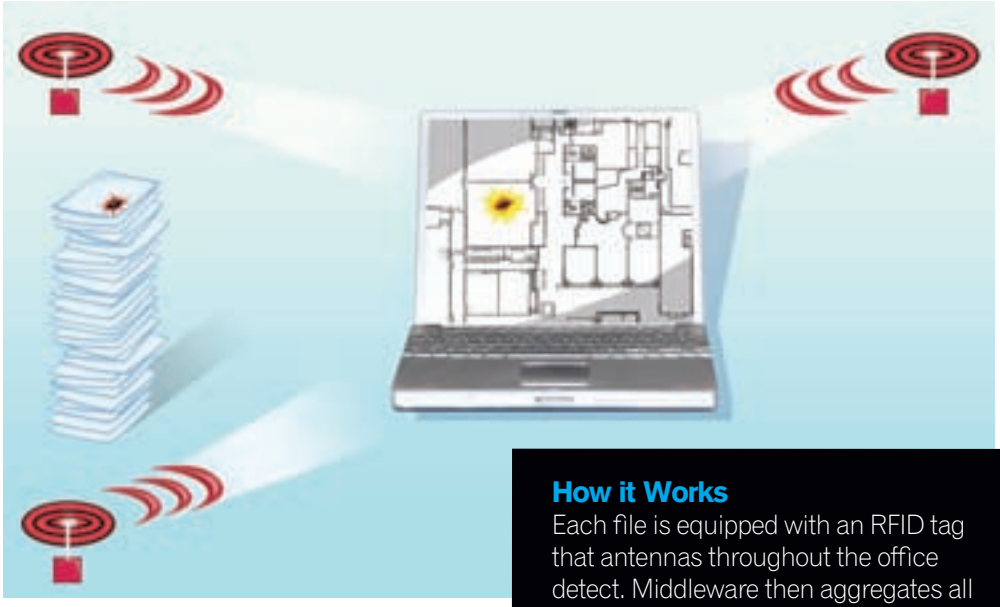
"They had a technology that would work," he said. "But it wasn't really cost effective at that time."

With Wal-Mart's continued push for RFID, the technology evolved quickly — as did lower prices. In 2007, InnerWireless, the company that acquired PanGo, gave Zinn a

call that set in motion the development of the office's new tracking capability.

Mox Weber, director of product management of location services at InnerWireless, said the three-year wait made the technology a better fit for the office's needs, and it also made it more affordable. "Today, there are readers that are optimized for capturing not only nearly 100 percent of reads, but are also optimized for office setups and conflicts," he said. The passive RFID tags used in these systems can now be purchased for less than 25 cents apiece.

"We had to wait until the technology caught up to what we had in mind," Krischer said. "Last year, it reached a point where it was doable, so we embarked on what you now know is the electronic case-file tracking system."



How it Works

Each file is equipped with an RFID tag that antennas throughout the office detect. Middleware then aggregates all the identification numbers that the interrogators or readers gather from the RFID tags. The middleware calculates a file's exact location and communicates this to the computer application, so when users strike two keys, they know where a file is.

Making the Use Case

Before jumping into implementation, the project team elicited feedback from office users on what the system really needed to do.

Carrie Donohue, head of the State Attorney's Office's Intake Division, said she was initially skeptical the system would work as well as promised. But she and many of her colleagues participated in meetings to help nail down user and system requirements.

"We got together and talked about the project. We did a flow chart and discussed whom the project would impact," she said. "We got together and had meetings that discussed how it was going to work. What we needed it to do was always taken into consideration."

Dan Zinn, CIO, 15th Judicial Circuit, Palm Beach County, Fla.

Weber said the upfront work is what made the system such a success. "We spent a lot of time with the attorneys and staff to understand the kind of use cases they wanted to satisfy," he said. "They walked us through how they wanted to track files, how people carry those files, what doorways they walk through and how fine they needed the accuracy of results to be."

The use-case discussion, which is used to determine system requirements, allowed the development team — made up of office members, InnerWireless and Computer Information & Planning Inc. — to understand the tracking requirements before programming a single line. "We didn't want to disturb patterns that users were accustomed to following," Weber said. "The point is not to change behavior, but to complement it. So we made sure that we understood the behaviors and tailored the system to that."

The resulting solution provided office workers with the RFID solution and also seamlessly integrated it into the existing proprietary case database system used in state attorney offices across Florida. The solution was completed in less than a month.

Implementation Challenges

Zinn and Weber credit the upfront use-case design for the system's success. But Zinn said the project would not have gone forward without executive buy-in.

