

GOVERNMENT TECHNOLOGY[®]

SOLUTIONS FOR STATE AND LOCAL GOVERNMENT

VOL24 ISSUE10 | OCTOBER 2011

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spar over interference

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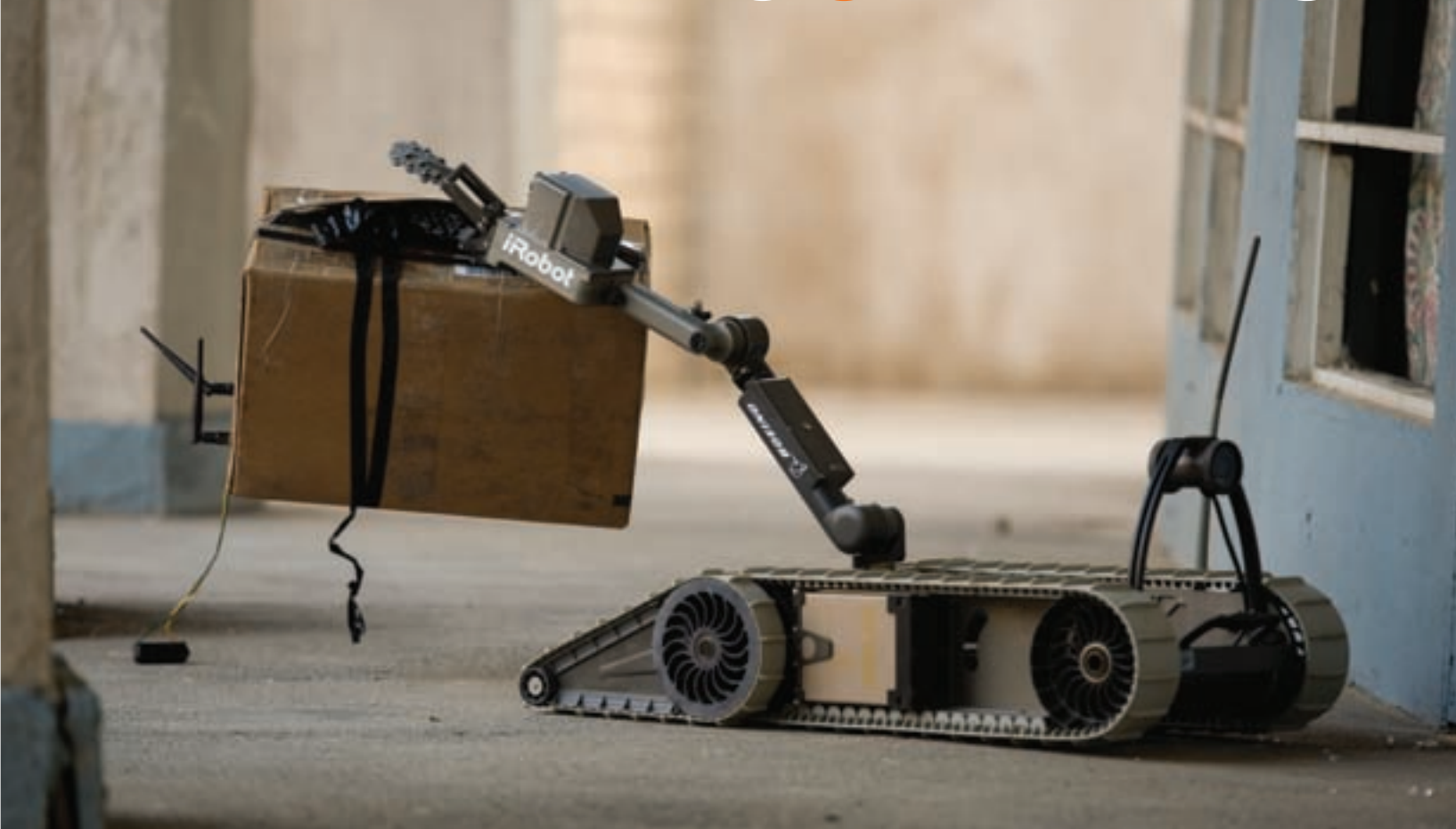
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COVER IMAGE: ISTOCKPHOTO.COM/TOM McKEITH



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Group Publisher: [Don Pearson, dpearson@govtech.com](mailto:dpearson@govtech.com)

EDITORIAL

Editor: [Steve Towns, stowns@govtech.com](mailto:stowns@govtech.com)
Assoc. Editors: [Matt Williams, mwilliams@govtech.com](mailto:mwilliams@govtech.com)
[Elaine Pittman, epittman@govtech.com](mailto:epittman@govtech.com)
[Jessica Mulholland, jmulholland@govtech.com](mailto:jmulholland@govtech.com)
[Chad Vander Veen, cvanderveen@govtech.com](mailto:cvanderveen@govtech.com)
[Karen Stewartson, kstewartson@govtech.com](mailto:kstewartson@govtech.com)
Managing Editor: [Miriam Jones, mjones@govtech.com](mailto:mjones@govtech.com)
Chief Copy Editor: [Andy Opsahl, editorial@govtech.com](mailto:editorial@govtech.com)
Features Editor: [Hilton Collins, hcollins@govtech.com](mailto:hcollins@govtech.com)
Staff Writers: [Brian Heaton, bheaton@govtech.com](mailto:bheaton@govtech.com)
[Sarah Rich, srich@govtech.com](mailto:srich@govtech.com)
[Colin Wood, colinwood0@gmail.com](mailto:colinwood0@gmail.com)
Editorial Assistant: [Natalie August, naugust@govtech.com](mailto:naugust@govtech.com)

DESIGN

Creative Director: [Kelly Martinelli, kmartinelli@govtech.com](mailto:kmartinelli@govtech.com)
Art Director: [Michelle Hamm, mhamm@govtech.com](mailto:mhamm@govtech.com)
Senior Designer: [Crystal Hopson, chopson@govtech.com](mailto:chopson@govtech.com)
Illustrator: [Tom McKeith, tmcketh@govtech.com](mailto:tmcketh@govtech.com)
Production Director: [Stephan Widmaier, swidm@govtech.com](mailto:swidm@govtech.com)
Production Manager: [Joi Heart, jheart@govtech.com](mailto:jheart@govtech.com)

PUBLISHING

VP Strategic Accounts: [Jon Fyffe, jfyffe@govtech.com](mailto:jfyffe@govtech.com)
Reg. Sales Directors: [Leslie Hunter, lhunter@govtech.com](mailto:lhunter@govtech.com)
[Shelley Ballard, sballard@govtech.com](mailto:sballard@govtech.com)
EAST
WEST, CENTRAL
Account Managers: [Melissa Cano, mcano@govtech.com](mailto:mcano@govtech.com)
EAST
WEST, CENTRAL
Bus. Dev. Dir.: [Erin Gross, egross@govtech.com](mailto:gswenson@govtech.com)
[Glenn Swenson, gswenson@govtech.com](mailto:gswenson@govtech.com)
Bus. Dev. Managers: [John Enright, jenright@govtech.com](mailto:jenright@govtech.com)
[Lisa Doughty, ldoughy@govtech.com](mailto:ldoughy@govtech.com)
[Kevin May, kmay@govtech.com](mailto:kmay@govtech.com)
Exec. Coordinator to Publisher: [Julie Murphy, jmurphy@govtech.com](mailto:jmurphy@govtech.com)
Regional Sales Admin: [Christine Childs, ccchilds@govtech.com](mailto:ccchilds@govtech.com)
National Sales Admin: [Jennifer Valdez, jvaldez@govtech.com](mailto:jvaldez@govtech.com)
Dir. of Marketing: [Andrea Kleinbardt, akleinbardt@govtech.com](mailto:akleinbardt@govtech.com)
Sr. Dir. of Cust. Events: [Whitney Sweet, wsweet@govtech.com](mailto:wsweet@govtech.com)
Dir. of Custom Events: [Lana Herrera, lherrera@govtech.com](mailto:lherrera@govtech.com)
Custom Events Managers: [Tanya Noujaim, tnoujaim@govtech.com](mailto:tnoujaim@govtech.com)
[Gina Fabrocini, gfabrocini@govtech.com](mailto:gfabrocini@govtech.com)
Cust. Events Coordinator: [Megan Turco, mturco@govtech.com](mailto:mturco@govtech.com)
Custom Events Admin.: [Sharon Remeiro, sremeiro@govtech.com](mailto:sremeiro@govtech.com)
Dir. of Custom Media: [Stacey Toles, stoles@govtech.com](mailto:stoles@govtech.com)
Custom Media Editor: [Emily Montandon, emontandon@govtech.com](mailto:emontandon@govtech.com)
Sr. Custom Media Writer: [Jim Meyers, jmeyers@govtech.com](mailto:jmeyers@govtech.com)
Custom Media Writer: [Noelle Knell, nknell@govtech.com](mailto:nknell@govtech.com)
Cust. Media Proj. Asst.: [Courtney Hardy, chardy@govtech.com](mailto:chardy@govtech.com)
Dir. of Web Products and Services: [Zach Presnell, zpresnell@govtech.com](mailto:zpresnell@govtech.com)
Web Services Mgr: [Peter Simek, psimek@govtech.com](mailto:psimek@govtech.com)
Custom Web Products Manager: [Michelle Mrotek, mmrotek@govtech.com](mailto:mmrotek@govtech.com)
Web Advertising Mgr: [Julie Dedeaux, jdedeaux@govtech.com](mailto:jdedeaux@govtech.com)
Web Services/Proj. Mgr: [Adam Fowler, afowler@govtech.com](mailto:afowler@govtech.com)
Subscription Coord.: [Enie Yang, enienyang@govtech.com](mailto:enienyang@govtech.com)

CORPORATE

CEO: [Dennis McKenna, dmckenna@govtech.com](mailto:dmckenna@govtech.com)
Executive VP: [Don Pearson, dpearson@govtech.com](mailto:dpearson@govtech.com)
Executive VP: [Cathilea Robinett, crobinett@govtech.com](mailto:crobinett@govtech.com)
Executive Editor: [Steve Towns, stowns@govtech.com](mailto:stowns@govtech.com)
Chief Content Officer: [Paul Taylor, ptaylor@govtech.com](mailto:ptaylor@govtech.com)
CAO: [Lisa Bernard, lbernard@govtech.com](mailto:lbernard@govtech.com)
CFO: [Paul Harney, pharney@govtech.com](mailto:pharney@govtech.com)
VP of Events: [Alan Cox, acox@govtech.com](mailto:acox@govtech.com)
Chief Marketing Officer: [Margaret Mohr, mmohr@govtech.com](mailto:mmohr@govtech.com)

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The Best Laid Plans

As I write this column two days before the 10th anniversary of September 11th, I've come to realize that like most Americans, I will never forget the events of that morning. I had graduated from the University of Redlands four months earlier and was living with my father in San Bernardino, Calif. I was awoken by a text message I had received on my sleek, new Nokia 5190 cell phone. The message was from my mother and read, simply, "Turn on the TV." I groggily did as instructed and was astonished to see what seemed like an endless loop of replays showing giant airplanes smashing into the twin towers.

I didn't have much time to watch the news since I had to go to work. Back then, I was beginning what I'd convinced myself was a promising career renting cars for a company that rhymes with Schmenterprise. That day I'd been assigned to a tiny rental car branch at the San Bernardino Hilton. Upon arriving, I spent nearly all of my working hours sitting in the hotel bar watching coverage of the attacks. Everyone in the bar was transfixed, each of us no doubt trying to make sense of what we were seeing. The few customers who actually needed a rental car ended up delaying whatever plans they had and joined the crowd gaping at the TVs.

A few days after 9/11, I moved to Sacramento. With all my worldly and almost uniformly worthless possessions loaded into the back of my little Nissan pickup truck, I headed north. My plan was to live nearer to my then-girlfriend, who'd enrolled in graduate school at San Francisco State University. I would move in with a fraternity brother who'd taken a job at the state capitol. Eventually, I thought, I'd marry that girl, buy a house in the suburbs, have a couple of kids and keep slinging rental cars for a living.

