GOVERNMENT TECHNOLOGY

SOLUTIONS FOR STATE AND LOCAL GOVERNMENT

VOL26 ISSUE11 / NOVEMBER 2013

INSIDE:

With so many options, why can't we move to something better?

PASSWORD FATIGUE.

PLUS/ Idaho puts Braille on the menu

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KIMBERLY BRYANT, FOUNDER OF BLACK GIRLS CODE, HOPES TO DEVELOP THE NEXT GENERATION OF IT LEADERS.

GERRY McINTYRE

COVER STORY

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IN OUR NEXT ISSUE:

Year in Review
A look back at the technology and trends that shaped 2013.

Workforce Strategy
How local communities are preparing for the future.

Swift Resolution
Drivers with overdue fines video conference with judges from cop cars in Texas.

The only thing growing faster than citizen data is the need to secure it.

Understanding why government agencies need to secure big data is the easy part; cyber security attacks are escalating every year – putting citizen data at an increased risk. What's not always clear is whom government agencies can trust to help make securing and monitoring big data simple and efficient. At AT&T, we have over 1,500 security experts dedicated to helping government agencies increase big data security without exhausting resources. The experience we've gained while protecting over 19 PetaBytes of our own network data every business day is what makes us uniquely qualified to help government agencies secure more – with less.

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Rethink Possible®

By Steve Towns / Editor

Embracing Disruption

In a victory for the sharing economy, the California Public Utilities Commission (PUC) voted in September to license online-enabled ridesharing companies. The ruling lets fast-growing Web-based companies like Lyft Inc., Sidecar and Uber Technologies continue operating in California as long as they meet basic safety and insurance requirements.

> BEFORE THE CALIFORNIA PUC RULED IN FAVOR OF RIDESHARING COMPANIES IN SEPTEMBER, IT WAS AGAINST THEM.

The PUC's decision to license the Internet upstarts is a first for the nation — but it certainly won't be the last. Observers speculate that other states will follow suit now that California has broken the ice. And these pseudo-taxi services are just the tip of the iceberg.

A confluence of mobile technology, eBay-style user ratings and social media sensibility is spinning off disruptive new business models across a wide swath of industries. While taxi companies howl over companies like Sidecar — which connect paying passengers with drivers who use their own vehicles — hotel chains nervously eye Airbnb.com, which helps homeowners rent spare rooms to travelers. And others are bringing the same concept to everything from kenneling pets to parking.

Regulatory agencies — which need to balance safety concerns, fairness to entrenched industries and the potential advantages for consumers — have struggled with the rapid growth of these new companies. Before the California PUC ruled in favor of ridesharing companies in September, it was against them. The commission previously had issued cease-and-desist orders to Lyft, Sidecar and Uber and had fined all three firms.

In the end, however, California got it right. *Forbes* labeled the sharing economy "unstoppable" earlier this year, and it's probably right. Disruptive, tech-powered ideas like these have proven extremely hard to stamp out once they start. It's better to come up with reasonable rules to assure safety and try to be as fair as you can to both newcomers and incumbents.

The ruling, of course, didn't win the California PUC any friends in the taxi industry. Mark Gruberg of the United Taxicab Workers of San Francisco told the *Los Angeles Times*, "It's hard to see how the taxi industry with its rules and regulations and responsibilities can compete with a service that has none of those requirements." But if governments can get this right, consumers will win in the form of new transportation options and potentially lower fares.

Isn't it amazing what an innovative idea and a little bit of technology can do? GT

RAISE YOUR VOICE

Your opinions matter to us. Send comments about this issue to the editors at **editorial@govtech.com**. Publication is solely at the discretion of the editors. *Government Technology* reserves the right to edit submissions for length.

CENTER FOR DIGITAL GOVERNMENT

RESEARCH SURVEY

Legacy Modernization

November 2013

SHUTTERSTOCK

Introduction

Legacy systems continue to be a major concern to the state and local governments that rely on them. The various challenges they pose and ways in which they are being addressed are a mainstay in the national technology conversation in government. State and Local IT leaders are under continual pressure to deliver better services and up-to-the-minute business data to constituents while still keeping costs down. The Center for Digital Government explored this crucial topic with a recent survey conducted on the GovTech Exchange research community.

Through the study, we learned the priorities for state and local government leaders and gathered a better understanding of what triggers would assist them into moving from the conversation phase on the topic of Legacy Modernization to action. The overall picture is mixed — legacy applications are prevalent and are generally recognized as problematic, but the approaches and solutions being employed vary.

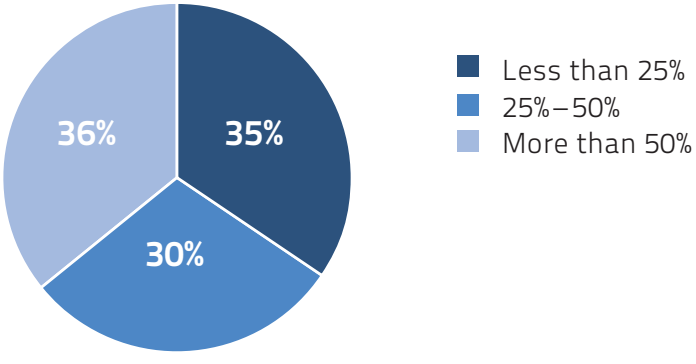
Prevalence and Importance of Legacy Systems

State and local governments overwhelmingly rely upon legacy applications; seventy percent (70%) currently use four or more, and more than one-third (41%) currently use nine or more legacy applications in their operations. Additionally, there is a broad agreement regarding the importance of these systems.

Number of Applications	Respondent %
0-3 applications	31%
4-8 applications	29%
9-12 applications	14%
13 or more applications	27%

These prevalent, mission-critical systems also tie up large portions of technology budgets. Respondents reported that an average of one-third (33%) of their technology budgets are devoted to maintaining these systems. Data collected also indicates that the budget impact of maintenance costs actually prevents or impedes efforts to eliminate reliance on these legacy systems (51%).

What percentage of your mission-critical applications are legacy based applications?



Challenges Posed by Legacy Systems

While state and local government business needs are evolving, over half (51%) of the survey respondents indicate that their existing legacy applications currently meet their needs while thirty-eight percent (38%) indicate that their needs are not being met and 11% responded that they don't know if their needs are being met. Though current needs for the majority are being satisfied, over half of state and local governments reported the use of COBOL, a programming language authored in 1959 and not updated significantly since 2002, in their legacy applications.

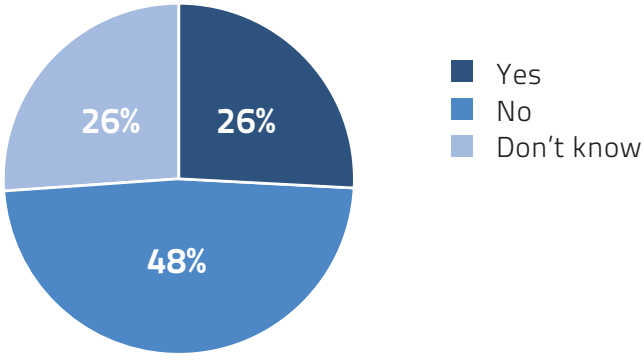
What language are these systems coded in?