"We had a very defined business problem," Zinn said. "But that executive buy-in was crucial. Without the support of the state attorney making sure the project was funded, and that divisions were committed to the idea and helping everyone understand the benefits, it wouldn't matter how good the technology was — we wouldn't be here."

In fact, funding was the only hiccup in an otherwise quick and clean implementation.

"Initially the source of our funding stream was not clear," Krischer said. Internal state politics made it unclear whether the state or the county was responsible for footing the bill. Eventually Krischer was able to cover the approximately $100,000 system cost from the proceeds of a $2 assessment fee on clerk office filings. However, the delay in determining the funding stream ended up being beneficial.

"The longer we strung it out, the cheaper the [RFID] labels became," Krischer said. "Ultimately stringing it out became a benefit, not a hindrance."

Office employees are satisfied with the new tracking capabilities. "We love it," Donohue said. "Even those of us who were skeptical can't believe we ever did without it." The office plans more enhancements, including RFID cards for personnel and timestamp logs for when employees and files leave the building.

Krischer said naysayers must see the system in use to understand how powerful it is. "Anyone who comes here and sees a secretary just type in a case file number and then see exactly where the file is located on the office schematic is always impressed," Krischer said. "The system sells itself. You just have to come here and see it." GT

CONTRIBUTING WRITER KAYT SUKEL IS A WRITER BASED NEAR FRANKFURT, GERMANY. HER WORK HAS APPEARED IN THE *WASHINGTON POST, GOVERNMENT HEALTH IT* AND *HEALTHCARE INFORMATICS.*

Synopsis: Prestonsburg, Ky., uses low-cost equipment to install a municipal Wi-Fi network for just $8,500.

Jurisdiction: Prestonsburg, Ky.

Technology: Meraki Wi-Fi network equipment.

Contact: Brent Graden, economic director, Prestonsburg, Ky., 606/886-2335 x54, brentgraden@hotmail.com.

Wi-Fi on a Shoestring

BY MERRILL DOUGLAS | CONTRIBUTING WRITER

With a budget of $8,500, a small city in rural Kentucky builds a municipal Wi-Fi network.

Prestonsburg, Ky., was hardly the first city to turn to municipal Wi-Fi in hope of spurring economic growth. Like counterparts throughout the country, local leaders figured that free wireless Internet access could help them attract new businesses. They also thought it might draw tourists, offer opportunities for telemedicine and distance learning, and keep young people from leaving Prestonsburg, a city of less than 4,000 residents at the rural, eastern edge of the state.

What leaders didn't figure on was the sticker shock after they gathered bids for constructing the network. One quote came in at $248,000 and another was $192,000. "We even got a low bid of $48,000, but that's still outside the realm of our small-city budget," said Brent Graden, Prestonsburg's economic director.

That's an understatement: Graden's budget for the project was just $8,500.

Nevertheless, in early 2008, Prestonsburg lit up with free Wi-Fi, a 2-mile corridor running through its downtown core. As of late March, 2,500 unique users had accessed the service.

Prestonsburg developed its system using equipment from Meraki, a Mountain View, Calif., startup that offers a do-it-yourself approach to building Wi-Fi networks.

Founded in 2006, Meraki started as a doctorate-research project at the Massachusetts Institute of Technology. Fueled by funding from Google and Sequoia Capital, the company's mission is to bring the Internet to the masses with wireless routers, which are cheap to buy and easy to install and operate.

Meraki takes a mesh-networking approach, which means each access point not only communicates with nearby wireless computing devices, but also serves as a router, passing the radio signal to other nodes. A Meraki Pro router for outdoor use costs $150 to $200. Other vendors were quoting $10,000 for an outdoor access point, Graden said. "Obviously those give you great coverage," acknowledged Graden, but with the price for a competitor's device higher than the city's entire Wi-Fi budget, that equipment clearly wasn't an option.

A Meraki router covers a radius of about 500 feet, Graden said. That's been enough range to provide a signal along the 2-mile corridor, plus a few outlying locations, such as a local park and an arts center. Prestonsburg installed 48 outdoor units and 12 indoor units, he said.

Meraki keeps its prices low, in part by relying on economies of scale, said Sanjit Biswas, the company's CEO and co-founder. "We have thousands of networks around the world now," he said. "We're in 110 or 120 countries, and we're seeing a lot of growth."

Back-End Intelligence

The technology is less expensive because a Meraki network isn't self-contained. Rather than situating the bulk of the network's intelligence in the local infrastructure, Meraki conducts much of its essential activity in its Mountain View data center.

That means the user doesn't have to install and manage the entire infrastructure that other Wi-Fi networks require, Biswas said. "That's everything from access point controllers to user-management devices. There's a lot of complexity there," he said.