That awful day marked a new chapter in my life. I had all my life's major plans in place. In a rare bit of luck, everything actually went according to said plans, except for the rental car thing. Turns out I'm not very good at upselling people into SUVs and unnecessary car insurance. With a decade now having passed since 9/11, I wonder what sort of plans those who died that day might have had. And I grimace at the thought of those plans being wiped from existence in a few moments of fire and horror.

So instead of using this month's column attempting to convey some trite message about budgets, servers or mobile apps, I hope instead to share how important it is that we all try to find a bit more joy in each day, hug our loved ones a few seconds longer, and cling a little less tightly to the plans we've made. 

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U.S. General Services Administration

New Mexico May Consolidate IT Department

New Mexico could be the latest state to **consolidate its IT department** under an existing agency if legislators back an efficiency proposal from Gov. Susana Martinez. On Sept. 6, Martinez unveiled an ambitious agenda for the start of the Legislature's special session. In an official proclamation, the governor said several state agencies should be merged to address a "bloated" executive branch with 22 cabinet positions.



CELL PHONE BAN:
Aiming to stop illegal cell phone use by prison inmates, a bill is moving forward in the California Legislature that would authorize the use of "managed access technology" to block wireless transmissions in California prisons.



5k

The number of signatures required before the White House will review a petition created using a new online petitioning website called "We the People."

\$5.5 million:
The amount New Jersey Gov. Chris Christie wants to spend to modernize some of the state's worst computer operations.

WHO SAYS?

"An exaflop supercomputer's performance is the equivalent of every person on Earth making about 150 million calculations per second."

www.govtech.com/technology/Intel-Forms-Subsidiary-Federal-Government-Supercomputing.html

TOP-TWEETED STORIES

- Missouri Teachers Sue Over Social Media Restrictions** 
- 5 Emerging Technologies Soon to Hit the Government Market** 
- Is Social Media Pushing E-Mail to Extinction?** 

HOT OR NOT?

- | | |
|--|--|
| <p>Most-read stories online:
5 Emerging Technologies Soon to Hit the Government Market 38,776 VIEWS</p> <p>Police Investigations Get 3-D Upgrade in Central Virginia 5,261 VIEWS</p> <p>2011 Best of the Web Award Winners Announced 4,492 VIEWS</p> | <p>Least-read stories online:
Tornado-Damaged Oklahoma Town, 17 Others Get USDA Broadband Grants 213 VIEWS</p> <p>'Anonymous' Plans Protest of S.F. Cell Phone Shutdown 157 VIEWS</p> <p>GAO: FDIC Must Do More to Protect U.S. Financial Data 141 VIEWS</p> |
|--|--|

“ Viewing the events of 9/11 in New York from this perspective makes you realize just how physically insignificant the events were to America as a whole. Not to downplay the significance of the loss of life, but it does justify the reason why 9/11 didn't break the American spirit. We always think of things from the surface, but if we look at the big picture like this, we realize that this too shall pass.

Kevin, in response to NASA Releases 9/11 Footage Shot Aboard the ISS

“ Of course mobile devices are going to exceed PCs in terms of the numbers used to access the Internet, but that hardly constitutes the end of the PC era. The processing power offered by the less mobile PC platform is still required to do most of the actual work that computers are so proficient at. Surfing the Web doesn't require a lot of horsepower.

BDO, in response to Study: 2015 Could Mark the End of the PC Era

“ Eliminating CTA [California Technology Agency] could save the state MILLION\$\$\$\$, and would streamline the entire IT process. Just a thought ...

Phil, in response to California CIO Carlos Ramos Announces Reorganization of the State's Technology Administration

“ I agree in part, the whole 'cloud' computing thing is a just hip tag for outsourcing and distributed processing. That has been going on for years. I have been in this business since 1979 and get a chuckle out of some of my younger friends who think this is all something new. I also picked up on the idea that it is little more than a sly (not so covert) way to market the concept.

William J. Cisco, in response to New Commission to Advise State and Local Governments on Cloud

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Masdar City

What would a sustainable city look like? The answer lies in **Masdar City**, a 2.3-square-mile carefully planned United Arab Emirates community that relies on solar energy and other renewable energy sources. The project was announced in 2006 and is projected to be complete by 2025.

Everything in Masdar City — which has a \$20 billion price tag — has been meticulously designed, constructed and tested to maximize the region's resources and advocate eco-friendly practices. These practices are reflected in the use of battery-powered driverless vehicles, photovoltaic panels and an LED tower that changes color to alert people when too much energy is being consumed. Even businesses are carefully selected and must comply with the city's low-carbon mandate.

MASDARCITY.AE

Rob Mancini

CTO, Washington, D.C.

Rob Mancini became Washington, D.C.'s CTO in July after serving as acting CTO since January. An early AOL employee who later worked at several private software firms, he joined D.C.'s Office of the Chief Technology Officer (OCTO) in 2003. During his OCTO career, he worked with a string of high-profile city CTOs including Suzanne Peck, Vivek Kundra and Bryan Sivak.

1 What is your top priority for OCTO?

We're a young agency. We were growing up when Suzanne left. Vivek came in and had some really good ideas, but we didn't have enough maturity in enterprise architecture standards and processes to take over IT for the city. I've inherited an agency full of talented IT professionals. If I can put a little discipline around that, we can skyrocket to the top of the IT world.

2 How will you do that?

When you want to change the culture and optimize business processes, you have to rely on centers of excellence — and we have a few of those. We need to make sure those centers are playing nicely, and then lift other agency programs up to that level. The agency needs a bit of a redesign because we're not positioned well for a leveraged service model.

3 What's the status of the city's Google Apps deployment?

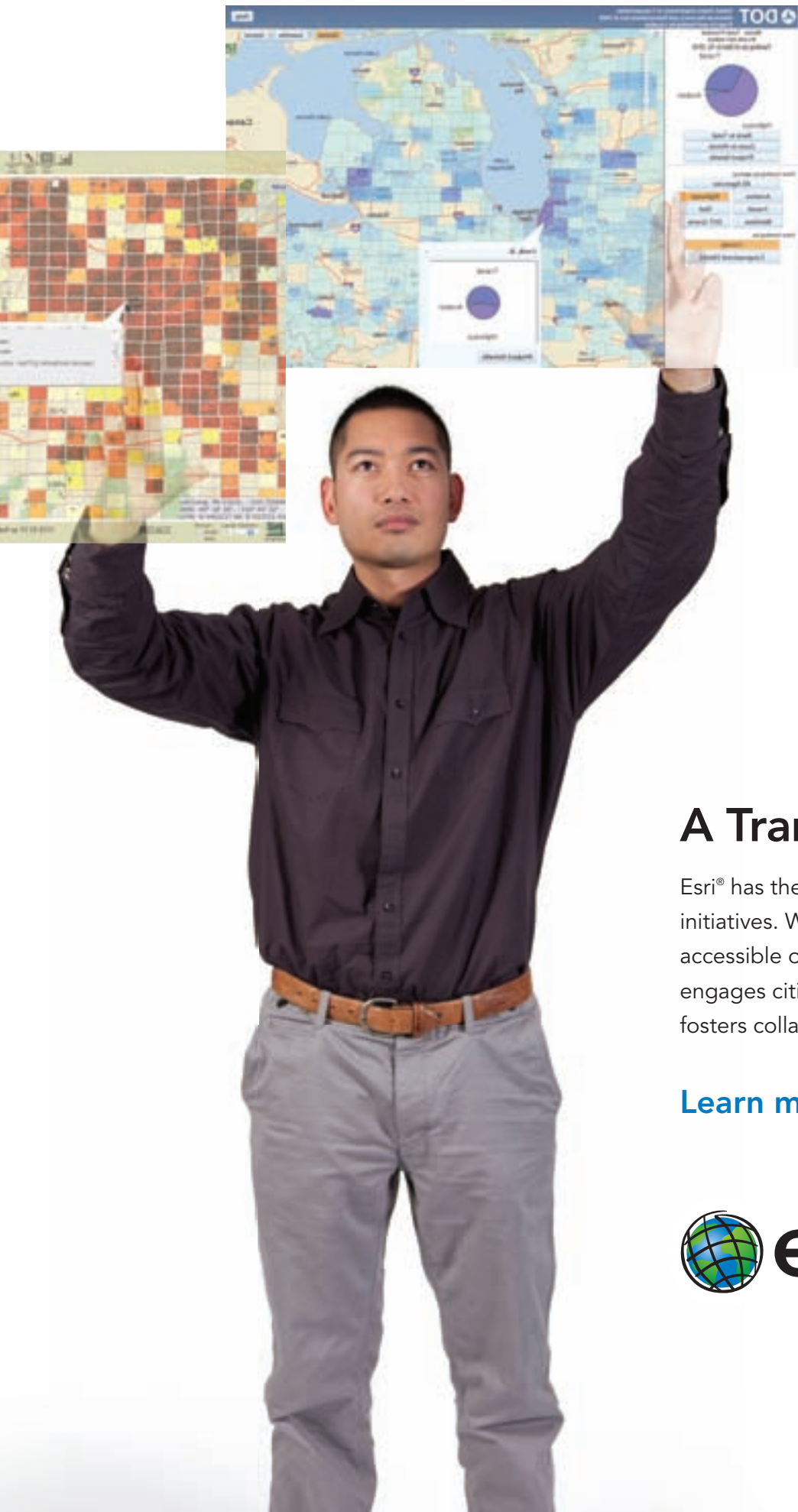
We use Google Docs extensively across the city. That's been a game-changer. We don't use a lot of the Gmail piece. When [Microsoft] Exchange is well run and well liked by users, it's hard to displace it. Gmail may be a cheaper solution, but it has to pass the "as-good-as or better" test.

4 Will the city run another Apps for Democracy contest?

We'll move beyond the apps contest. I'd like to see us partner with business incubators. If we can help startups get off the ground, we could end up with public-private partnerships that pay off well beyond a few apps here and there. We're working on that now. **GT**

— Steve Towns, Editor





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Others have tried and failed,

but with a go-ahead pending from the FCC, one wireless broadband company is a step away from transforming the wireless industry. Backed by billionaire hedge fund manager Philip Falcone, Virginia-based LightSquared has signed a 15-year contract with Sprint Nextel and is ready to begin a cooperative eight-year network build-out that would provide terrestrial and satellite-based 4G-long term evolution (LTE) Internet service to 260 million Americans by the end of 2015.

But the contender has a powerful opponent. LightSquared operates in a band of radio frequency adjacent to GPS, raising fears that the new 4G service could interfere with GPS-based location systems used for public safety, aircraft navigation and other crucial tasks. Indeed, last year, LightSquared's initial transmissions interfered with GPS receivers — prompting the company to cut both signal strength and the size of its operable spectrum in order to create a buffer between its 4G service and GPS signals.

Additional testing has not yet been done, but analysts predict the changes may eliminate the interference with standard GPS receivers. However, LightSquared still needs to eliminate interference with high-precision receivers, which improve the accuracy of hurricane and earthquake monitoring, as well as farming, construction and surveying

Can an ambitious new 4G wireless network coexist with vital location services?

4G Growing Pains

equipment. These high-precision GPS receivers account for roughly .5 percent of GPS receivers used nationally.

The GPS industry is up in arms. It wants the FCC to move LightSquared elsewhere on the frequency spectrum in the name of public safety. LightSquared contends that the problems can be solved without relocating its signal. The

By Colin Wood / Contributing Writer



LightSquared's
Jeff Carlisle says
his company spent
\$9 million to eliminate
GPS interference.

Federal Aviation Administration (FAA) sided firmly with the GPS industry, issuing a report in July stating that 794 human fatalities would occur from 2014 to 2023 due to “LightSquared impacts to GPS,” and would cost taxpayers \$72 billion in GPS retrofitting costs. LightSquared maintains that the GPS interference problems stem from a lack of foresight by GPS device manufacturers and noted that LightSquared is also concerned about the public safety ramifications. Will GPS and LightSquared find common ground?