COBOL	53%
Natural	17%
Powerbuilder	16%
Delphi	11%
Mapper	5%
Other	46%

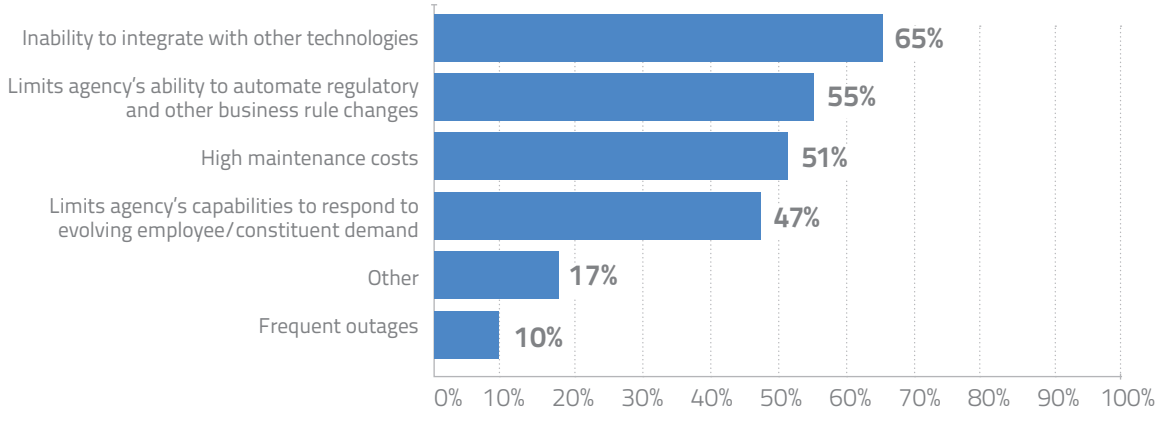
Nearly 40% of state local leaders indicate that their needs are not being met by their existing legacy applications

This use of outdated code to develop applications is likely a reason why forty-eight percent (48%) of respondents indicate that they will be unable to effectively recruit qualified personnel to maintain and enhance their legacy applications.

Are you able to effectively recruit qualified personnel to maintain/enhance legacy applications?



When asked to identify the pitfalls of long-term, continued use of legacy applications, state and local governments cite an inability to integrate with other technologies, high maintenance costs of legacy applications, and the legacy application limiting an agency's capability to respond to evolving employee demands as their chief obstacles:



Clearly state and local governments recognize and agree on many of the risks. This is further supported by a majority of respondents indicating that they will be modernizing their systems in the near future.

How Legacy Systems are Being Addressed

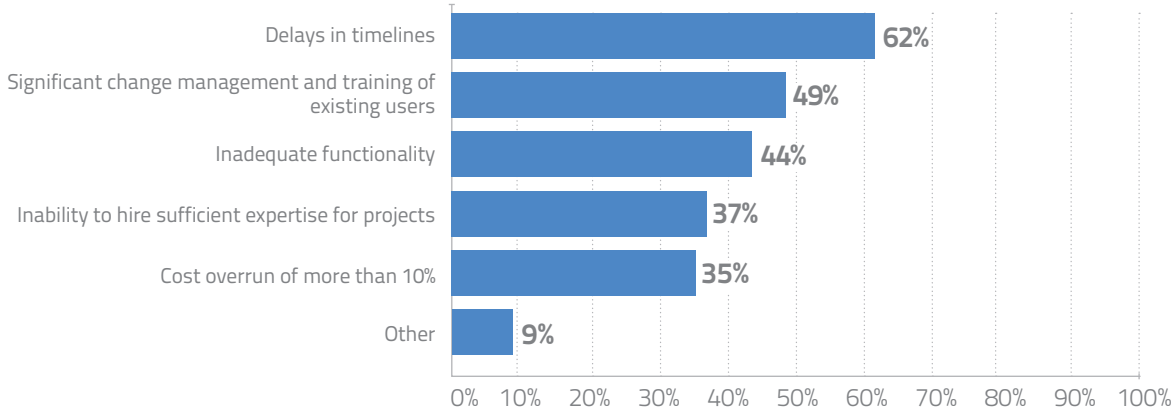
In order to address the numerous limitations of legacy applications, nearly 70% of state and local governments have indicated that they have a plan to modernize their legacy applications.

Of the state and local respondents with a plan to modernize their legacy applications, their time frames are relatively short — one in four respondents are seeking to modernize their legacy applications within the next year. The data shows that states and localities will be busy modernizing these systems over the next three years as sixty-four percent (64%) of respondents will tackle legacy modernization within the next three years.

Rip and Replace Has Been Painful

State and local leaders are grappling with whether to "Rip and Replace" or to modernize their systems. One thing is clear; "Rip and Replace" has been painful. Leaders have learned the hard way that these projects are frequently delayed, over budget and require frequent change management.

Have you experienced any of the following in your recent application replacement projects?



It Doesn't Have to Be So Hard

It is clear that the public sector will have to begin modernizing legacy systems — but how do they decide? What criteria should be considered? And, most importantly, what effect will the decision have on the agency and the mission?

The Cost of Doing Nothing is Too High
Doing nothing is often simply too risky and the continued operation and maintenance costs do not help contain spending. Luckily, the data reflects IT leaders recognize the pitfalls of continued use of outdated systems and legacy application replacement is a top-of-mind issue.

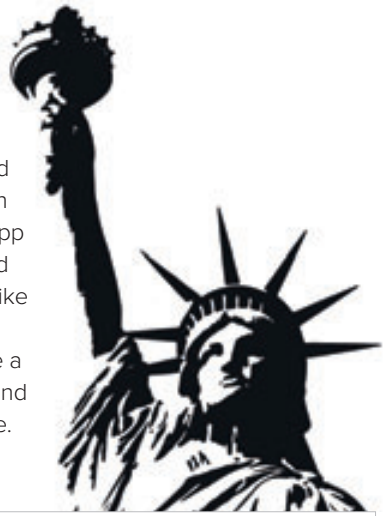
Rip and Replace is Too Painful
The most important task for any CIO is to determine the cost and the risk associated with an IT initiative. As evidenced in the survey findings, past attempts at legacy system modernizations have relied on rip and replace and have been very painful. IT leaders should examine alternatives to complete system replacement.

Legacy Modernization
Governments are pushing forward with modernization because they have no choice. The cost and risk of rip and replace has IT leaders examining legacy modernization to deliver a higher ROI by leveraging code conversion as a viable alternative.

> Legacy modernization through **code conversion delivers higher ROI with lower risk of failure** than rip-and-replace.

311 + Engagement

New York City launched a new mobile 311 service request tool with a format that's been compared to the restaurant and service review platform Yelp. In September, Comptroller John Liu's office launched NYC 311+, a mobile civic engagement app that allows users to report traditional 311 service requests and also write reviews of city government services and facilities like subway stations, libraries and playgrounds. Reviews can be submitted anonymously or publicly with the option to include a photo. Other users can support or comment on the review, and like Yelp, the platform offers a five-star scale to rank a service.



WHO SAYS?

"Privacy as we've known it is dead, and so we're going to have to reconcile that the two things need to go together: privacy and transparency."

www.govtech.com/quote-Nov13

64%

of apps are **developed outside of the United States**, reported Flurry Analytics. However, people spend most of their time on apps developed within the U.S.

Virginia Loves Cyber?

Virginia may be for lovers, but if a new accelerator program is successful, the state may also become a prime destination for cybersecurity innovators. The state's Center for Innovative Technology started a **Cyber Accelerator** program to kick-start cybersecurity businesses in the region. The accelerator consists of two 90-day sessions with each featuring four to six startup companies. Participating startups receive an initial round of funding from the center. At the conclusion of the sessions, demo days will be held to showcase the companies' products to investors. If a company is successful, it will receive a second investment from the center and additional funding from private investors to continue work. The idea is to encourage cybersecurity professionals and technologists to step forward with their best ideas and turn them into product-oriented, market-facing businesses.

HOT OR NOT?

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Google Glass Prompts Experiments in Journalism Schools	98 SHARES
Super Wi-Fi Pilot Hits Libraries Around the Country	85 SHARES

reader/**comments:**

"Perhaps you need to emphasize anti-bullying programs first. Young women who break stereotype are still punished by peers, society and sometimes even teachers. All the happy STEM girl talk in the world has a hard time countering the grinding down many young women still face when they transgress as 'fake geek girls' into boy territory. Adolescence for girls is about more than academics. Address the social aspects or fail.