To set up a network, a user simply installs the routers and then logs in to the Meraki dashboard on the Web site, **www.meraki.com**, to create an account. The administrator then uses Meraki's software, via the dashboard, to set policies and manage the network. "The software lets you do things like manage hundreds or thousands of users," Biswas said. If the operator wants to charge for the service, the software handles the billing.

The administrator, Biswas explained, may also use the dashboard to enter text messages, which appear in a bar at the top of the screen while a user is on the network. Some operators sell ads in that space to help support the service.

Besides handling administrative chores, such as billing, Meraki monitors customers' networks from its data center and makes modifications as needed, such as rerouting traffic. "If you were to add more DSLs or T1s [for backhaul from the mesh network], we would automatically balance the load across those," said Biswas. "If interference suddenly shows up, we will route around that as well."

Because Meraki handles so many of the technical aspects, Graden was able to install Prestonsburg's entire network himself. "If I had a bucket truck with me and a driver, I could probably put it up in one day. It's that easy," he said. "If you can screw in a light bulb, you can do this."

A Small Pilot

Graden first learned about Meraki from a magazine advertisement. He investigated the technology with help from ConnectKentucky, a nonprofit, technology-based, economic-development organization. Then he decided to install a pilot system. "I just bought a couple of routers to try it out first. And it worked exactly like they said," said Graden. "So then we bought the full amount to go 2 miles."

The 48 outdoor and 12 indoor routers cost Prestonsburg about $5,300. About $2,700 paid for three DSL connections with two years of service. With the remaining money, Graden bought advertising to publicize the service.

For Prestonsburg and many other customers, Meraki includes three years of its data center services in the price of the hardware, Biswas said. Larger customers can opt for a plan that discounts the hardware, but adds a monthly fee for service, he said.

Graden logs in to the dashboard about three times a day to check on the network. If there's a problem, he usually can fix it himself, he said. But there haven't been many problems. "It's self-healing," Graden said. "It sends packets of information, called pings, to each node to double-check, to make sure the system is running smoothly. If not, it sends me an e-mail reminder."

Because the dashboard is accessible via the Internet, Graden said, he can manage the network from anywhere. "I could be on vacation in Paris, France, and get on my iPhone and control the whole system."

Currently Prestonsburg isn't selling ads in the messaging bar, and since it's not charging for the service, the network isn't producing revenue. The city might start selling advertisements in the future, though, as Graden develops an e-government Web site. When that's ready, the first stop for anyone connecting to the Wi-Fi network will be the city's home page. The city would sell display ads on that splash page, Graden said.

Meraki is exploring more sophisticated advertising options. The advertisement service is still in beta testing as Meraki works out details such as who — Meraki or the network operators — will do the selling. "We need about another year or so to get that put together," said Biswas.

In the meantime, the service brings in money indirectly by attracting new enterprises, Graden said. "The first thing I tell a business when I'm driving them around, showing them different properties for their business is: 'Did you know the whole town's wireless for free?'" GT

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

San Francisco Network Gains Momentum

Meraki officials don't always know immediately when a new network comes online because users install the networks themselves. But co-founder and CEO Sanjit Biswas says they're popping up everywhere — from northern Alaska to Cape Horn, with many in Latin America and Europe. "We're all over Western Europe for sure, and we're now entering Eastern Europe, and [there are] a bunch in Africa and India as well," he said.

There's another spot on the map where Meraki is taking the lead in building a network: That's San Francisco, site of the company's "Free the Net" initiative. Meraki aims to blanket the entire city with Wi-Fi by distributing consumer-grade, indoor repeaters free for volunteers to install in their windows. "We have about two neighborhoods online right now, which covers roughly 2 square miles. We're probably crossing 75,000 users today," Biswas said in early April. For a coverage map, see **http://sf.meraki.com/map**.

Since Meraki isn't using public assets, San Francisco's city government isn't involved in the initiative. Meraki paid to install a couple dozen Internet-gateway points and sponsors the DSL service at those points. Setting up an outdoor Wi-Fi router lets people find their way to the network. Meraki offered to give participants indoor routers, known as "boosters," which retail for about $50. Each time a volunteer installs a booster, the signal becomes available to people outside that building, and the mesh network grows.

Free the Net is both a research project and a public relations initiative. "We wanted to see what happens when you build a really big Meraki network," Biswas said. "So this is partially to have a test bed for our own technology, and also to show the world that it can be done."

Synopsis: Police in Ulster County, N.Y., use a high-tech firearms simulator to train officers and educate the public.

Agency: Kingston Police Department, N.Y.