As with any feud, the story of LightSquared’s open wireless broadband network and GPS changes dramatically depending on who’s telling it. In 2002, LightSquared and GPS industry representatives were on the same page when they drafted an agreement restricting any part of LightSquared’s signal from entering GPS frequencies. In the intervening years, several revisions were made to LightSquared’s plan through the FCC; some industry rules changed and now both parties are living with the reality that being a good neighbor is easier said than done. Determining who is in the wrong and what will happen next is a complex matter that will affect how much of the country connects to the Internet.

To help make sense of things is Alex Wyglinski, an assistant professor at Worcester Polytechnic Institute, who specializes in wireless spectrum and signal processing issues. “It’s kind of scary that they’re trying to do this so close to the GPS band,” he said. “The problem is, there’s not enough spectrum out there.”

Across the United States, 200 million cell phones are stuffed into purses, jammed into pockets and clipped to belts — and more are added every day. LightSquared simply is attempting to meet that connectivity demand, Wyglinski said. “The problem in modern society is that frequency is getting really crowded.”

Wireless signals aren’t well defined like cars driving down lanes on a highway, so every wireless signal automatically interferes with every other signal to some degree. But GPS is particularly vulnerable.



Because GPS satellites are more than **20,000** km above the earth’s surface, GPS signals are incredibly weak.

“GPS signals are ridiculously weak,” Wyglinski said. “The satellites are something like 20,000 kilometers up in space. When it reaches Earth, it’s an extremely weak signal. The signal from GPS is actually weaker than the thermal agitation of the electrons in the metal of the receiver.”

The only reason GPS works is because there are complex signal processing algorithms that distill the GPS signal from competing noise and interference within its frequency band. If GPS signals whisper, LightSquared signals scream — and that noisy neighbor could interrupt these quiet conversations.

LightSquared mitigated interference with standard GPS receivers by moving slightly away from GPS on the spectrum band and lowering signal strength. But this creates new problems for the company, Wyglinski said. Reduced signal power means weaker, spottier service for LightSquared customers, and creating a buffer zone — known as a guard band — means there is prime spectrum real estate that’s going unused. “It doesn’t make much business sense,” he said. “LightSquared is really stuck between a rock and a hard place.”

Another problem is the interference with high-precision receivers. If LightSquared can solve that issue, the GPS industry might be appeased. Jeff Carlisle, the company’s vice president of regulatory affairs, said LightSquared has been very cooperative, and now it’s the GPS industry’s turn to carry the onus.

Interference with high-precision receivers isn’t the company’s fault, Carlisle contends. “The GPS industry council asked us to limit our out-of-band emissions, so we did. We spent \$9 million developing a filter that did that.”

What the GPS industry didn’t tell LightSquared, Carlisle said, was that high-precision receivers only work properly by reading signals outside the GPS band. In late August, the Information Technology & Innovation Foundation, an IT policy think tank, filed comments with the FCC supporting LightSquared’s claim that the commercial GPS industry is responsible for interference problems between GPS devices and LightSquared’s network. The foundation alleged that the manufacturers of high-precision GPS

Who uses high-precision GPS?

One of the most outspoken opponents of LightSquared is in **agriculture**. John Deere sells high-precision GPS systems to farmers who want increased efficiency and accuracy from their equipment. Using a tripod base station, tractors, combines and sprayers can stay within 2.5 cm of their routes. But the receivers won’t work with LightSquared’s current broadcast settings.

GPS is also used in **public safety** to monitor earthquake and hurricane data. Because high-precision GPS can measure within centimeters, rather than meters, it can give researchers a more informative data set. In 2008, a team of researchers at Purdue University used GPS to predict the 2010 Haiti earthquake.

High-precision GPS is essential in **surveying and construction**, and many of the GPS tools used by surveyors would become useless without wide-band capability.



devices ignored government warnings and guidelines when they built their receivers, deliberately building devices that listen into the satellite L-band spectrum, which is where LightSquared wants to operate.

“The GPS people like to pretend this is something that started a couple of months ago, but they’ve known about this for 10 years,” Carlisle said.

LightSquared isn’t alone in its fight against the GPS industry. Many public interest groups and rural community leaders have presented letters to the FCC in support of the company’s plan.

Carlisle also branded the FAA report supporting the GPS industry a dirty political maneuver. “The report itself was completely inaccurate. They didn’t just say it would cause interference, they said we would completely knock out GPS for 10 years. Nobody is talking about knocking out GPS for one second,” Carlisle said. “They absolutely refuse to acknowledge the fact that high-precision GPS receivers are stationary. We know where they are. Many of them are near airports and we have to restrict our signal near airports anyway. There needs to be a certain amount of reality injected here.”

In fear of LightSquared’s broadcasts, hundreds of companies and groups from the GPS industry have united to create the Coalition to Save Our GPS. Jim Kirkland, vice president of Trimble, a maker of GPS products and founding member of the coalition, said the controversy with LightSquared comes down to a matter of intentions.

LightSquared’s original intent, as authorized by the FCC in 2002, was to offer limited-purpose, ancillary satellite fill-in for terrestrial service, Kirkland said. “This sat around in dormancy for eight years, and now they blame us based on a fill-in authorization and zero activity in eight years,” he said. “All the people talking now about what the FCC did weren’t even around in 2002.”

LightSquared’s chunk of spectrum is valued at roughly \$12 billion, but because of the way it was acquired, the company paid only a small fraction of that cost to acquire it, Kirkland said. “No one knew that they were going to do this. You’re telling me that AT&T or Verizon wouldn’t have bought them out?”

As for the claims that the GPS industry is being uncooperative, Kirkland said that’s an exaggeration — and it’s beside the point, because GPS was here first.

“The GPS industry has worked with LightSquared all along,” he said. “Trimble, my company, has two to three engineers working full time trying to find a solution to this problem.”

But LightSquared, he said, is the newcomer. “If someone came up to you and said, ‘Give me all your money,’ does that make you uncooperative if you say ‘No’? We want to make

this work,” Kirkland said, “but you’re not going to gamble on E911 calls and hurricane prediction.”

A ground network that reaches 260 million Americans by the end of 2015 is LightSquared’s plan largely because the FCC stipulated that figure — but it’s good news for rural areas that have trouble getting broadband Internet access. Akshay Sharma, mobile infrastructure research director at Gartner, said in some ways LightSquared’s plan could end up doing what Obama’s old high-speed Internet plan was supposed to do. “That turned out to be more of a jobs act; wireless is probably a better approach for rural America,” he said. “For these wide swaths of land, you can’t reach everywhere with fiber. LightSquared could even turn a lemon into lemonade.”

Jim Kirkland:

GPS-maker Trimble has several engineers dedicated to solving problems caused by LightSquared.



TRIMBLE

With Sprint shutting down the Nextel push-to-talk network, LightSquared is in a unique position to provide that functionality with its satellite coverage, Sharma added. And in fact, LightSquared announced in July its intention to provide push-to-talk functionality, emphasizing the benefits to public safety.

Public interest groups are paying attention to LightSquared because the company could help reverse growing vertical integration in the telecommunications industry. LightSquared plans to sell service wholesale to wireless retailers, which analysts say will give any company a chance to compete with the big boys. Deals with Best Buy, Leap Wireless, Cellular South, Net Talk, South Illinois Wireless, Powernet Global and Open Range have been announced.

Michael Calabrese, a senior research fellow at the New American Foundation, is among the public interest group representatives who have presented the FCC with letters supporting LightSquared. “It’s appalling because essentially the GPS industry has decided that they’re just going to take



BOB RIVES

an absolutist position," he said. "They're going to take the spectrum for their own use, they're not going to give it up, and they're not going to bear any of the responsibility. The GPS people haven't done anything since 2003, and from a standing start, now it'll take time and money."

The FCC has resolved similar issues before, like when Sprint was forced to rearrange the 800 MHz band so as not to interfere with public safety utilities.

"In that case, the FCC's order sternly stated that certain parties are trying to attribute blame, but no one was to blame. It's just crowded. These boundary issues are coming up more and more often. There's only so much beachfront spectrum," Calabrese said. "I think the FCC's motivated to try to find a path for the two industries to coexist."

A likely solution, he said, includes a multipart plan where the most important GPS infrastructure is fixed immediately to eliminate interference issues, and old GPS receivers are phased out over several years. The costs, he added, would likely be divided between GPS and LightSquared.

With the telecom industry trending toward a duopoly dominated by Verizon and AT&T, Calabrese said the FCC should not only allow LightSquared into the market, the agency also should encourage everyone to find technical solutions that allow LightSquared to use its entire spectrum. "The L band is a big chunk of a dwindling supply," he said, "we can't really afford to be throwing it away on a guard band."

LightSquared's plan also would allow for more innovation in the technology industry, Calabrese said. When Apple released the iPhone, it was forced to partner with a carrier because there are no wireless wholesalers. If LightSquared had been around, Apple or even a much smaller company could have released its device and provided its own service plans, leased through LightSquared.

The deal with Sprint, Calabrese said, was a good move. "That makes us much more hopeful about this. The fact that LightSquared could piggyback on Sprint's

infrastructure means it's much more likely LightSquared can do this," he said, adding that it's also good for Sprint because it makes it likelier that Sprint can survive the impending duopoly. "I think Sprint has in mind becoming an infrastructure co-op. They might invite other carriers to bring spectrum to their towers."

It's crunch time for LightSquared. If the company wants to begin testing its network next year, as planned, it will need to find a comprehensive solution to its interference problems. Michael Marcus, a wireless technology expert who worked for the FCC for 25 years, said LightSquared won't survive if it can't ace the next round of testing. "The day LightSquared turns on," he said, "there had better not be interference to most, if not all, GPS units."

The FCC is unequipped to handle this sort of testing, so the agency has left it to GPS and LightSquared to do the testing and return to the FCC with results, Marcus said. "They all hold hands and cooperate, but when you read the paper, you can see some friction going on." But it won't matter who is at fault if the interference problems aren't fixed, he said, because ultimately, GPS is too important to worry about playing the blame game. **GT**

colinwood0@gmail.com

Organizing the Band:

Allowing LightSquared to build a full-fledged network in its current spectrum band — known as the Mobile Satellite Service or MSS band — doesn't make any sense, contends Jim Kirkland, founding member of the Coalition to Save Our GPS. LightSquared's current chunk of spectrum is a legacy of the company's initial business plan to create a land-based network to fill gaps in satellite network coverage, Kirkland said, explaining that, "[In] spectrum planning and management, you put similar uses next to each other."

In early September, the House Committee on Science, Space and Technology heard testimony from **Scott Pace**, director of the Space Policy Institute at George Washington University. Pace, who has been involved with GPS issues for more than 20 years, proposed that the FCC, Obama administration and Congress deny LightSquared operation in its current state and withdraw its license to operate in the MSS band. Allowing LightSquared to operate without searching for alternate solutions, Pace said, violates the traditional organization of wireless spectrum and creates interference issues.

Pace proposed one solution — allowing LightSquared's satellites to operate in their current spectrum location adjacent to GPS, but moving the company's terrestrial service elsewhere on the spectrum. Space on the wireless spectrum may be hard to come by, he said, but jeopardizing a utility as important as GPS is not an option. "When it comes to spectrum efficiency, GPS is arguably the most efficient use of spectrum the world has ever seen," Pace said. "Almost a billion people are currently benefiting from the 20 MHz GPS signal that is available today."