***shavanerad in response to* National Movement Targets Lack of Women, Minorities in Computing**

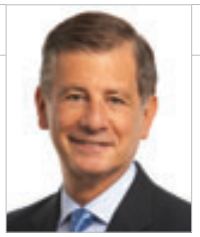
"Where did the money come from for this facility and how much did it cost? San Antonio and Bexar County are no different than other localities stretched for funds and unable to adequately fund over-sized pension and health benefit promises to public employees. There is no discussion or effort by the many disjointed, existing library systems around the country (public, schools, colleges) to regionalize their operations and eliminate duplicate management while increasing volume buying power of materials.

***BrentJavanovich in response to* Texas' Bookless Library: BiblioTech Turns the Page on Tradition**

"Top-down technology ideas are rarely successful. Government's best role is to get out of the way, spend less of each taxpayer's hard-earned money and encourage free-market, citizen-driven solutions. In addition to the technical and political (disparate quality of service) issues, there is also the issue of concentrating so much power over communication in the hands of government. We have only to look at Iran, Iraq, North Korea, etc., to see how government, when faced with an information-driven challenge to its authority, will quickly shut down the Internet in an attempt to silence dissent.

***John_Westra in response to* Riverside to Scrap Public Wi-Fi?**

 By Stephen Goldsmith



Paint a (Data-Driven) Picture

Visualizing information is the next step in making open data portals more useful to the public.

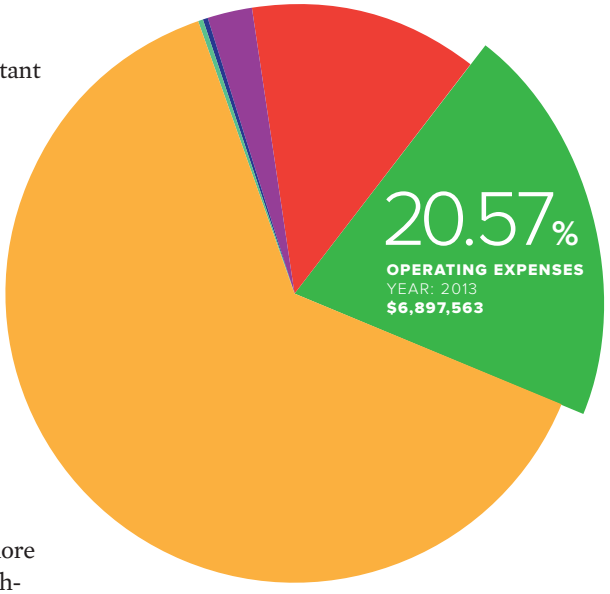
With a click of a button, governments can now make a dizzying number of data sets available to citizens. The information, from 311 calls to budget trends, can fundamentally change how the public engages with policymakers. Most of the time, however, the sheer amount of data proves daunting to those unfamiliar with spreadsheets and sophisticated data analysis. How can officials make the data they provide more useful to the public?

Increasingly, public officials recognize that simply providing raw data isn't enough. One solution to making data more accessible involves visualization. Interactive charts, maps, and graphic aids can transform data, allowing consumers to quickly shift through thousands of data points to view patterns and draw conclusions.

Chicago's Data Portal includes functions to visualize many of the city's 955 open data sets, with user-configurable options for various kinds of charts and maps. The city also curates an official site to highlight third-party use of its open data at digital.cityofchicago.org, many of which take the form of maps or visual apps that make the data more useful. For example, last year civic technologist Tom Kompare built a flu shot finder that Chicago eventually incorporated into its own website.

Visualization also plays an important role in helping officials and citizens alike understand municipal service requests. For example, Citizens Connect, Boston's 311 app, allows users to view service requests on a map of the city. By looking at all spatially clustered requests, viewers can identify related concerns and even propose solutions through the app. Users can see which neighborhoods have the most service requests, and they can also click on the map to see which requests have been investigated and closed. Mapping 311 data makes it more relevant and usable to different neighborhoods while also allowing the city to ensure it is serving all residents equitably.

Budgets also provide high-value targets for visualization. How governments spend public money is a crucial and deeply contested aspect of governing, but even in the transparency era, citizens labor to decipher thousands of pages of PDFs showing one line item after another. Several cities have begun to address this problem with budget visualization tools that turn the dreary budget PDF into categorized, interactive and searchable charts. South Orange, N.J., implemented one such tool, built by OpenGov, earlier this year. Mayor Alex Torpey has found it useful for internal processes and for communicating the realities of budgeting to the public. "As people begin to understand the complexities of how this money gets divvied up [through the visualization], they understand that they're not solving problems by just suggesting to cut the budget," he said. "To me, it's not just the accessibility piece but the education piece. I want people to understand what we're doing."



This chart shows a breakdown of 2012-2013 budget for South Orange, N.J.
SOUTHORANGE.OPENGOV.COM

Visualization drives interaction and responsiveness. The dramatic enhancements in visualization must catch up with the transparency, data analytics and performance movements in order to drive true progress.

Stephen Goldsmith is the Daniel Paul Professor of the Practice of Government at Harvard Kennedy School and directs the Innovations in Government Program and Data-Smart City Solutions. He previously served as mayor of Indianapolis and deputy mayor of New York City.

GOVERNMENT

An ever-increasing amount of your staff is using mobile devices for work. But without a complete mobile solution in place, your infrastructure can be overtaxed and sensitive data may be at risk.

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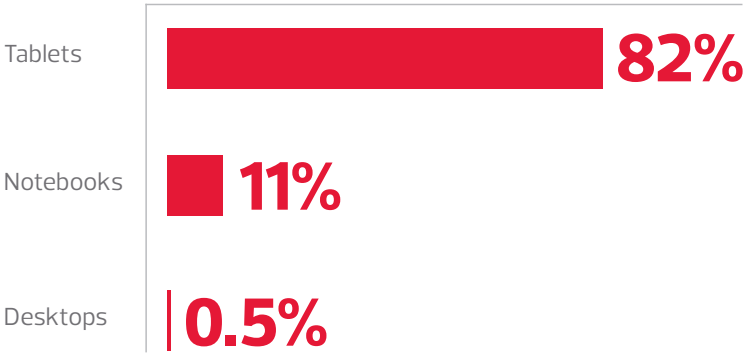
THE PEOPLE DEMAND MOBILITY »

2012 INCREASE IN SALES[1]



AND IT'S CHANGING THE WAY YOUR AGENCY WORKS. »

49% of state and local IT professionals use their personal devices for work.[2]

BUT WITHOUT A PLAN TO SUPPORT MOBILITY, YOUR NETWORK CAN BE LEFT EXPOSED.

39% of state and local government officials do not lock their mobile devices.[2]

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For more information on mobility solutions for state and local governments, download our white paper at CDWG.com/mobilitywp

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[1]IC Insights, IC Insights Raises Forecasts for Tablets, Notebooks and Total PC Shipments [2]Center for Digital Government, "Mobilty and Security Research" September, 2012

JAKE BELCHER

William G. Brooks III

Chief of Police, Norwood (Mass.) Police Department

The first Police Innovation Conference took place in September at the Microsoft New England campus in Cambridge, Mass. On the eve of the event, Government Technology *spoke with several top public safety officials to get their take on the top technology trends making their way into law enforcement this year. Among them was Norwood, Mass., Police Chief William G. Brooks III.*