Technology: Meggitt Defense Systems.

Contact: Egidio Tinti, lieutenant, Kingston Police Department, etinti@ci.kingston.ny.us.

Paintball to Video

Ulster County, N.Y., police officers are armed with firearms training simulator.

BY JIM MCKAY | JUSTICE AND PUBLIC SAFETY EDITOR

For police officers in Ulster County, N.Y., training on a firearms training simulator (FATS) is a major step up from pelting one another with paintballs and wax balls.

To an observer, FATS might look like a giant video game. A trainee shoots a realistic-looking gun at a 15-foot by 8-foot screen, which projects a re-enactment of a potentially hazardous scenario, such as a knife-wielding man.

FATS isn't only a great tool to teach cops how to handle a crisis situation; it's also a good way to educate the public about the split-second decisions required of law enforcement. Ulster County police use the newly purchased simulator to teach cops and citizens the landmines involved in police work.

Realistic Weaponry

When training on the simulator, an officer packs a real Glock 17 pistol converted to fire carbon dioxide cartridges. The gun kicks as if it were shooting real bullets. The officer is given 10 feet of floor space to seek cover, move into firing position or cover a target on the large screen.

A video scenario — one of hundreds an officer might face on patrol — is projected on the FATS screen. All the scenarios were adapted from real-life situations reported by U.S. law enforcement and then re-enacted on video by actors.

A man brandishing a knife, a husband and wife arguing or a routine traffic stop play out on the screen as the officer handles each situation — any or all of them could turn into a crisis situation for the cop.

"You can have a scenario where the officer pulls over a driver and the instructor can choose between different scenarios, like whether he's going to be a threat target or not a threat target," said Lt. Egidio Tinti of the Kingston Police Department in Ulster County. "You can have the officer repeat the same scenario, but with a different ending."

Ulster Community College acquired the training simulator in fall 2007 from Meggitt Defense Systems for $67,000, via a grant obtained by state Sen. John Bonacic, R-Mount Hope. FATS is used by an emergency services team, a county special weapons and tactics team, two police academies, the newly founded citizens' police academy and the Ulster Community College Department of Justice.

"It gives you exposure without risking your life," said James Truitt, assistant professor and

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Alison Levine | Wednesday, September 24

Alison Levine is no stranger to risk-taking. She has survived sub-zero temperatures, hurricane-force winds, sudden avalanches, and a career on Wall Street — all without the use of supplemental oxygen. Please join us to hear her extraordinary story.

Frank Abagnale | Thursday, September 25

You met him in the major motion picture *Catch Me if You Can*. This is your chance to see him in person and relive his daring exploits as a teen-age confidence man. Now Mr. Abagnale has plenty to say about fraud, identity theft, forgery, embezzlement, and document security.

Greg Schwem | Thursday, September 25

Greg Schwem earned a degree in journalism at Northwestern University, and spent five years working as a newspaper and NBC television reporter before quitting his job to pursue his dream of performing stand-up comedy as a career.

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coordinator of Ulster County Community College's Criminal Justice Department. "It helps provide distress inoculation — when you're in a stressful position you'll have the skill level to handle it."

Hundreds of Scenarios

The simulator records data about the scenario, including the training officer's reactions, voice commands, bullet tracers and where the officer's gun muzzle was pointing at all times. The information allows the trainer to play back the video and discuss what the trainee did right and wrong.

The simulator allows firearms training in an atmosphere where life and limb aren't on the line. Teaching proper gun handling is difficult to do on a range when shooting with paper targets. With the simulator, the trainer can *show* trainees what they are doing wrong instead of just telling them.

"We'd been using force-on-force means [paintball guns] in the past, but this is excellent," Tinti said. "It's safe, it's clean and you can play it back and show them where they're hitting, where they're aiming, whether they're cognizant of the fact that they're not behind cover. It provides a lot of different avenues."

> "We're trying to **make an impact** on getting **people to understand** why law enforcement does what they do." **Egidio Tinti,** *lieutenant, Kingston Police Department*

There are two components of the system: a firearms training component, which teaches basic stance, grip of the gun, etc.; and a decision-making component.

"Jerking the trigger, anticipating recoil — you won't see that on a range very well," Truitt said. "And you can't argue with the playback. They can see exactly where the muzzle was pointed and where every shot went. If it didn't hit the target, where did it go?"

There are hundreds of scenarios for honing officers' decision-making skills.

"It might be an off-duty situation where you're in a mall and a robber runs in and says, 'Show me your hands,' and the officer has to do something, either verbally or a straight engagement," Tinti said. "The guy might have just shot and you don't have time to say drop the gun. You have to engage to save the life of another."