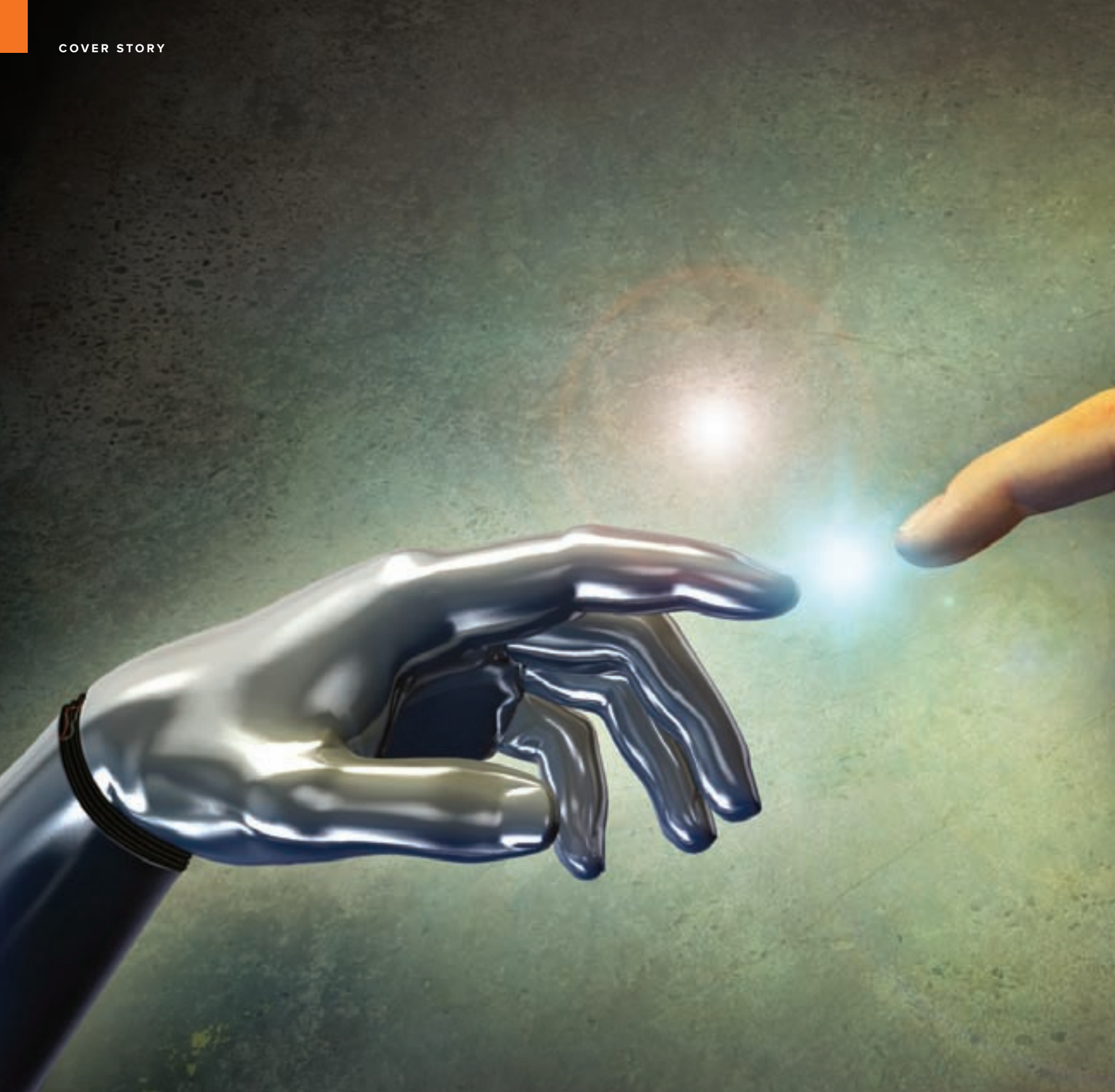


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AUTOMATION MEET



By Brian Heaton / Staff Writer

IT'S NOT EXACTLY ROBOCOP, BUT TECHNOLOGY IS MAKING OFFICERS SAFER AND MORE EFFECTIVE.

LAW ENFORCEMENT technology may not have reached the point where officers are replaced by cyborgs (think RoboCop), but new automated devices and robots are making public safety efforts more efficient and significantly less dangerous.

According to experts, unmanned ground robots, 3-D technology and various scientific developments are slowly but steadily changing how police, tactical and rescue personnel spend their time and do their jobs.

Four-wheeled drones (that have more in common with Mars rovers than screenwriter Ed Neumeier's RoboCop character) are increasingly being used to extend the eyes and ears of police and military personnel. A variety of companies are producing these robots, which are designed to keep people out of harm's way.

S POLICING

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The 30-pound **iRobot SUGV** is a tactical mobile robot that gathers situational awareness data for soldiers and public safety officials in dangerous situations. Various payloads and sensors may be added to extend its usefulness. The robot is used for surveillance and reconnaissance, bomb disposal, check-point inspections and explosive detection. Environmental conditions aren't much of a hindrance, as the SUGV is designed to operate on both rough terrain and city streets.



A mobile robot opens the door of a wrecked vehicle to see if any further dangers exist inside the car.

For instance, a line of ground and maritime robots from iRobot, a robot designer and manufacturer, is focused on achieving mission objectives such as observation and investigation. The company's small unmanned ground vehicles have been used by bomb squads and SWAT teams to gather information prior to raids. Knob Moses, head of iRobot's Government and Industrial Robots Division and a retired Navy supply officer, said giving people the ability to diffuse bombs and investigate scenes with a remote presence that features audio and video feeds is a huge safety benefit. Whether it's a

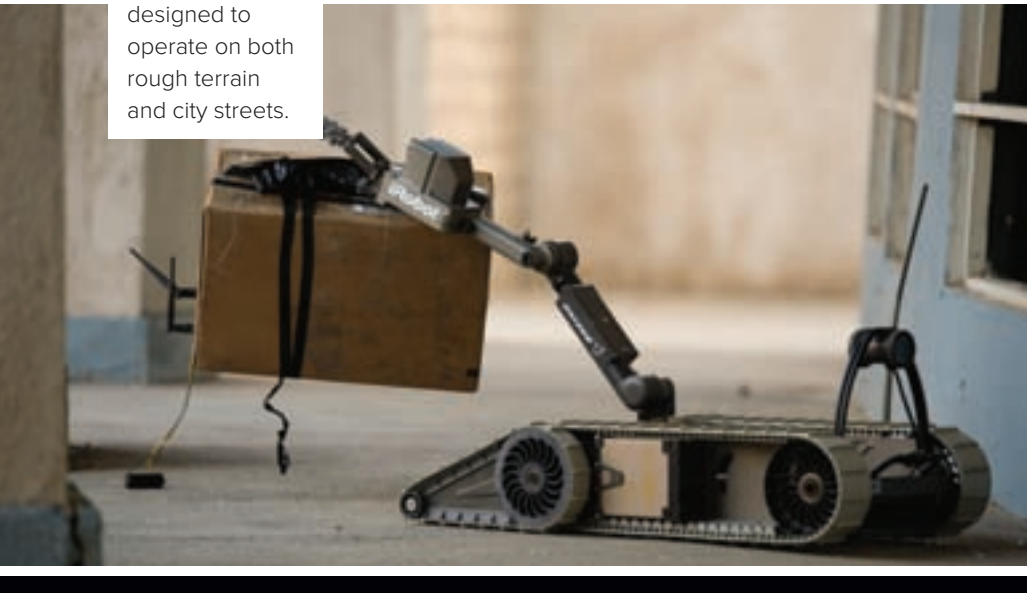
hostage situation or a drug lab, the ability to see and hear what's going on from a distance improves situational awareness and saves lives.

But Moses cautioned that robotics must improve before the devices can truly be a force multiplier. He explained that although iRobot's machines can cut wires and lift certain items, the extent of that manipulation is less than that of a 7-year-old's fingers, so the robots really can't replace human hands for complex tasks. Current-generation robots also can't right themselves if they tip over, he said, so a person would need to go and get the machine.

"What we really would like to be able to do is have a robot go into a building ... know there are stairs there and climb [them]," Moses said, adding that if a robot's audio and visual signals are lost, he'd also like to see a machine be able to automatically return to the last place it had communications.

"In terms of enhancing what a law enforcement or military unit can do, [a robot] is definitely a good tool ... but you still really would not want to use it for more sensitive operations," Moses admitted.

Automation is changing public safety in other ways too. Take the seemingly mundane task of verifying a person's identity. Now fingerprints can be checked against law enforcement databases in 60 seconds on the roadside using mobile devices connected wirelessly to internal systems. This is replacing the time-consuming task of hauling suspects to a police station for a standard fingerprint check.





ROBOT

Dolan, but it has significantly impacted officers' jobs. "As you look at the technology, it is not just what kind of cool gadget it is," Dolan said. "It is how efficient you can get workable data in a meaningful and timely manner to the officers, and this [fills that] gap."

Mobile fingerprinting technology also helps with public relations: A routine traffic stop where there are questions about a person's identity now doesn't have to frustrate a citizen with a drive to the station, Dolan explained. "Now we can do it in just a couple of minutes, and the quality of contact between the officer and citizen is much better," he said. "Therefore your experience with the police department is more favorable, regardless of whether you get a ticket or not."

This field-based biometric technology can be viewed as a force multiplier, because it makes officers more efficient. In addition, the technology improves officer and public safety by letting officers understand who they're dealing with in a timelier manner.

Although mobile fingerprint technology has been around for years, its use is now common in law enforcement, including the Los Angeles Police Department (LAPD) where officers utilize Blue Check fingerprinting devices as a part of their regular routine.

Blue Check may not be a "James Bond-type" futuristic tool, said LAPD Officer Steve

Other technologies also provide officers with more accurate information in a faster time frame. For instance, 3-D technology is making accident and homicide investigations more dynamic. Though not quite at the level seen on popular TV dramas like *CSI*, 3-D scanners enable law enforcement personnel to capture data from crime



3M COGENT



Cogent Inc.'s Blue Check mobile fingerprint scanner

allows Los Angeles police officers to verify identities during traffic stops or other field situations. The 3-ounce device confirms identities in seconds, eliminating the need to haul suspects to a police station for a standard fingerprint check.





The Leica HDS4500 is a high-speed, phase-based, shorter range scanner. Phase-based scanners use a continuous laser beam rather than a pulsing beam. Continuous lasers scan from 100,000 points per second to 500,000 points per second, making them a good choice for tasks with short time windows, according to the manufacturer. Besides forensic applications, these scanners are widely used in manufacturing and architectural industries.



DUTCH POLICE

Dutch authorities use a 3-D scanner to record the scene of a train crash.

scenes and create a model that takes a judge or jury on a virtual walk-through of the event.

The Central Virginia Regional Crash Team — a multijurisdictional unit composed of law enforcement agencies in the city of Bedford, Bedford and Franklin counties, the towns of Vinton and Rocky Mount, as well as the Virginia State Police and National Park Service — received two Leica HDS4500 3-D scanners in August for use during investigations.

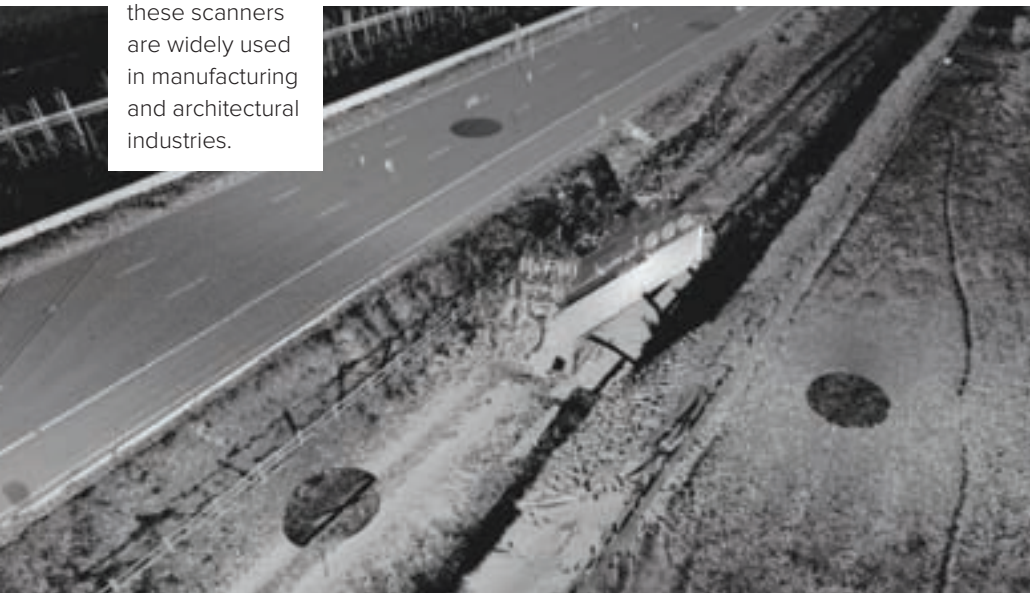
Capt. Jim Bennett of the Bedford Police Department said officers investigating a crash scene typically rely on tape measures and other equipment to draw two-dimensional diagrams

and perform calculations to determine the various factors that led to the accident.