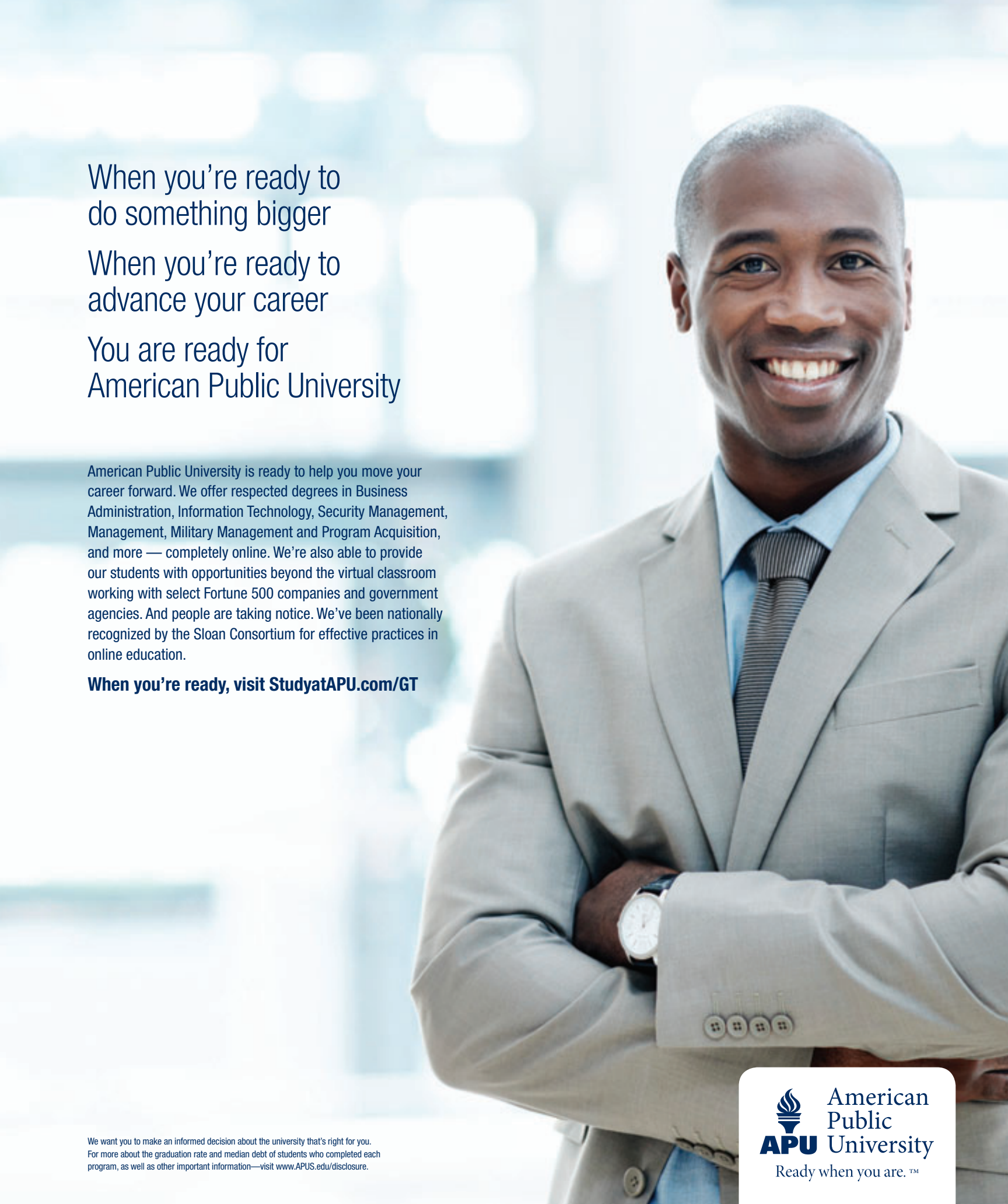
1 What are this year's top trends in police innovation?
The effective and efficient use of community outreach technology. Everyone is aware of social media (Facebook, Twitter, etc.), but there seem to be more and more types cropping up. I'm interested in knowing what has worked for other police agencies, because I think you can do too many, and I believe they can be mismanaged. In the end, you want to use social media to not only reach the tech savvy, you also want the average resident to be able to stay connected.

2 What has changed compared to last year? The drone issue is hot. What can they do, how do you manage them? How do you keep the community on your side? The police should not use a tool just because someone is selling it. You must first decide whether there is a need, and then what the benefit is. The second issue rushing forward is body-worn cameras by police officers. Dash cams have been around for years, but technology can now put a camera on an officer's uniform. So the application is no longer just drunken drivers, but domestic disturbances, use of force and, with the case of the NYPD just recently, stop and frisk. The cameras are great, but you have to figure out management systems: Where do you store the data, for how long, is it Freedom of Information Act material, etc.

3 What innovations or technologies most interest you? Strategic crime control. How to use software to predict crime, prevent crime and identify trends and series. Also the proper use of social media, which I believe my department does effectively.

4 What about drones and robots? How is that technology changing law enforcement? Drones are too new, and we don't see them here. Robots have actually been around for a while. Bomb squads use them, so now SWAT teams are calling out the bomb squad even where there's no bomb, just to make use of the robot. If there's a barricaded gunman, you hate to send in a dog because you don't want the dog shot, but you don't want officers hurt either. A bomb robot can climb stairs. They have cameras and mics. You can also broadcast a message to the subject. Now it's up to us to identify safe, legal and effective new uses. GT

— Chad Vander Veen, Contributing Writer



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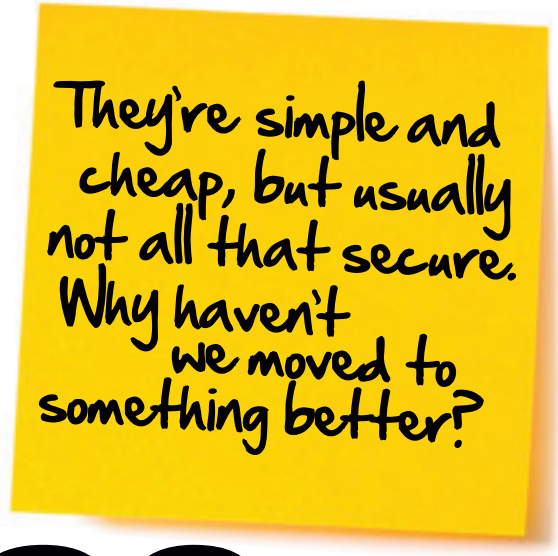
IBM SMARTER CITIES

Nerve Center of the City

This operations center in Rio de Janeiro integrates more than 20 local departments to improve public safety and incident response across the city. The center — built by IBM and opened in late 2010 — consolidates data from various urban systems to provide real-time visualization, monitoring and analysis. The system was designed initially for forecasting floods and related incidents, but it is extensible to any event occurring in the city, enabling leaders to make decisions in emergency situations based on real-time information.

By Chad Vander Veen / Contributing Writer

Why Do We Still Use Passwords?



Laziness, carelessness, stupidity, ignorance, naiveté — what do all these have in common? They're all reasons passwords don't work and also the reasons we're still using passwords. People and corporations, small businesses and government agencies, by and large everyone is too lazy to do what's right when it comes to passwords because what's right is a pain in the ass. Of course, getting hacked is much, much worse, but that's where naiveté factors in — it won't happen to me.

password
iloveyou
123
trustno1
monkey
password2
abc123
456
password
123
master
welcome
abc123
123
123456
456
password
qwerty
456
iloveyou
password
letmein
123
master
cheese81
welcome
5678
123
trustno1
master
456
123
abc123
sunshine
password
456
123
iloveyou
master
123
shadow
master
password
password
password
123456
123
567
monkey
monkey
123
my_password
123
football
123abc
trustno1
password4
123
iloveyou
letmein
567
5678
iloveyou
password

On Internet discussion boards like Fark and Reddit — places where pop culture knows no expiration date — anytime a thread about password security comes up, you'll invariably encounter this quote uttered by *Spaceballs* antagonist Dark Helmet:

"So the combination is ... one, two, three, four, five? That's the stupidest combination I've ever heard in my life! That's the kind of thing an idiot would have on his luggage!"

Luggage in the '80s, email accounts today. Actually, it's somewhat unlikely to have 12345 as your password if only because most applications require six or more characters, which is why annual lists of the worst passwords almost always include 123456 in the top 10.