Sometimes, trainees are required to go outside and exercise, then come back inside and train on FATS with an elevated heartbeat to simulate a pressure situation. Going over hundreds of simulated scenarios gives the officer some knowledge and experience to fall back on during a crisis, when a split-second decision must be made.

"Can you shoot a person holding a knife?" Tinti asked. "Here's what I tell students: 'yes and no.' If they're 10 feet away and they say, 'I'm gonna kill you,' and make a motion toward you, the officer will have to engage.

Same person, same knife, but he's a football field away. Are you justified in shooting that person? No."

Citizen Training

Ulster County opened a citizens' police academy in May and will use the simulator to show the public just what kind of mayhem officers might face and what law enforcement's options might be. Tinti said most of the interaction between the public and police is negative, and the academy will try to show the public how difficult police work is.

"We're promoting a more detailed interaction between law enforcement and the community, teaching things like why an officer shoots when he does," Tinti said. "Why do cops have to come up to the car with their hand on their gun? Why do they ask for registration before they tell me what I've done? Why did they have to shoot a guy 12 or 15 times?"

Tinti said citizens are surprised when they participate in the training simulator. "We ran a couple of civilians through a test at the community college. One woman fired six rounds in a second and a half. They were blown away by how fast they could fire these rounds, and they continued to fire as the person in the video was going down," Tinti said.

Proper gun handling is difficult to teach using paper targets. In the simulator, trainees learn how to hold a gun properly and target — all of which can be seen onscreen for easy and accurate feedback.

The civilians got an understanding of how quickly an officer must decide whether to use force and what that means. "You fire until the threat is no longer a threat," Tinti explained. "Couple that with two officers responding and now you have two guns firing. It doesn't take much to see that a guy can be shot 12 or 15 times.

"Most people raise their eyebrows when we talk about decision-making — instantly having to decide whether or not this use of force is condoned or not," Tinti said. "We're trying to make an impact on getting people to understand why law enforcement does what they do."

Synopsis: Virtualization presents many benefits to the IT world, but people must be careful that their virtual networks don't slip out of their control.

Technology: Virtualization software, security.

Contact: Mark Ramsey, manager of IT operations, Charlotte County, Fla., 941/764-5542, mark.ramsey@charlottefl.com.

Virtually Vulnerable

Growing use of virtualization raises new cyber-security questions.

BY HILTON COLLINS | STAFF WRITER

Virtualization can work wonders for an IT environment. Virtualization lets one computer do the job of many consuming less floor space, energy and operational costs than installing more hardware. These virtual machines can be managed remotely, and can store critical data and applications for disaster recovery purposes.

But virtualization comes with a potential drawback. Specifically it introduces a new layer of software on top of the host machine or system, which creates additional infrastructure to manage and secure.

Despite security concerns, however, virtualization's here to stay. According to survey results Microsoft released in April, 71 percent of U.S. retailers use virtual tools to cut costs and gain greater infrastructure control. Experts agree other sectors, including government, will ride the virtual wave for the foreseeable future.

As virtualization becomes common, security must adapt and evolve. IT professionals should ensure they don't scale their virtual environments up higher than they can control. To obtain a manageable virtual environment, it should be built with clearly defined goals, architecture and set policies to gauge performance.

Steps to Security

Mark Ramsey, manager of IT operations for Charlotte County, Fla., said shutting down unnecessary services in the virtualized environment can help decrease cyber-attacks.

"It's probably more important in a virtualized environment, because of performance, that you eliminate unnecessary services from your servers," he said. "If you don't need Internet information services for some specific purpose on one of your servers, don't install it."

There will be less activity to protect and monitor if IT managers shut off unneeded activities. Another benefit is the network will likely run better because it will take up less processing power.

But securing a virtual network takes more than the efficient use of resources.

There are three areas that are different between virtualized and nonvirtualized environments, according to David Greschler, director of integrated virtualization strategy for Microsoft. "First, customers need to secure the virtualization layer by ensuring they are running virtualized applications on a trusted platform," he said. In other words, secure physical resources before running virtual systems on them.

Second, IT staff should isolate virtual machines, Greschler said. One way is to segment virtual machines into groups — one set running on one piece of hardware and another set running on a different piece — based on function and level of importance. This way, if one operating system inside a virtual machine is compromised, it's harder for viruses to infect systems running on other hardware.

"Third, customers must monitor virtual machine-to-virtual machine traffic so that the only communications through the network [are] where policies can be enforced and traffic analyzed," Greschler said.