But 3-D scanner technology not only produces three-dimensional images, it creates those images much faster and with less manpower. For typical accident investigations, Bennett said six people are sent to the scene, but the 3-D scanners' efficiency means that a crew of two do the same job.

"While it takes us hours or days to take these measurements, [the 3-D scanner] can do a 360-degree scan of a scene in six to eight minutes," he said.

The process is not much different than what's seen in a science fiction movie, where a complete room scan is done by a laser, Bennett said. The



CREDITS: HUMBERSIDE POLICE, PINELLAS COUNTY SHERIFF'S OFFICE, SCHOOL OF SURVEYING AND SPATIAL INFORMATION SYSTEMS, THE UNIVERSITY OF NEW SOUTH WALES, AUSTRALIA.

scanner measures the entire scene in eighth-inch increments. Those data points are downloaded onto a computer, where software uses them to reconstruct a 3-D model of the scene.

In addition to providing the model for investigators and people in a courtroom to visualize certain elements during a trial, the technology lets officers respond in court if their version of an incident is challenged by opposing legal counsel.

If there was a murder scene and the suspect was 6 feet 4 inches tall, and a defense attorney offered an unknown suspect of differing height and build as the murderer, Bennett said officers can input that data into the 3-D model and use the information to confirm or deny the plausibility.

“You can go back and re-create [scenarios] and come up with a truer picture of what may have happened, or you can dispel a theory,” Bennett said.

While many people associate technology with gadgets, Dustin Haisler, director of government innovation for Spigit, a software developer that focuses on idea collection and management, said crowdsourcing and collaboration techniques can make law enforcement more effective.


Software programs that collect the thoughts and ideas of officers from a “bottom-up” perspective, he says, help break down some of the barriers associated with strict hierarchies in law enforcement agencies. Haisler — former assistant city manager of Manor, Texas — made extensive use of crowdsourcing during his public-sector career.

Spigit’s solutions provide a Web-based platform where chatter from officers — in the form of ideas or suggestions — can be captured and then voted up or down by the officers’ peers and others. Haisler explained that the process is completely transparent so that a chief or decision-maker can see the idea, see how well it may be accepted, and ultimately make a decision on the idea.

“We are using behavioral science to make this process fun in an agency, but also to allow this chain of command that is traditionally within an agency to really be broken down,” Haisler said. “We operate on the premise of allowing anyone, whatever their role is within an agency, to submit their recommendations or to help validate and comment.” This way, he says, it grows through this process into something more actionable.

The open data movement being embraced globally is another advancement Haisler sees growing in importance for law enforcement agencies. While there are countless streams of data being compiled by databases and published online, Haisler said he believes citizens and police officers adding “contextual intelligence” to the data will add value to it and help investigators solve complex crimes.

Haisler also said most police officers serving a community know where crime hot spots are, but interactive use of open data might solve the deeper questions about the root cause of some crimes.

“It is probably going to be driven by allowing even citizens to look at open crime maps and use them like a virtual bulletin board,” he said. “[Right now], they can see it, but they can’t say, ‘Here is a piece of information about it or something you need to know.’ Allowing that information to get back to officers can help them better do their jobs.” 

“As you look at the technology, it is not just what kind of cool gadget it is. It is how efficient you can get workable data in a meaningful and timely manner to the officers.”



bheaton@govtech.com
twitter/govtechbrian

VIEWING DETAILS: Black-and-white scans (far left) often are sufficient and sometimes better for understanding an incident. Some 3-D scanners include an internal camera that allows color images to be draped over 3-D scan points (center). Users also may apply false coloring (immediate left), which shades scan points according to the amount of energy reflected by the object’s surface.

MAN+MACHINE

SCIENTISTS USE ROBOTICS TO BUILD A BETTER US.

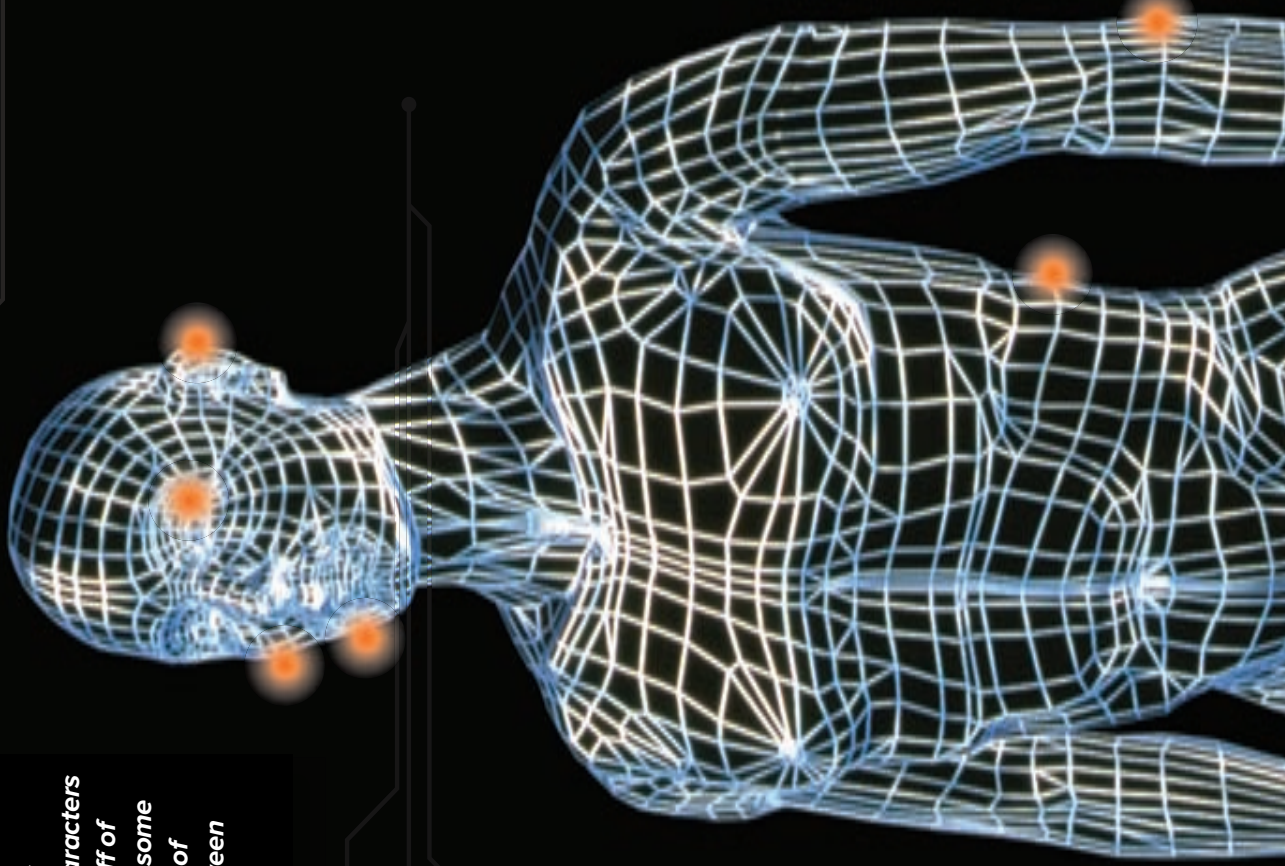
Robotics — Researchers may one day perfect the humanoid robot, but for now characters like Ed Neumeier's RoboCop remain the stuff of science fiction. Still, advances in robotics — some of them modeled on the heightened senses of animals — are blurring the boundaries between man and machine.

NOSE: It's no secret that sharks have an acute sense of smell, allowing them to quickly track down a source of blood in the water. Researchers hope to mimic those capabilities in underwater odor-detecting robots, which could seek out leaking oil pipes on the ocean floor. Meanwhile, Japanese scientists say genetically modified frog cells could result in a new generation of super-sensitive electronic noses capable of sniffing out any number of harmful substances.

MOUTH: Dental students in Japan are training on robots that blink and flinch just like humans would when under the drill. The silicone robots, which also sneeze, gasp and cough, look spookily realistic. These advances could improve public safety training, and may one day lead to robots that interact more naturally with humans.

EYES: Although the technology exists to give robots superhuman vision, it's much tougher to replicate spatial perception and other sight-related human capabilities. European researchers have created a 3-D visual system that's synchronized with robotic arms. Their progress in controlling the interaction between vision and movement could produce robots that recognize their surroundings and act appropriately.

EARS: Scientists are studying Ormia ochracea, a tiny yellow parasitic fly, in the hope of re-creating its keen sense of directional hearing. Research into the critter's ear structure is influencing the design of hearing aids and may result in efficient miniature antennas for radar and imaging systems.

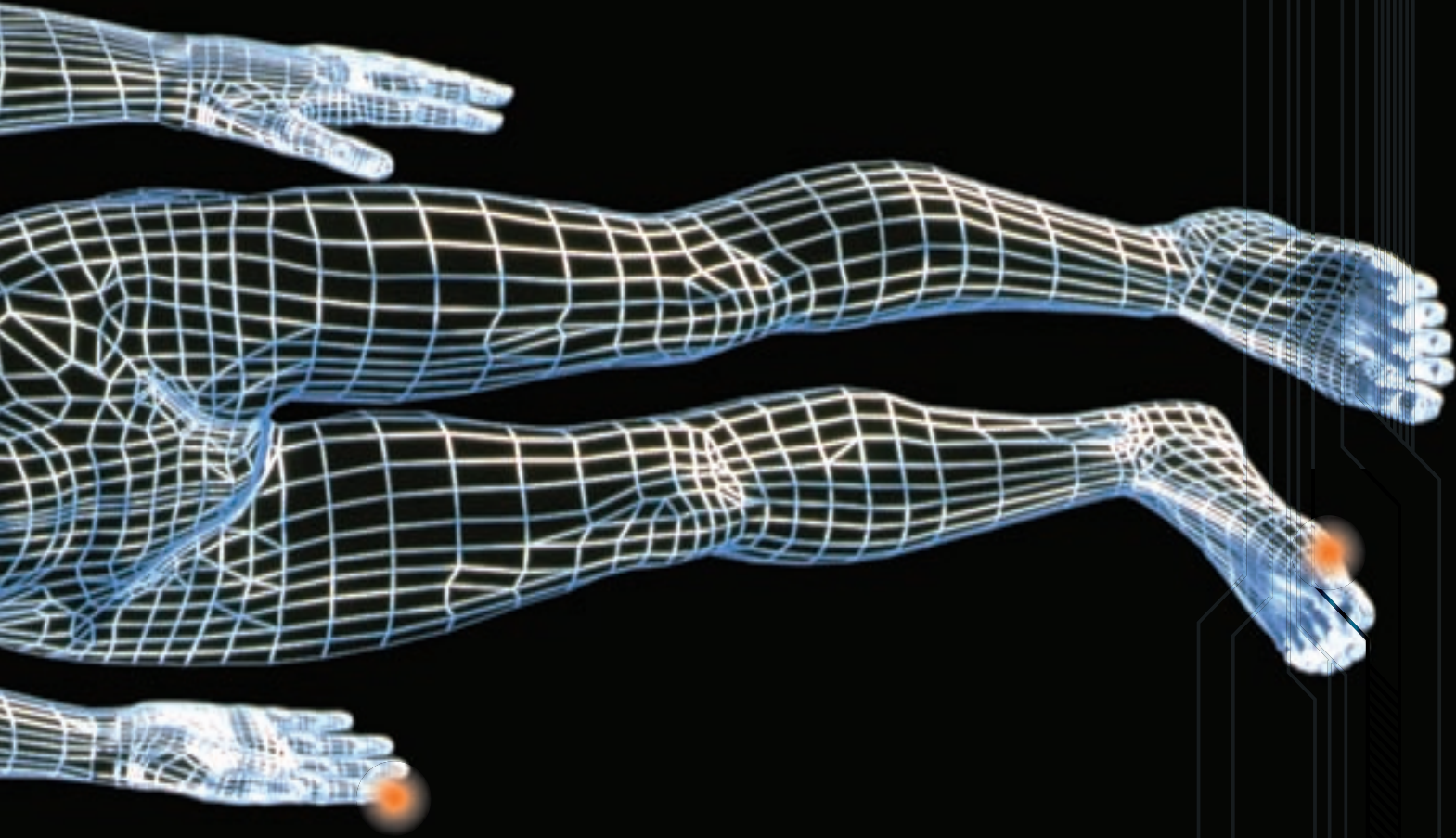


FINGERS: Current robotic hands lack the sensitivity of human hands. But two Stanford University graduate students recently showed off a four-finger robotic hand that rivals the human sense of touch. The device's fingers are covered with the same material used to make touch-sensitive smartphone screens. Advances like these will let automated devices take on more complex tasks, perhaps letting public safety professionals hand off more dangerous duties to their robot partners.