Passwords have been used by humans for millennia; they're part of our shared culture. But that's not the only reason we cling to them. We also like them because they're simple and they're free — for manufacturers and consumers.

"I think passwords are a part of the culture for most enterprises because they are well understood, easy to use and built in by default," said Dan Lohrmann, Michigan's chief security officer. "Other security options often cost more or add complexity. There is an old saying in technology: 'Whoever writes the draft first wins.' I think that saying applies to the use of traditional PC passwords."

The first draft was written when Julius Caesar invented the Caesar cipher, one of the earliest known forms of encryption. Or more than likely, someone a thousand years before Caesar came up with his own method of authentication. The point is that humans are hardwired for authentication and passwords are the easiest, cheapest, fastest solution.

There are a host of wannabe usurpers to the password's reign. But can any lead the revolution?

Two-Factor Authentication

Have you ever logged into Facebook from someone else's computer? If so, you probably had to enter your password and then complete one or more security verifications such as identifying someone in one of your photos or providing the secret answer to a previously agreed-upon question.

Or say you can't remember your password. PayPal, for example, will call you at the phone number on file and give you a code you must then enter in order to gain restricted access to your account — enough to begin the password recovery process.

These are examples of two-factor authentication. Two-factor authentication is becoming the norm for password security in what amounts to a concession from users to information security officers pleading with them to follow basic password security protocols. Since almost no one follows those protocols, two-factor authentication has become the stop-gap.

Two-factor authentication means simply that authentication requires two means of identification. The current standard is that two of the following three factors must be authenticated:

- something the user knows, such as a password;
- something the user has, such as a mobile phone; or
- something the user is, such as a fingerprint.

"In the past, a lot of the efforts in this area were to find a replacement for passwords," said Nishant Kaushik, a security blogger and chief architect at identity management firm Identropy. "It was recognized that passwords are bad, but biometrics and other mechanisms were never a good replacement because they all suffered their own flaws, and could not counteract the biggest thing passwords have going for them: They are cheap and convenient. What we are seeing today is a growing movement away from explicit, point-in-time authentication to a recognition model that mixes implicit factors — like device recognition, geolocation and behavioral analytics — with explicit challenges such as passwords, biometrics, OTPs [one-time passwords] and dynamic KBA [knowledge-based authentication] based on identity verification services."

"So the combination is ... one, two, three, four, five?"

But Kaushik and other experts know these solutions won't provide complete security. In fact, they're not even designed to.

"The core idea is to enable a risk-based model where these factors can be combined in various ways continuously throughout the user's interaction with an application environment so as to provide continued assurance regarding the identity of the user," Kaushik said.

Two-factor authentication is a risk-based model. In other words, there's a level of acceptable loss that people and organizations are willing to take in exchange for somewhat better security with minimally increased complexity.

Not all two-factor authentications are equal, either. Consider how much of your personal data is online, probably mostly on Facebook and maybe LinkedIn. For many users, a quick click on an "about" tab will

Google Apps' Top 10 Passwords

1 / Pet's name
2 / Significant dates (like a wedding anniversary)
3 / Date of birth of a close relative
4 / Child's name
5 / Other family member's name
6 / Place of birth
7 / Favorite holiday
8 / Something related to your favorite sports team
9 / Current partner's name
10 / The word "password"

reveal plenty of information that will defeat simple authentication schemes — things like an email address, date of birth, hometown, current town, spouse's name and best friend's name.

"Two-factor authentication appears to be the current norm for applications that are considered more secure," said Timothy Maliyil, CEO of AlertBoot, a cloud-based data and mobile security company. "Two-factor authentication is nothing new, but using a device such as your cellphone via SMS or an automated call is getting more traction. The belief is that a thief is unlikely to have both your password and your cellphone, so sending a one-time authentication passcode to your mobile phone via voice or SMS text message creates that second factor of authentication."

But say your mobile phone is stolen and a hacking-minded crook wants to get into your email as well. For the crook, it could be as easy as clicking on "forgot your password?" and plugging in the details you already posted online. If the system uses true two-factor authentication, it might send a code to your mobile phone, which the crook has. If the system merely asks a verification question like where you were born, you could find yourself in a world of hurt in mere minutes.

Biometrics and Beyond

For anyone who has ever watched any science fiction or high-stakes techno-thriller, you know there's a better solution: biometrics. Fingerprints, retina scans, voice recognition — so why aren't biometrics replacing passwords? Well, they are, sort of. You probably have a fingerprint scanner on your laptop if it's relatively new. HP, Dell and others have included facial recognition in their laptops for a while now. But the reality is even if you do have these features, you probably don't use them. And for those who don't have biometric devices built into their equipment, the expense and hassle usually don't justify the results.

Theodore Claypoole is a senior partner at the tech law firm Womble Carlyle and heads its Intellectual Property Practice Group. Claypoole also is co-author of the book *Protecting Your Internet Identity: Are You Naked Online?* He said biometrics don't cut the mustard with most Americans for the same reason passwords still do — convenience.

"Protection of consumer transactions tends to be 'good enough' two- or three-factor authentication, rather than high-level intense biometric-based multi-factor authentication," Claypoole explained. "The current magnetic striped card system has worked relatively well for 40 years now, and consumers have not pushed for additional security."

Claypoole points to a series of reasons why biometric authentication largely hasn't caught on. "First, changing the entire system would be expensive for everyone, and is therefore resisted by consumers, retailers, banks, processors and the card companies," he said. "Second, a smarter, more protective system would not be so substantially better than the current operating system that it would be worth the change. Third, tests have demonstrated that American consumers have absolutely no tolerance for hassles and headaches in line at retail stores, especially due to false negatives in biometric security. No one wants to be told that their thumb is not registering as the correct thumb, especially in line at the grocery store with shoppers filling the lane behind you."

If not biometrics, then what — what will free us from our dependency on passwords? As more devices are of the touch-screen or even motion-sensing variety, most expect to see innovative physical (touch) or gesture-based solutions start to replace the typed-in password.

Windows 8 made headlines with its picture password feature wherein a user preselects a photo from his or her library and assigns shape drawings and/or taps for authentication. A company called PixelPin offers something similar that has a user making four specific taps on a chosen photo.

Google and others seem to be leaning toward a USB security device that companies like Yubico, which Google is rumored to be partnering with, are developing. In fact, Google Vice President of Security Engineering Eric Grosse and Principal Engineer Mayank Upadhyay told IEEE's *Security and Privacy* magazine earlier this year that they have something up their sleeve.

"Others have tried similar approaches but achieved little success in the consumer world. Although we recognize that our initiative will likewise remain speculative until we've proven large-scale acceptance, we're eager to test it with other websites. ... We'd like your smartphone or smart-card-embedded finger ring to authorize a new computer via a tap on the computer, even in situations in which your phone might be without cellular connectivity."

Yubico is fairly well known for its flagship product, the YubiKey, a one-time password device that works on any computer or phone with a USB port. Yubico CEO Stina Ehrensvärd said the company is pursuing affordable hardware authentication.

"The best security practice is to combine a hardware security token with

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Groups work to reverse decades of cultural barriers that keep women and minorities out of technical careers.

GERRY McINTYRE

KIMBERLY BRYANT FOUNDED BLACK GIRLS CODE, A NON-PROFIT THAT TEACHES GIRLS OF COLOR ABOUT COMPUTER PROGRAMMING.

BY COLIN WOOD / CONTRIBUTING WRITER

ANYONE CAN CODE

The Iron Sheik is a professional wrestler, now mostly retired at the age of 71, who achieved a level of fame playing the bad guy in the ring alongside personas like the Ultimate Warrior and Hulk Hogan. If you're a man, there's a good chance you already knew that. If you're a woman, there's a good chance you didn't know that and you probably didn't want to know, either.

While the WWE claims that 35 percent of its fans are female, the largely male fan base illustrates a clear difference between the minds of men and women. The failure of educational institutions to realize and acknowledge differences like this could be part of the reason that finding a woman in a computer science class can be like finding a parking space at the mall on Saturday.