Sometimes it's hard for people to track virtual machine activity. If they deploy additional virtual machines, they create another layer of machines to manage on top of the ones in their physical environment. This added

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virtual traffic can lead to security lapses and "blind spots" — areas people can't see in the infrastructure. It's not unusual for networks to be so vast that people lose track of which virtual machine runs what application.

This problem can be solved, but at times, it may not be that pressing of an issue.

"There are very rare cases where customers need full visibility of every sort of piece of traffic going between machines," said Nand Mulchandani, VMware's senior director of product management and marketing. In normal physical data centers, no one views traffic because it's not cost effective. "So when you move to a virtual environment, the loss of that visibility is actually not that big a deal," Mulchandani said.

Security and Management

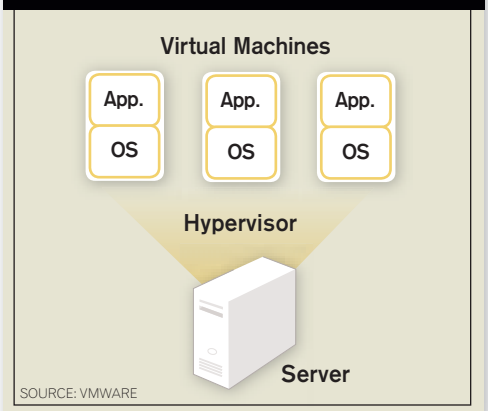
Suppose you're an IT manager who wants to see what happens in a section of your network. Virtual machine No. 20 is communicating with virtual machines No. 21 and No. 22, and you want to see what packets — formatted data blocks — are being exchanged. The solution is to find an application that lets you monitor traffic and provides the visibility you need.

"There are a couple of folks, and VMware's one of them, that have built net flow interfaces, which give you the ability to view what traffic is moving between all the different virtual machines within a specific hardware enclosure," said Mike Rothman, president and principal analyst of Security Incite, an independent information security firm.

Other vendors, including Microsoft, Blue Lane Technologies and Altor Networks, also have applications designed to monitor virtual traffic. These applications let people block, stop or analyze traffic. However, with so many vendors selling security-monitoring products, it's not easy to pin down an industry leader or select a solution.

"Right now, no one vendor can solve all the virtualization issues on [the] security side," said Stefan Nguyen, a consultant for the Florida Department of Transportation who works on servers that support the central department office. Though these vendors' software solutions all promise to monitor security, they don't all do it the same way. "Each piece of software plays a [certain] role, so you can't combine everybody. That's why you have to use your own best practices."

In this example, **one physical server** acts as several **virtual machines**.



Best practices are helpful, but sometimes customers are so in love with virtualization's benefits — cost savings and energy reduction — that best practices become afterthoughts.

"There [are] a lot of industry guidelines and platform providers' suggestions, best practices, for securing virtualized environments," said Christopher Hoff, chief security architect at Unisys. "It's amazing how many people don't do them."

Managing virtual networks is similar to managing physical ones. In fact, a good first step to securing a virtual infrastructure is securing the software that runs it. A properly configured physical network lays the foundation for a safe, properly configured virtualized one.

"I don't differentiate between my virtual and physical infrastructure," said Ramsey, who recently received certified chief information officer accreditation though the University of Florida. In Charlotte County, Fla., he has eight physical servers that run 109 virtual machines. "You apply all the same methodologies and checks and balances that you would whether you're dealing with a virtualized server or a physical server," he said.

As a beginning point, Mulchandani recommends securing the software that runs the virtualization platform.

"When you move your machine from a physical machine — say you run on a Windows server or a desktop — and you [create] a virtual machine out of it, the security products and security of your machine are unchanged," Mulchandani explained. "Meaning, if you were running antivirus software on your physical machine, it actually continues to run unchanged in your virtual machine."

Virtual World Attackers

Software that manages virtual machines is called the "hypervisor." When installed on a host machine or operating system, the hypervisor sorts the host system's processing power and other resources to support the various virtual machines. Some experts wonder if it's a prime target for malicious programmers to corrupt or penetrate to gain access or control of scores of virtual machines.

"The probability is high that we will see exploits targeting the hypervisors," Unisys' Hoff said. "The possibility really depends upon how well these vendors do in securing the underlying hypervisors themselves."

Hoff said inevitably hackers will target virtual environments specifically, but vendors have done a decent job of securing hypervisors' underlying code.

"There haven't been any attacks against the hypervisor, so all of this talk and discussion is theoretical," Mulchandani said. "What makes it hard to attack the hypervisor is the fact that the hypervisor is actually a very small piece of code. It has few interfaces to the outside world and does not communicate or have users checking e-mail and browsing the Web on it."