FEET: Technology modeled on the complex toes of geckos may produce robots that effortlessly climb smooth surfaces. A team of researchers led by a Stanford University mechanical engineer created the "Stickybot," which can scale slick glass and metal walls just like the tiny tropical lizard.

BACK: A team of universities in the United Kingdom is developing lightweight power-generation technology that may one day be woven into the fabric of military uniforms. Researchers are combining nanoscale solar cells with thermoelectric technology, which creates electricity based on the temperature difference between two surfaces to generate power night and day. Once perfected, the technology could supply reliable power for first responders, eliminating the need for heavy batteries.

SKIN: A Stanford University researcher is perfecting ultra-sensitive electronic skin that can detect chemicals and sense various kinds of biological molecules. The foundation for the artificial skin is an organic transistor made with flexible polymers and carbon-based material. The breakthrough could let robotic devices sense diseases and harmful chemicals, or even spot drunken drivers.





Sites to See

Annual Best of the Web program spotlights government's best portals.

Best of the Web spotlights the nation's top state, county and city Web portals based on innovation, functionality and efficiency. The portals are judged by a panel of retired government officials, senior executives from e.Republic's Center for Digital Government (CDG) and former Best of the Web winners (who did not compete in this year's program).

Among the categories reviewed by judges are site accessibility, innovation, cost-savings and level of service to the public. Best of the Web is a joint project between *Government Technology* and the CDG.

State Winner / Arkansas

The Natural State won for improvements made to Arkansas.gov. CTO Claire Bailey said the state strived to improve service delivery through various apps on its Web portal, such as an enhanced search function, a photo gallery, a much-lauded live chat feature and text4Help, a text messaging-based customer service tool.

Optimizing Arkansas' mobile Web presence was another a key driver. "We worked to enhance the mobile portal display so

we'd get more 'full' content pages," Bailey explained. The portal also was modified to have a more unified look and feel.

In addition, Arkansas.gov created various service widgets that Web developers can use for free to embed state information directly into other websites and social media. The widgets can be customized for a user's particular location.

Best of the Web judges were particularly enamored of the widget feature, calling it a "great example of collaboration and really groundbreaking" in terms of delivering local information and services.

City Winner / Seattle

Seattle topped the city portal winners. CTO Bill Schrier said the city worked hard during the past year to improve the portal's look and feel, spotlighting the work that his staff — and Julie McCoy, Seattle Mayor Mike McGinn's chief of staff — did to clean up the site's look and improve the visual experience.

The judges said the site's layout is consistent and that each page is "visually appealing." Seattle also was commended for its emphasis on blogging. "CityLink blogs not only enable

transparency, but this content is also pushed to RSS feeds and widgets so content is fresh," one judge said. "Many sites have blogs, but they don't allow public comments," added another judge. "This defeats the purpose of a blog. Seattle does it right."

Seattle wanted to better connect with constituents by being more interactive, Schrier said, so My.Seattle.Gov was developed to let users customize the Web portal. The "My Neighborhood Map" function lets visitors find city services, events and information.

County Winner / Stearns County, Minn.

Stearns County, Minn., was the gold standard in the county portal category. Information Services Director George McClure said the county took a subject-based, residential approach to building its website.

"We tried to focus on the topic the person had in mind," McClure said of the site's navigation bar. "We used the analogy of how you find items in the aisle of your favorite grocery store and grouped all the like items together. We took a unique and fresh approach, and I think that's one of the strengths of the site."

Best of the Web judges agreed. Besides complimenting the site's overall design and use of white space, they highlighted the portal's interactive mapping and online payment features, as well as social media integration. Judges also thought highly of the automatic redirect to the mobile version of the site, calling it the "best we have seen so far." In addition, judges praised the site's blog for kids and interactive calendar. **GT**

2011 BEST OF THE WEB AWARDS

State Portal Category:

- 1 / Arkansas
- 2 / Utah
- 3 / Indiana
- 4 / Rhode Island
- 5 / Texas

City Portal Category:

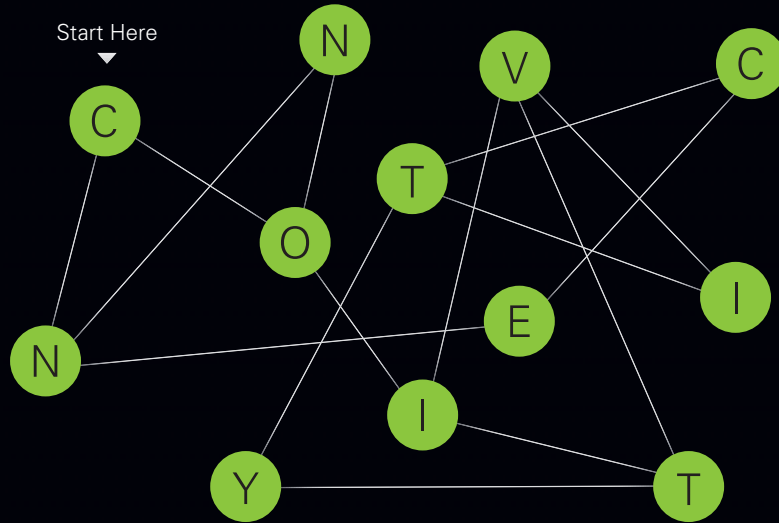
- 1 / Seattle
- 2 / Louisville Metro Government, Ky.
- 3 / Arvada, Colo.
- 4 / Riverside, Calif.
- 5 / Danville, Va.

County Portal Category:

- 1 / Stearns County, Minn.
- 2 / Oakland County, Mich.
- 3 / Miami-Dade County, Fla.
- 4 / Pinellas County, Fla.
- 5 / Roanoke County, Va.

See more Best of the Web winners online at www.govtech.com.

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Who's Winning the Cloud War?

Analysts look at the state of competition for cloud business among Microsoft, Google and Amazon.

By **Andy Opsahl** / Features Editor

State and local governments are expanding their use of cloud-based services, but it's hard to pick a clear winner among cloud providers in the public-sector market.

To some geeks in government, Google's 2009 defeat of Microsoft to run e-mail for Los Angeles was akin to Luke Skywalker's blow to the Empire in *Star Wars*. By October 2010, Microsoft struck back, signing an e-mail contract with New York City, moving 100,000 public servants to its cloud. In 2011, San Francisco also took e-mail to Microsoft's cloud and Wyoming became the first state to use the Google Apps for Government suite. These are just a few of the higher-profile examples.

Several other local governments currently buy cloud services from Google, Microsoft and other providers. Amazon Web Services (AWS) has crept up as another top contender with its growing list of federal agency cloud customers. But given that there's no dominant player,

analysts are left basing their predictions of success on the perceived strengths of the household name providers. For example, Microsoft's cloud has the lure of offering virtually the same applications that government employees already use — Microsoft Office. Google has been positioned as a low-cost, anti-incumbent challenger of Microsoft. While AWS is viewed as the charmingly scrappy hosting provider whose services are already attained under the radar by government programmers.

Insight from a few analysts could give CIOs more focus when assessing the cloud computing trend.

Broad Services Versus Storage Only

While Google, Microsoft and AWS are often seen as the top contenders for government cloud business, they're not always contenders for the same types of cloud business, said Rob Enderle, principal analyst for advisory firm Enderle Group. If governments want e-mail and other business applications as a part of a cloud contract, that would typically be a

contest between Microsoft and Google.

"Both Google and Microsoft are trying to provide broad services to that set of customers; Amazon is mainly storage," Enderle said.

Enderle expects Microsoft to do best with larger governments and Google with smaller ones. For large agencies moving massive e-mail systems to the cloud, Microsoft could be viewed by CIOs as a less risky choice, he said, especially if problems arise. A CIO on the hot seat to explain technology choices may find Microsoft easier to defend, given the company's long, tested history as an incumbent.

By comparison, Google Apps for Government is better positioned for smaller governments. "As you get down to city government, Google looks better because it doesn't have this big enterprise mentality that Microsoft has with regard to engagement [of customers]," Enderle said, adding that Google could play into sour feelings in government about Microsoft.

"Any vendor that has been working with anybody a long time is going to have

QUIT PLAYING AROUND.



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customers who are unhappy, and Google can play on that really well. It's a challenge and without a lot of history."

Google often has an edge on price too, he added, which would likely appeal to smaller governments.

"[Google is] the most heavily subsidized, and [it is] trying to buy into the market," Enderle said. "If price is your driving factor, then Google is going to look awfully good to you, particularly if you're pissed off at Microsoft."

Seeming to play into Google's attractiveness to smaller governments is an observation from Charles King, principal analyst for Pund-IT Inc., an IT industry analysis firm. He said Google Apps customers typically find the product to be a satisfactory replacement for Microsoft Office, assuming they don't need more expansive offerings, like Microsoft Publisher.

"You're basically buying a set of Web-delivered apps that have fewer capabilities than Microsoft Office does," King said. "The real question there is whether you need all of the bells and whistles that Microsoft provides. For many people and companies, particularly those economically constrained, a 'good enough' suite like Google's could make sense."

Regarding security, Microsoft is perceived as being the strongest, said Enderle. As evidence, he pointed to the frequent news coverage of the bounties Microsoft has offered to catch cyber-criminals. Bounty prices from Microsoft have been in the hundreds of thousands of dollars.

"If there is a breach, they are one of the firms that are very aggressive in terms of working with law enforcement to bring the people down," he said.

Google is stereotyped as less secure because it scans the free Gmail accounts it hosts in order to sell advertising, Enderle said. Enterprise-tier customers often believe the same applies to them, he said, even though the scanning function can be disabled in Google Apps for Government.

"The firm makes [much of] its money in advertising, so it carries the perception of being a firm that is not secure," Enderle said. "Perceptions guide buying behavior. It may be as [much as] or more secure than the other offerings."

If a government merely wants to store data or host a website, AWS is an attractive

option. Enderle said AWS isn't viewed as secure as Microsoft, but it's perceived as more secure than Google and offers affordable prices. Besides being the backbone for the federal government's Recovery.gov, AWS hosts sites for the U.S. departments of Treasury, Energy and State.

In the matter of overall market identity, King thinks Microsoft comes across as more focused on cloud services

power without putting any kind of stress on your own data center."

Thanks to Amazon's business model, these developers need little more than their government-issued credit cards to use the service, Enderle said. "When they need something fast and want to bypass process, Amazon is their favorite choice," he said, adding that, "It is done in government whether it is a legitimate option or

Cloud Comparison

<p>Microsoft®</p> <p>Considered in government to be the most secure cloud.</p> <p>.....</p> <p>Been in business for many years; strong business reputation.</p> <p>.....</p> <p>Governments consider best fit for massive cloud transitions; familiar with its products.</p>	<p>amazon web services™</p> <p>Best known for data storage and website hosting.</p> <p>.....</p> <p>Enables testing of apps without burdening an agency's data center.</p> <p>.....</p> <p>Flexible business model.</p>	<p>Google™</p> <p>Low cost; good for smaller entities.</p> <p>.....</p> <p>Has broad service offerings.</p> <p>.....</p> <p>It's not Microsoft.</p>
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than Google, which he said, can seem all over the map to customers.

"They have tons of projects going on in tons of different areas," King said. "The problem with that is, I don't think the public, businesses and government have a really clear view of what Google's value proposition will be for them as a cloud services provider. There is just too much going on."