Women earn 57 percent of all undergraduate degrees in the country, and 52 percent of all math and science undergraduate degrees. But in computer and information science, women represent only 18 percent of all undergraduate degrees. And the trend starts early: Females constitute 56 percent of all high school Advanced Placement (AP) test-takers, but represent only 19 percent of AP computer science test-takers.

There's growing evidence that this gender gap is hurting the nation's economy. The U.S. Department of Labor estimates that between 2010 and 2020, there will be more than 1.4 million computing-related job openings nationally, but at current graduation rates, only 30 percent of those positions can be filled. While opinions may differ on how to lure more students into STEM fields, limiting the country's talent pool by failing to address this lack of diversity is a poor strategy for success in a competitive global market.

BLACK GIRLS CODE HOLDS EVENTS THROUGHOUT THE COUNTRY ON ROBOTICS, APP DEVELOPMENT AND WEB DESIGN.

GERRY McINTYRE

Women and minorities not pursuing computer science can largely be attributed to stereotypes around technology, said Joanne Cohoon, a University of Virginia professor who specializes in sociological issues around computing and gender. Cohoon also is the senior social science researcher at the National Center for Women and Information Technology and the principal investigator for the Tapestry Workshops, which educate teachers around the country on how to recruit and retain female and minority students in computer science.

"As a culture, we think that being masculine is related to being technical," she said. "And we don't think very much of women being technical. I think you find that even when women go into technical fields like engineering, they go into the disciplines that are most closely aligned with feminine stereotypes like biomedical engineering."

There's no evil intent on behalf of any group to exclude any other group, Cohoon said — many Americans just can't help but to go along with the modes of thinking that have become cultural norms.

Seth Reichelson, a computer science teacher at Lake Brantley High School in Altamonte Springs, Fla., said he once was part of the problem. "When I look back at the things I used to do to get students in my class, I'm embarrassed by how bad it was," said Reichelson, who has been teaching physics, engineering and computer science for 17 years.

For many of those years, he never gave any thought to the fact that there were typically only three or four girls in each of his computer classes. "It was almost like I was trying to scare the girls away," he said, recalling an incident from 2005. "Our school was the Knights, and they told us to paint a giant shield for the computer programming club. We painted the Iron Sheik, the Iranian strongman, topless, and he had Java tattoos all over his body. It was like … AP computer science: Iron Sheik. I still think it's funny, but not a lot of girls looked up and said, 'I can picture myself in there.'"

These days, Reichelson's getting everyone interested in what he's selling. So much so, he was invited to the White House and recognized for his ability to attract girls and minorities to his computer science classes.

In 2012, Reichelson's students alone made up more than 1 percent of all students in the country who took the AP computer science exam, and many of them were female. One secret to Reichelson's success, he said, is putting students first. He contends that many teachers are more concerned about their own pass rates than student achievement; therefore, they lead students out of classes if they think the students may fail.

Talking to Reichelson, it's easy to see why he's popular with students. He comes off as passionate, engaged and open — a natural teacher. But if Reichelson inadvertently kept girls out of computer science, physics and engineering for so many years, then good teachers, average teachers and bad teachers are likely doing the same or worse.

In recent years, a movement has grown around the country. There are now many organizations dedicated to expanding the pool of computer science students beyond white and Asian males. Reichelson changed his approach after receiving an email from the Tapestry Workshops, which he now tours with. Even today, Reichelson said he must fight old habits that would lead him back to a mostly male classroom.

"First you have to have good content," he said. "No good content means no students at all." Teachers also need to create an inclusive atmosphere. Students need to feel they belong or they won't want to participate. "You have to watch out for what examples

you choose. You have to watch out for the language you use; you have to be gender neutral," Reichelson said. "Even as far down as what your classroom looks like."

Despite the hurdles, there may not be a better career right now than computer science for women seeking a four-year degree. "There are so many scholarships and job opportunities for girls, it's ridiculous," he said. "If you're a girl majoring in computer science, you can pretty much write your own ticket with any company."

Kyla McMullen agreed that it's good to be a woman in computer science. McMullen found herself in the media spotlight when it was discovered that by earning her Ph.D. in computer science in 2012, she became the first black woman at the University of Michigan to do so. Getting a doctorate is difficult, she said, but the difficulty level is increased for women and minorities in computer science because the institution isn't designed with them in mind.

Like many college students away from home for the first time, McMullen faced resistance on the path to achieving her goals. Lack of sleep, difficult classes and a big workload put her in the same boat as many other college students, but she had the added challenge of being in the minority in her major. She began to doubt herself, she said, but the Meyerhoff Scholars Program, an undergraduate scholarship program for minorities, gave her a support network and much-needed guidance. Her love of computer science combined with personal resolve led to her eventual graduation.

In graduate school, things got even tougher. McMullen failed her qualifying exam the first time, failed a test early on and was put on academic probation. No longer an undergrad, she didn't have her scholarship to lean on and had to build her own support network — but the people around her weren't always supportive. McMullen once visited the graduate department chair for help during an especially difficult time, and he suggested she give up on computer science and pursue a subject she might be better suited to, like education.

Similar incidents would happen periodically, she said. A graduate school liaison whose job it was to help students once told her, "I've never taught one of you before," McMullen recalled.

That McMullen even had the opportunity to be the first anything in 2012 is a testament to the institutional design flaws in higher education. With racial and gender issues on top of the challenges inherent in achieving an advanced technical degree, it's no wonder McMullen was alone at the top.

Now an assistant professor at the Human-Centered Computing Division at Clemson University in South Carolina, McMullen is doing her part to change the face of computing. The mostly female and non-white division at the School of Computing is featured in a documentary Web series called Lab Daze, a marketing tool conceived by Department Chair Juan Gilbert. The effort is aimed at addressing computer science's image problem.

"We're just trying to give people a different picture of what computer science looks like and what people who study computer science might look like," McMullen said. It's important for people to see other people who look like them doing things in computer science if it's going to become part of their world, she added.

And that kind of role modeling and mentorship must start at a young age. "If nobody tells you about [these programs] then you may pick a career that you might be good at — history or English or something — but you might even be a better computer scientist," she said.

BRIDGING THE GAP

Based in the Pacific Northwest, iUrban Teen Tech is focused on bringing tech education to black and Latino males, the two groups at the highest risk for dropping out of school. Through interactive workshops, technology summits, classes and trips to industry, students get exposure to the world of technology development. The idea, said Founder Deena Pierott, is to show students that careers in technology are available.

"iUrban Teen targets the youth who are typically missed," Pierott said. "We leverage the thriving technology sector in the region to bridge this gap, allowing them not only a view of what a career in technology looks like, but also engaging them in the process of designing change in their communities and families. Our belief is that we have to intentionally reach the layers of youth that have been and continue to be overlooked and underutilized."

The program was launched in 2011 on the campus of Washington State University in Vancouver, and later expanded to the University of Portland, having now reached more than 700 students. Next, iUrban Teen Tech will stretch to Seattle and Los Angeles, and it plans to add new programs such as think tanks where students and industry professionals can build ideas together.

GIRLS CODE

Black Girls Code hosts events around the U.S., operating from offices throughout the country. "Our goal and our mission," said Founder Kimberly Bryant, "is to teach girls of color between the ages of seven and 17 about computer programming and technology." By providing resources, skills and access to mentors, she hopes they will become the next generation of IT leaders.

Founded in 2011, the nonprofit gained immediate support and has received money from all over, including from Craig Newmark, founder of Craigslist, and organizations like the Kapor Center for Social Impact. Two years of crowdfunding through Indiegogo has yielded about 3,000 supporters and $130,000.

"When I got to school, I was often the only student of color and maybe the only woman in my classes," Bryant said, recalling her days as an electrical engineering major in the late 1980s. "Going through that makes the experience even more daunting than just learning the material because you don't have that connection with someone who shares your experience."