But just how do you secure the hypervisor? There are applications that reduce its attack surface, and methods include embedding the hypervisor deeper within the network or limiting the number of network channels.

Attacking the hypervisor may be worth the trouble for only the most sophisticated hacker. After all, if you're going to burglarize a house, why smash through the concrete foundation when you could break open the door or a window?

"A Windows machine running on your Dell box in your physical data center and a virtual machine look identical because they have an IP address," said Mulchandani. Consequently most hackers won't care much about the hypervisor when they can use their regular tricks to attack the machines directly.

Hoff feels the same way. "Attackers are lazy. They go after the low-hanging fruit," he said. "Why would I bother deploying virtualized rootkits when I can just essentially exploit a poorly configured server?" This takes the same amount of effort it would take to infect a system with malware once someone clicks on a link they shouldn't. GT

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Need for Speed

THIS SUMMER, on the border between France and Switzerland, something incredible will happen. Hundreds of feet below the surface is a 17-mile-long, circular tunnel designed for a spectacular purpose — accelerating particles of matter to nearly the speed of light and smashing them into one another. The Large Hadron Collider (LHC) is the largest and most powerful machine ever built.

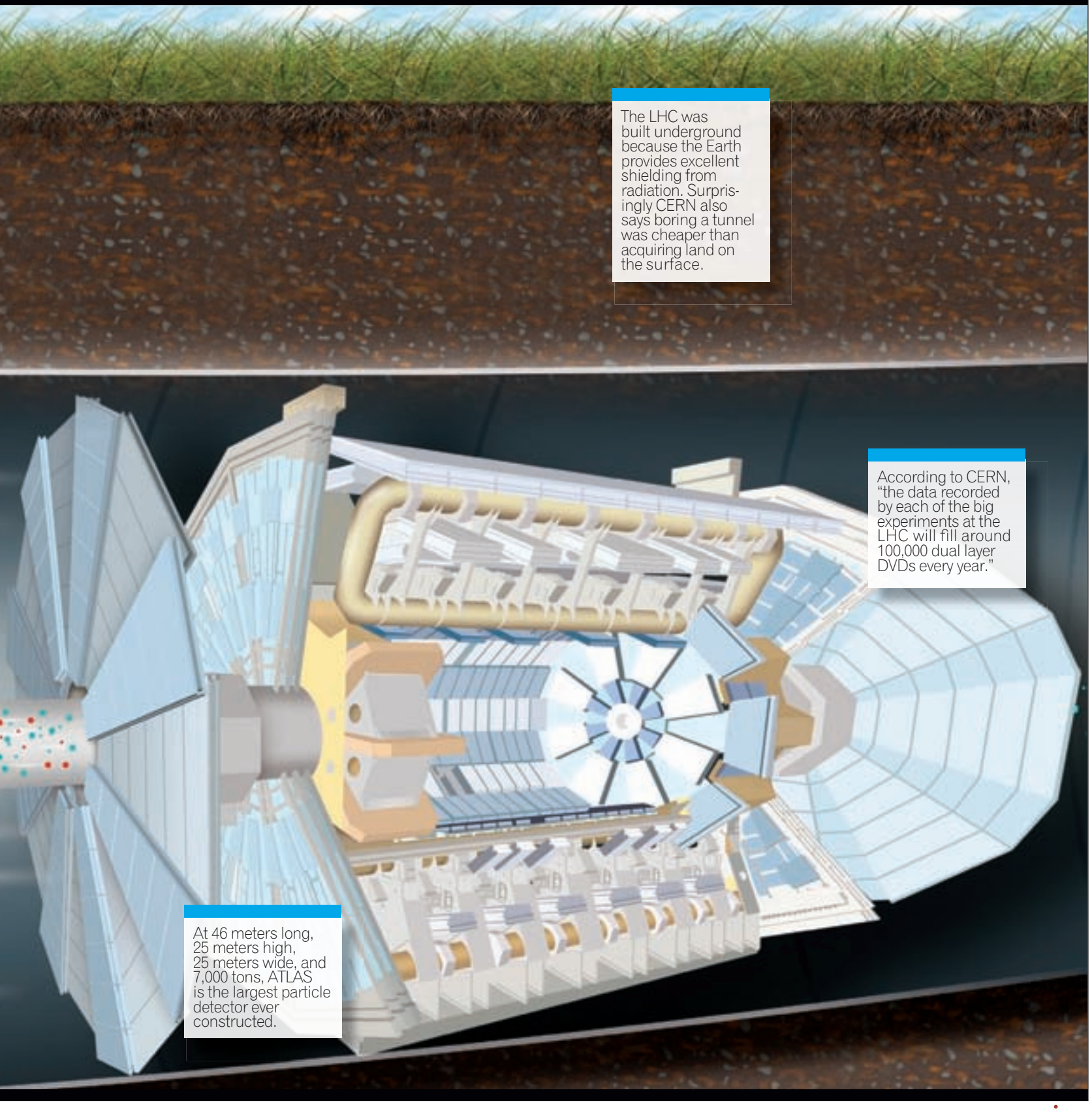
The European Organization for Nuclear Research (CERN), where Tim Berners-Lee worked when he created the World Wide Web, began constructing the LHC in 1998 at a cost of more than $6 billion. In this illustration, the ATLAS (A Toroidal LHC ApparatuS) station is shown in detail. ATLAS is one of six particle accelerators that will work in concert to whip two proton beams in opposite directions around the ring at mind-boggling speed. Researchers will then slam them together.