Cloud Under Cover

Another stake Amazon has in the government cloud market is limited use of AWS' hosting by agency programmers for developing Web applications, said King. Enderle said he's also heard of this happening frequently in government, usually without the CIO's approval.

"It's basically to test drive [the applications] online with Amazon to see how they would work in the real world," King explained. "You get access to a significant amount of computing

not. This is one of the commonest practices out there, and it's across industry — public and private sector. It's bubbling up to be one of those things that's giving CIOs nightmares at the moment."

Enderle said developers typically do this to meet deadlines and survive on inadequate funding.

Montgomery County, Md., CIO Steve Emanuel said such activity could be occurring among "distributed" IT workers in individual business departments, rather than developers in a municipality's central IT group. Emanuel said programmers isolated in business departments could be motivated to purchase third-party hosting services on the sly.

"They cannot just load and run apps on the county systems, so this is a place where it could happen and core IT would never be the wiser," said Emanuel. **CT**

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Social Scene

Agencies keep an eye on the popularity of Google Plus and wait for a chance to join.

By Sarah Rich / Staff Writer

In June, Google threw itself into the social networking fray with the launch of a platform called Google Plus. The fast-growing service had attracted about 20 million users by September, according to various news estimates. If those numbers — which still pale compared with Facebook's 750 million users worldwide — continue to expand, government agencies might soon decide that Google Plus is worth supporting.

But does this new offering have what it takes to make its way into government agencies? The answer seems to be, "Not quite yet."

One reason is that Google hasn't established "brand" accounts for use by businesses and organizations (including governments). In a July 6 blog post, the company said it's working to make brand accounts on Google Plus available later this

year. Google recommends that businesses and organizations delay creating pages until then.

"Businesses and organizations can't really have an official presence there because [Google Plus] — as it is now — wants to keep all the accounts as personal accounts," said Lee Yount, a programmer analyst for the Catawba County, N.C., Technology Department. "But that creates quite the challenge for business organizations for external means of communication to the public."

Yount said his department is potentially interested in using Google Plus when the time — and features — are right.

New Features

Unlike Facebook and Twitter, Google Plus separates a user's followers into different groups or "circles." According

to Google, this arrangement improves the privacy of communication by allowing a user to post certain information to a specific group of people. According to a blog post in August by Jed Sundwall, president of Measured Voice, an Internet communications consultancy, the circles feature is a good way to organize contacts and manage distribution of content.

Along with circles, Google has created "huddles," "hangouts" and "sparks."

Huddles is a group messaging feature; hangouts are group video chat — whether it's on a desktop or mobile device; and sparks are content feeds for different topics a user may be interested in, according to Google's official blog.

What About Security?

After brand accounts are available on Google Plus, a few more tweaks might be necessary so government agencies can use the platform efficiently. For instance, the platform's security and customization features will be crucial, according to Thom Rubel, vice president of research for IDC Government Insights.

"I think it has to be modified in ways that recognize the highly sensitive nature of public information and government-owned information," Rubel said. "It needs to be customized in a way that offers state and local governments a high level of confidence that there's some specificity around certain kinds of services or government information."

Catawba County's Yount said he'd like Google Plus to facilitate a more open exchange of information. He wants Google Plus to emulate Facebook groups and Facebook pages, which are open to all users and don't require the acceptance of friend requests. Google Plus should follow suit once brand accounts are available to government agencies, Yount said.

"Google is going to have to create that environment for brands or organizations ... so that they can show everybody the information rather than having to add somebody to a circle or a thing like that," Yount said.

Growing Workload

Since social networking first gained traction among college students with the birth of Facebook in 2004, its purpose has expanded from a platform for communi-

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cating with friends to a way for government agencies to engage with citizens. Whether it's to announce new services or alert the public of an emergency, social media has slowly evolved into an important source of two-way communication between citizens and public officials.

“A lot of agencies and organizations are still trying to catch up to figure out how to use social media.”


But as government agencies use and support more social media platforms, staff workloads increase. If government agencies eventually decide to adopt Google Plus, Sundwall said adding another network to the list will certainly create more complexity for staff in charge of maintaining an agency's social media pages.

“A lot of agencies and organizations are still trying to catch up to figure out how to use social media,” Sundwall said. “I imagine Google Plus is going to change all the time — there are going to be continuous innova-

tions, new functionalities and features, and stuff people need to keep up on. That adds up because you're already on Facebook, and likely, you're already on Twitter.”

Before committing to the social network, Rubel said agencies should ask themselves if there's a specific business need that Google Plus addresses. If the answer is yes, agencies should identify

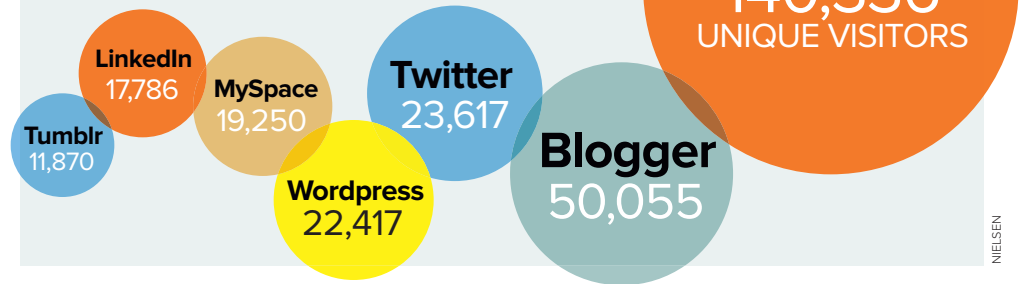
the needs that aren't currently being met through other social media networks.

Rubel said agencies should ask themselves questions like, “Does [Google Plus] meet a business need that will improve our services or improve the information that we're providing to citizens? How so?” 

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Hot Spots

A comparison of traffic to the most popular U.S. social media sites, based on visits in May 2011.



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Good Deeds

County e-recording system saves citizens time and money through online filing.

By Brian Heaton / Staff Writer

A new software program has made it easier to record legal documents in Richland County, S.C., and is saving citizens money and time, according to local officials.

Designed by the county's IT department, the Web-based Register of Deeds e-Recording System has increased efficiency at the county's Register of Deeds office (ROD) by reducing on-site foot traffic and streamlining the document filing process.

Instead of trekking into the office, people can record their documents online. The county estimates the change will save constituents roughly \$174,000 per year.

Janet Claggett, CIO of Richland County, explained that the ROD handles approximately 150,000 transactions annually in which citizens, attorneys, abstractors and title company personnel come to the county office to file documents and pay fees. By taking the process online, citizens can now record documents anytime they wish, saving both money and time.

"I had the opportunity to chat with one of the managers at our deeds office, and she said that [it] has become almost deserted since we went live," Claggett said. "Their foot traffic used to be heavy, but those days are gone."

To calculate the savings to residents and businesses, the county stayed conservative, estimating only 75,000 transactions

each year, and averaging the savings based on gas price, mileage and parking costs.

The county launched the program in December 2010 and created e-recording software using a federal stimulus grant for "green" projects. Claggett added that online recordings haven't grown quickly since the program went live and estimates that in time, the county should see 80 to 90 percent of all documents being filed online.

In addition to the savings Richland County residents are realizing from the e-recording program, the ROD is seeing benefits as well. The office has seen improvements in efficiency and accuracy in the county's document collection and filing process, Claggett said.

Local Praise and Future Projects

The e-recording system's success has been noticed locally. The program won a first-place 2011 Palmetto Pillar Award, in the category of "Custom Application Development." The annual awards program, hosted by the Greater Columbia Chamber of Commerce Information Technology Council, was held in August.


The event, which honors the area's leaders in technology innovation, started in 2000. Projects honored this year included startup ventures and public service technology projects. The council also provided

two scholarships to college IT students.

Despite its success, Richland County isn't resting on its laurels. Claggett said the county has two other custom software projects in progress. One of the efforts is a four-county collaboration to write custom software for a computer-aided mass appraisal system used by county assessors. Another is a management system that is used by Richland County's Premiere Online Data Services.

Although Richland is the project lead on the appraisal system project, the county will go live last, according to Claggett. "It may sound counterintuitive," she said, "but we have to stay with the project" until it's fully operable.

The first county in the group will begin using the system in December, with others to follow in 2012. Claggett said Richland County was an early adopter of the "agile" methodology of software development, where projects are done incrementally using cross-functional teams, and it has been successful for those involved on the project.

"The four county assessors participate in viewing demos of actual working code every 10 days," Claggett said. "It is amazing to see four jurisdictions collaborate and harmonize so well, but the four assessors seem to love this project." 

“ Their foot traffic used to be heavy, but those days are gone. ”

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Access Point

Pinellas County, Fla., residents video conference with jail inmates from a mobile visitation bus.

By Sarah Rich / Staff Writer

Video conferencing is often thought of as a useful tool to connect with people in distant locations. Students and teachers living in foreign countries take advantage of the technology to communicate with loved ones back home, and businesses use video conferencing to hold meetings with representatives sprawled across various locations. The technology is also providing a link between inmates and their relatives and friends in Pinellas County, Fla., where all visitations are done electronically. But the public has a choice: go to the jail to video conference with an inmate, or chat from a high-tech bus that travels throughout the county, making stops in certain cities.

BUS SCHEDULE

Pinellas County's visitation bus travels to cities throughout the region.

Monday and Wednesday:

St. Petersburg

Tuesday: Clearwater

Thursday: Tarpan Springs

Friday: Largo



This bus brings mobile visitation facilities to inmate families.

The mobile visitation program, which began in 2009, facilitates communication between the public and the incarcerated via a high-tech bus. The Sheriff's Office purchased the bus and outfitted it with six laptops that are equipped with video-conferencing software, said Pinellas County Sheriff Jim Coats. To video chat with an inmate, residents register in advance for a 40-minute time slot, according to the Sheriff's Office's website. Each week, the bus visits four cities located within Pinellas County, reducing the number of people using the jail's onsite visitation facility.

"I thought if we could reduce the demands of our inmate visitation — at the video visitation at the jail complex — and put it out in the community, it would help relieve the demand for services at the complex for video visitation," Coats said.

Residents can still communicate with inmates from the Video Visitation Center located in the Pinellas County Jail Administration Support building, but Coats said having the visitation bus also benefits

those who can't afford to drive to the jail or lack adequate transportation.

Bus, Camera, Action

The original bus was purchased from an auction in 2009, but due to maintenance problems, the department upgraded to a newer model last year, Coats said.

The six laptops on the bus connect to a wireless modem, which connects to a wireless access point (WAP) at each of the four locations. This WAP is available via a shared connection provided by local Internet service provider Bright House Networks, said Tom Boos, technical services manager for the Sheriff's Office. When the bus comes within 50 to 100 feet of the secured WAP, it picks up the signal, which provides Internet access to the laptop workstations.

Of the six laptops, only five are used at a time. "We're running it at about a 20-megabit download [speed] and about a 2-megabit upload [speed], and because we're doing a two-way conversation, we have to send video and audio both ways at the same time," Boos said. "So we're





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trying to squeeze in five simultaneous conversations, and we carve up the bandwidth that Bright House provides us.”

To match the caller to the proper inmate, a telephone operator at the jail’s visitation center connects video-conference calls made from the bus to one of the 200 video-conference stations at the jail. Boos said visitors schedule calls based on the inmate’s availability.

The department chose video-conferencing software by VCon, an Israel-based video-conferencing company, because it’s compatible with the department’s older computer systems, whereas some Web-based services are not. Software by Viewgate automatically turns off the call after the allotted 40 minutes are up.

A Worthy Expense?

Creating the mobile video visitation program carried an initial price tag less than \$62,000. The bus cost about \$23,000, Coats said. Outfitting the vehicle with tech-



ON THE ROAD

The Pinellas County, Fla., Sheriff’s Office spends about \$50,000 annually on its mobile visitation program to link inmates to their families and reduce the number of visitors to the county jail.

nology added another \$38,400. According to Coats, all funding came from either forfeiture or inmate commissary funds.