Black Girls Code runs events year-round on topics like robotics, game and mobile app development, and Web design. It also hosts boot camps for older students to work alongside engineers from companies like Twitter and gain valuable first-hand experience.

"We're looking to see our program grow to reach 1 million girls by the year 2040," Bryant said. "One of the most important things is to plant that seed of interest because [our students] don't generally have any knowledge of computer programming or computer science before they come into our classes."

LONNIE MAJOR

IN 2012, **KYLA MCMULLEN** BECAME THE FIRST BLACK WOMAN TO EARN A PH.D. IN COMPUTER SCIENCE FROM THE UNIVERSITY OF MICHIGAN.

There are many factors to consider when it comes to keeping students interested in science, technology, engineering and mathematics, said Portland, Ore., Chief Technology Officer Ben Berry. It takes a multifaceted effort: Students need to be exposed to what's available, feel inspired to continue participating and have role models to help show the way. In addition, parents need to support their child's interest and students' peers must accept their choice to be involved with technology.

"We need more mentors," Berry said. "I truly believe I was driven to a STEM career because my father was in science and technology as the first black to graduate in aeronautical engineering at USC. Because he worked in the aerospace industry, I got to see him being effective in STEM roles of authority and accountability. Therefore, I was exposed to multiple technologies and I knew that these roles were possible. If we never see people that look like us and sound like us in these jobs, then we start to think these jobs aren't for us."

The good news is that progress is being made. Programs like the Tapestry Workshops are taking the right approach, Cohoon said, addressing issues of confidence, role modeling and the in-group, out-group dynamic.

Historically interest in computer science has fluctuated year by year, but the overall trend is toward growing interest, Cohoon said, although she's still concerned about diversity and the ability to meet overall demand. "Students want to go into this, but we don't have the capacity," she said.

In many ways, educational institutions are still geared as if today's job market is the same as it was in the 1950s. The educational infrastructure required to support the number of technical jobs needed simply doesn't exist, she said.

Online courses like those offered by Kahn Academy and MITx could provide some relief, but the issue of bringing women and minorities into the fold will require constant vigilance, Cohoon said. "If we have this pervasive cultural issue that is steering women away from computing, then we have to take action in order to draw them back."

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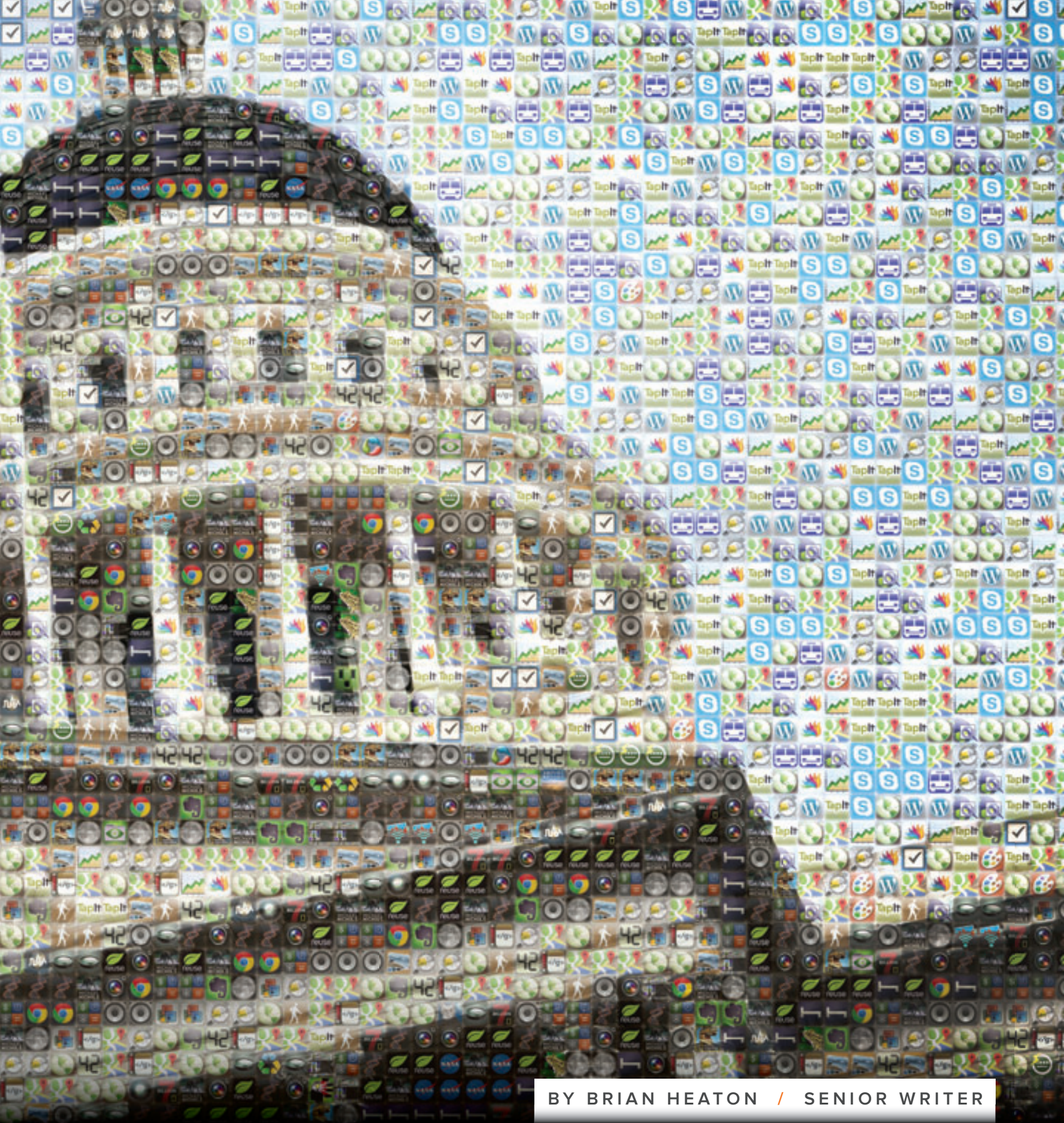
ADDICTIVE APPS

HOW TO BUILD MOBILE APPLICATIONS



BY BRIAN HEATON / SENIOR WRITER

THAT USERS CAN'T LIVE WITHOUT.

You have a budget and marching orders to design your agency's first mobile app. Building it shouldn't be difficult, but how do you ensure the app is a success? According to experts, the first priority is to keep it simple.

Developers and company executives agree that governments should tailor an app to serve a specific function, instead of forcing it to handle multiple issues. An app that is tightly focused is likelier to see widespread adoption among both internal and external users.

Agencies typically design two types of mobile apps: productivity apps for use by employees and engagement apps for use by citizens. But many of the same best practices apply to both.

Maury Blackman, CEO of Accela Inc., said that just because an app works great for city building inspectors doesn't mean it will work effectively for an entire public works department. So developers shouldn't try to force one app to do multiple jobs.

Westminster, Colo., for example, has a group that inspects manholes. Accela worked with the city to create a Manhole Inspection App that is designed to make inspectors' jobs easier. But the app wouldn't necessarily work in a more general sense for other departments in the city. Focusing on a specific task, Blackman said, is a key to developing a popular app.

Reed Pangborn, area vice president of industry and mobility application solutions for AT&T, agreed. When it comes to citizen engagement, he said successful apps provide easy access to information that users need every day — like real-time parking availability and subway schedules.

ENGAGE YOUR USERS

Popular apps engage users, and simplicity is a critical component here. If you make users work too hard, they probably won't return.

"If you have designed a mobile app that requires users to walk through five or 10 steps just to find out where a bus is or to remove graffiti, then people are unlikely to use it," said Chris Osgood, co-chair of the Mayor's Office of New Urban Mechanics in Boston, which created the city's award-winning Citizens Connect mobile app. "The design needs to be well thought through so people can actually get the service that they want done quickly."