The particle collisions in the beams will result in … well, nobody really knows. Researchers hope the collisions will provide evidence of the theorized Higgs boson particle. If it exists, Higgs boson could help explain many unanswered questions about the universe. CERN researchers have also assured the public there is almost no chance the LHC will create a black hole that will swallow the Earth. GT

Atom smashing is cool — really cool. The magnets are chilled to –271 degrees Celsius to eliminate resistance and energy loss.

600 million particle collisions will take place every second when the LHC is operating. These collisions will generate infinitesimal bursts of heat 100,000 times hotter than the sun.

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



The LHC was built underground because the Earth provides excellent shielding from radiation. Surprisingly CERN also says boring a tunnel was cheaper than acquiring land on the surface.

According to CERN, "the data recorded by each of the big experiments at the LHC will fill around 100,000 dual layer DVDs every year."

At 46 meters long, 25 meters high, 25 meters wide, and 7,000 tons, ATLAS is the largest particle detector ever constructed.

Camera's On

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BY PAUL W. TAYLOR
CHIEF STRATEGY OFFICER
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Funding Schemes
(In the nicest sense of the word.)

We've gone off in the tall grass," insisted Ian Liddell-Grainger, visiting conservative British parliamentarian, on the UK's government modernization.

His complaints were familiar to an American audience — projects were overdue, over budget and never worked as well as the old systems they replaced. It was a "disaster," he said.

A comparative report on tax filing systems in the UK and United States brought Grainger to San Francisco, Washington, D.C., and Ottawa, Canada. He's chair of the UK's All-Party Parliamentary Tax Group that released the report after two years of study.

But during a conversation it was clear that Grainger's concerns extended beyond taxes to a chronic inability to realize public value from a continuous stream of treasury-robbing IT projects.

"What's worse," he said, "we have been paying for them through off-budget schemes."

Now the phrase "off-budget scheme" sounds harsher to Americans because in the British vernacular, schemes often are good things. But not so for going off budget, protested Grainger, because the British experience with off-budget funding has been characterized by "an utter lack of accountability for how much money is involved and who gets it."

I'm the author of a white paper, *Be IT Resolved*, (free download at **www.govtech.com**) on what our guest called off-budget schemes, so I decided to press a little further into the tall grass.

It turns out that was a good thing. On Grainger's central concern — accountability — the U.S. separation of powers provides structural advantages that are largely absent in the UK. Moreover, states and localities have quietly and effectively developed a track record of what policymakers have called "alternative funding mechanisms" — though "alternative" may be as misleading as "schemes" in describing them. Strategies like gain sharing and self-funding speak for themselves in terms of how many jurisdictions use them, how much they've used them and the amount of public value produced.

Of course, these schemes have an important element of self-correction — no taxpayer funds are risked, and IT integrators only get paid if the systems work and increase public revenue.

Our commute-length, cross-cultural conversation was instructive.

The word "scheme" is regarded as benign in the UK, but pejorative in the U.S. The reverse is true where "off budget" is concerned. The phrase raises the hackles of British parliamentarians because of a dismal track record as used by Her Majesty's government and a suspicion that its proponents have something to hide.

Going off budget carries some baggage in America too, but it can be used to exploit IT's unique ability to help pay for itself if properly conceived, executed and audited. As such, it can and has provided much needed fiscal relief for political subdivisions when revenues tank.

To be clear, reducing pressure on the general fund isn't the same as sneaking around it. Finding ways to fund modernization in tough budgetary times is consistent with the finest tradition of another Englishman. During vexing fiscal times a century ago, Lord Ernest Rutherford said, "We have no money, so we must think."

In thinking about the current tough times, it's fair to conclude the tall grass sometimes hides the unknown and untried. GT

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