Annual expenses include the bus driver’s salary — \$34,000 a year with benefits — as well as fuel, and the wireless service, for a total of about \$50,000 per year. The program

may seem like a costly endeavor, Coats said, but it benefits inmates and their families.

“About 80 percent of our inmate population is pretrial detention, so these people haven’t even been convicted of the crimes that they’re charged with,” he said. “We think it’s important for the inmate and the family members to have the ability to talk via video visitation.” **GT**

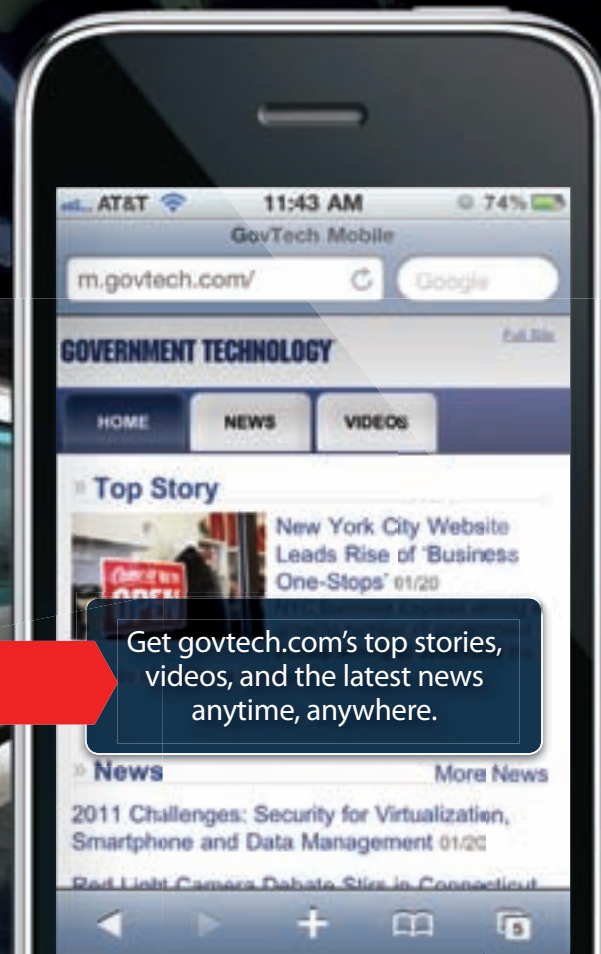


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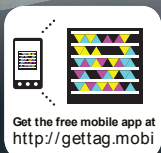
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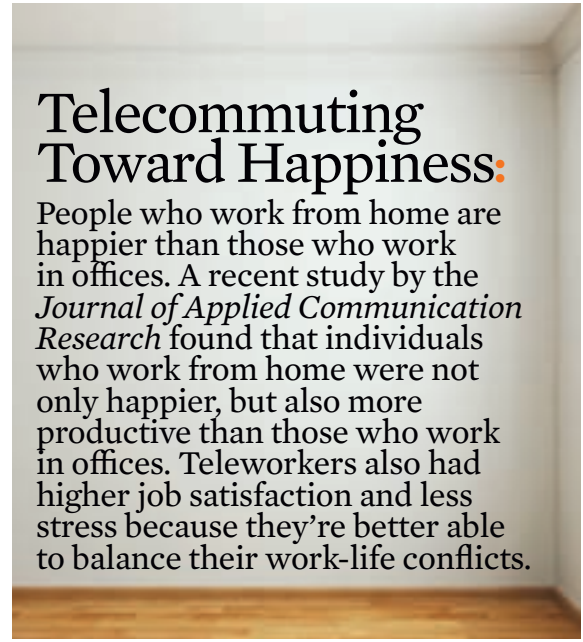
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Cardboard Cathedral

Cardboard homes are no longer makeshift abodes for the homeless. After New Zealand's magnitude 6.3 quake in February, a landmark church was destroyed, but its replacement won't be the typical structure. A temporary 78-foot-high, 700-seat cathedral from cardboard will take its place for the next 10 years.

Japanese architecture company Shigeru Ban is spearheading the project, which if approved, will be made from cardboard tubes sitting atop a foundation of 20-foot shipping containers. "Emergency architecture" has been used in Haiti and Japan where building materials are very expensive after disasters. SOURCE: POPSCI

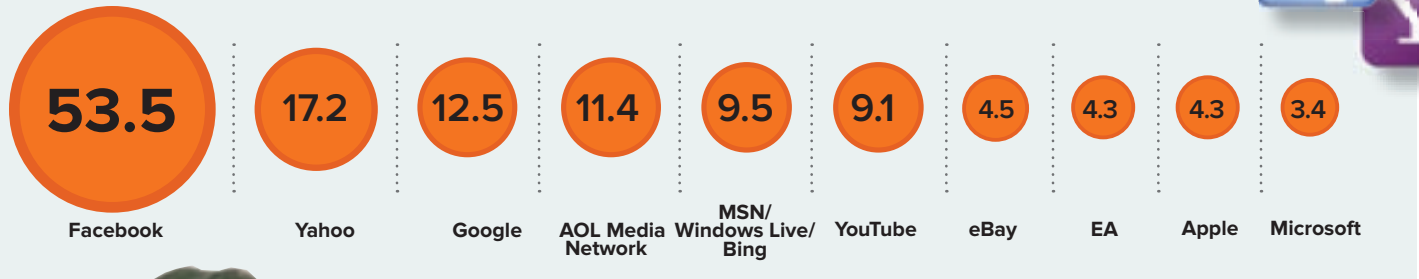


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People who work from home are happier than those who work in offices. A recent study by the *Journal of Applied Communication Research* found that individuals who work from home were not only happier, but also more productive than those who work in offices. Teleworkers also had higher job satisfaction and less stress because they're better able to balance their work-life conflicts.

Life Online Where do Americans spend most of their Internet time?

Top 10 U.S. Web Brands by Total Minutes, in Billions, Home and Work (Nielsen/May 2011)



Researchers are studying how **cyborg insects** could help search and rescue missions.

◀ Insect Inside

Researchers are finding that modifying real-life insects is easier than building robotic bugs. Using stimulators placed near a bug's antennae and electrodes implanted in its central nervous system, scientists can

control an insect's brain — and hence, its flight. Neural control systems in cyborg insects have generally been battery-powered, but researchers recently demonstrated an energy scavenger that makes power from the

wing motion of a green June beetle. The project is sponsored by the Defense Advanced Research Projects Agency, and the cyborg insect could be used in search and rescue, surveillance and HAZMAT detection. SOURCE: PHYSORG

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REVIEW

A Hardy, Secure Notebook

Beyond the HP ProBook 6460b's ability to handle demanding applications, its suite of security features will likely appeal to agency IT administrators who need to support field personnel and road warriors. HP ProtectTools, the company's security package, offers several sign-on options and authentication mechanisms to protect the laptop.

After switching on the machine and clicking the facial-recognition access option, my personal favorite, HP ProtectTools recognized my face using the webcam and gave me access within seconds. It's a useful luxury for those of us who appreciate security but hate passwords. HP cautions that one should activate the facial-recognition feature in conjunction

with another of the machine's authentication mechanisms, since it's possible for an intruder to trick the facial recognition with a photograph of the approved end-user.

Users can add fingerprint sign-on, which would be screened after the their face was recognized, or have the machine scan and identify a Bluetooth device. And agency help desk workers shouldn't worry about helping countless employees set up the aforementioned security tools. The company intended its current version of HP ProtectTools to resolve past complaints about user-friendliness. I think it succeeded — configuring the facial recognition, fingerprint sign-on and other security tools was intuitive and simple.

HP's QuickWeb feature takes the user to the Internet with a push of a button — without firing up the operating system. Because this functions separately from the operating system, a user can still access the Web, even if the operating system crashes.

As someone without a smartphone (gasp!), I would use this function to in airports to jump on the Web between tight connecting flights. But with the proliferation of smartphones in state and local agencies, those devices are probably better options for quick Web access, especially for workers routinely out of the office.

Using a liquid reservoir under the keys, the notebook can withstand minor spills, which drain from the bottom of the machine. I couldn't verify the reservoir's effectiveness, however, because the protective Mylar film on the keyboard kept most of the water I poured from penetrating. **GT**

editorial@govtech.com

ON THE INSIDE: The notebook is equipped with Intel technology and Windows 7 Professional 64-bit. Powered by a second-generation Intel Core i5-2410M processor and 4 GB of DDR3 1333 MHz memory, the unit “churns through resource-intensive applications and multitasking,” according to HP. The 14-inch LED-backlit anti-glare display offers a 1366x768 resolution, while graphics are handled by onboard Intel HD Graphics 3000. Storage options include a 320 GB 7200 rpm hard drive.

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Digital Clipboard

Americans use 90 million tons of paper annually, according to the Lawrence Berkeley National Laboratory's Environmental Energy Technologies Division. In fact, despite the long-running movement toward paperless processes and transactions, the U.S. remains the world's biggest paper con-

sumer, according to *The State of the Paper Industry* report.

The public sector is no stranger to the stationery conversation. Government agencies often boast about efficiencies they've gained as a result of going paperless. Even the U.S. Treasury Department recently started issuing paperless bonds. Ricoh's new **eQuill**, a feather-weight tablet that allows for a

digital workflow, may help simplify the process of going paperless. The "digital clipboard" writes like pen on paper and stores roughly 25,000 pages locally. The "e-paper" screen is 9.7 inches, has a 20-hour battery life and can be charged using a micro-USB cable or power adapter. Users can record data with the stylus, 5 megapixel camera, keyboard or voice recorder.

In addition, the device includes authentication technology that protects document integrity without creating extra work for users, according to the company. For government agencies, that means electronic documents created with eQuill will stand up in court just like paper, Ricoh says.

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Dealing With Change

What government agencies can learn from a good marriage.

A few weeks ago, I was at my county clerk's office trying to get my marriage certificate. Like many folks in my generation, I'm having a ceremony, but it's not in a church and my friend is the officiant. Therefore, I must get the official marriage certificate completed and signed at the clerk's office before my actual wedding.

In my conversation with the customer service rep at the clerk's office, two items struck me as to how my local government is failing to deal with change.

First, my fiancée is from Spain, so she has two last names. As a corn-fed Caucasian from Ohio, it took me awhile to understand it (you mean your mom's last name is your middle name? *No!* I have two last names). When we were filling out the marriage license, the customer service rep attempted to input both surnames, but the system couldn't deal with the situation — it wanted to hyphenate them. We explained it to the representative, who completely understood the situation. "It happens to me 10 times a day," she said, "but the technology guy says we can't fix the fields." I live in Florida, where 22 percent of citizens are Hispanic, so this is not a rare problem.

Second, the customer service rep said she's seen a spike in what she calls "yuppies" coming to the clerk's office to get a marriage certificate before the wedding. She said it's interesting, as it has increased the number of formerly rare questions (like how to get friends ordained in a given state), changed the popular times for people to come in, and changed the type of clientele. The agency, however, hasn't made any changes to adapt to these needs.

This happens all the time to cities and counties. Your citizenry

and their desires shift, but how do you keep up?

Companies deal with the same issue. Just a few months back, a new music company called Spotify entered the U.S. market with an unbeatable proposition — unlimited streaming music on your computer for free, but \$10 per month for access from their mobile device. My best friend just shook his head. How can the whole music industry be supported by a \$10 per month subscription on mobile versus buying CDs and iTunes? My local record shop has switched gears, selling less CD and vinyl, and morphing into a hybrid coffee shop/lunch spot with the remaining collectible records and memorabilia as art.

If my local record store can listen to customer demands, so should government. As budgets continue to shrink, government needs to constantly listen to citizen demands, whether they're driven by changing demographics, new technologies or other issues.

A good friend recently gave me this advice about marriage: The key is to continually grow with each other every day, because if you're not, one day you'll look at each other, won't know each other and will no longer be compatible.

To me, the analogy applies to government and citizens, whose relationship must be a two-way street, growing together — where government is continually listening to the demands and desires of its citizens. This is not an annual exercise, but a daily relationship with feedback to improve services. **CT**

Steve Ressler is the founder and president of GovLoop, a social networking site for government officials to connect and exchange information.



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