Osgood said feedback mechanisms are an essential feature too. The idea behind Citizens Connect is to make residents the city's "eyes and ears" in neighborhoods, he said. But along with the ability to report problems such as potholes, the app lets users send comments and suggestions to the development team.

WHAT'S THE ROI OF AN APP?

Once you have an app built, how do you know if the time and money spent is worth it? The number of app downloads is a good start, but according to Chris Osgood, co-chair of the Boston Mayor's Office of New Urban Mechanics, the better measure is seeing an improvement in a neighborhood or process over a period of time.

Boston's Citizens Connect app is a good example. It's been around for four years and now generates roughly 20 percent of all the requests the city receives for basic quality-of-life issues like potholes, graffiti and dark street lights. That percentage outpaces Boston's official website, second only to the city's 24-hour hotline.

As of early August, Citizens Connect had generated 56,556 requests from residents, which shows its importance and value to the community, Osgood said. Boston spent about $25,000 on the app and continues to maintain it.

"One of the important things with any system — a 311 system, mobile apps or some combination of the two — is to see if all residents are using these channels to get information to the city on how we can make their neighborhoods better," he said.

Philadelphia has also had success. Its 311 mobile app cost just under $20,000 to develop and was once ranked 38th overall in the iTunes App Store.

"The numbers we're getting compared to how much we spent to develop it is almost a no-brainer," said city Chief Innovation Officer Adel Ebeid.

Philadelphia's 311 app is another good example of a mobile program designed with the user in mind. Philly 311 allows citizens to submit pictures of graffiti or abandoned vehicles that they want the city to remove. Users get an immediate acknowledgement that the city has received their request, and they can track progress on resolving the issue.

In addition, gamification can help spur engagement. For instance, Philadelphia 311 lets citizens vote existing requests up or down, which helps the city prioritize which issues to work on first.

Adel Ebeid, chief innovation officer of Philadelphia, said a successful app is essentially a community engagement platform and should be built with interactivity in mind. "Don't take a mobile app and try to mirror the bureaucracy of government because it'll be doomed to fail from its first release," Ebeid said. "You have to use the mobile app to kind of demystify mobile government and show them a friendlier, intuitive face."

SOLVE A PROBLEM

Ultimately an app must deliver value. If an app is full of interesting features but doesn't actually accomplish a tangible task or solve a problem, it likely won't attract regular users.

Blackman pointed to an app created by El Paso, Texas, that helps give citizens a quicker explanation for missed garbage pickups. Previously, garbage truck drivers wrote out a paper ticket when they couldn't pick up a can that was overflowing, contained hazardous waste or had some other problem. The ticket was returned to the office at the end of the driver's route and entered into the city computer system, but it could take several days for that information to be available to residents.

Now when drivers spot a garbage can that can't be emptied, they use the app to take a picture of it and upload a report to the city's central database in real time.

Osgood said the apps with the highest adoption rates are typically those that

are really responsive to something the public needs or is acutely feeling. Ebeid concurred and stressed the need for an app to solve a "neighborhood pain point" in order to be successful.

"In the excitement to build, we sometimes forget the most basic tenet, which is we are here to help people," Osgood said. "It is incredibly important to anchor a lot of the development work around helping our residents and constituents with the basic challenges they face in their day-to-day lives."

BE FLEXIBLE

While it's important for an app to be specific in its function and scope, experts also believe the app's back-end support and design must remain flexible. Agility will only help agencies roll with societal and technological changes in years to come.

Pangborn said ongoing life cycle management is paramount for governments. He encouraged agencies to devise a strategy to ensure that the app will continue to run on the different operating systems currently on the market, and be able to quickly adapt to new ones as they appear.

Blackman is a proponent of making apps repeatable. He said apps need to be built on platforms that allow them to be duplicated across multiple cities. So instead of making things proprietary, developers should make sure the software can be adapted for use by anyone with a similar need.

"If we're having to build a manhole inspection or garbage pickup app for every city in America, it's going to be pretty difficult," Blackman said.

Some cities are already moving toward that model. Ebeid noted that Philadelphia and CIOs from "five to seven" other cities are interested in the idea of a public-sector app store, where local governments can make their work available to all municipalities in one place. Although talks are still informal, he expects to see some movement on the idea in 2014. GT

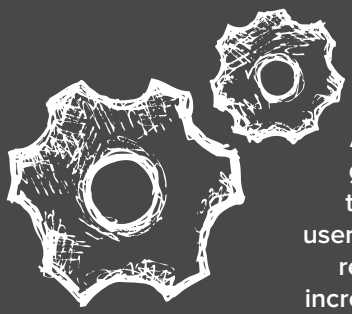
bheaton@govtech.com
twitter@govtechbrian

4 STEPS TO APP SUCCESS

Whether a government agency is creating a productivity app for employees or a citizen-facing engagement app, keeping the following steps in mind will increase the chances of developing a successful product.

1 / KEEP IT SIMPLE.

Design an app with a clear focus and make the interface easy to use. Users don't want to have to search for information. Instead of creating one app for many needs — that may require users to complete multiple steps to find information — develop the app to fill a specific purpose.

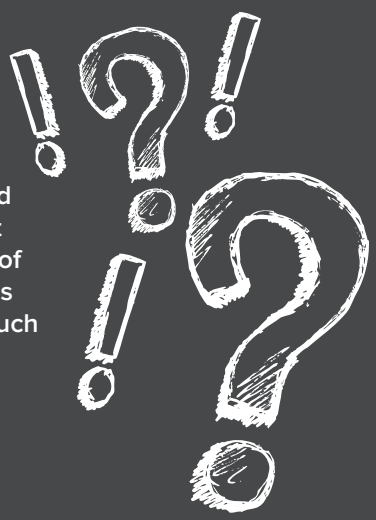


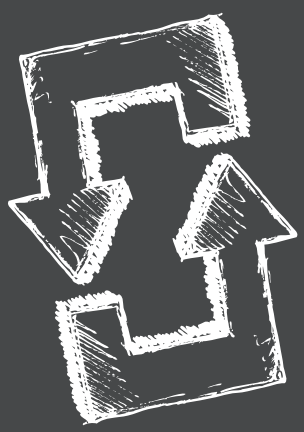
2 / ENGAGE THE USER.

An app should include feedback mechanisms and gamification elements where appropriate to make the experience interactive. Including the ability for users to comment or vote on app features like service requests can help engage them in the process and increase the chances that they will use the app again.

3 / SOLVE A PROBLEM.

Find a specific issue people are frustrated with, and use the app to address it. Don't make an app just to make an app. Some of the most successful government-run apps have clearly focused on a citizen need, such as real-time parking space availability.





4 / EMBRACE FLEXIBILITY.

The design of an app should be done with re-use and sharing in mind. Agencies also should make sure they have the resources to continually update the app to work on existing and future operating systems.

Not Just Hot Air

Are balloons the future of emergency communications?

By Wayne Hanson /
Editor of Digital Communities

Lighter-than-air craft were the wave of the future until the Hindenburg burned up in full view of movie cameras in 1937. Now with few exceptions — like aerial coverage of football games — they seem like toys or novelties. But something is stirring in the realm of lighter-than-air. NASA and the Defense Advanced Research Projects Agency recently gave California-based Aeros $35 million to develop a 500-foot-long helium-filled airship that's purported to carry more than 60 tons of cargo. And Google is floating Project Loon, the idea that Internet connectivity can be established on a network of balloons 12 miles up in the air.

Balloons also are being tested to lift wireless communications platforms high above areas stricken by disaster. Although balloons aren't the only method for doing so, they have some unique characteristics that might help round out disaster response at the local level.

In a major disaster, ground-based communications systems are most likely knocked out, and in 12 hours or so, generators and backup batteries will grind to a halt. It may be days before organized disaster relief arrives, and so an emergency communications system is needed that local authorities can deploy within 12 hours and continue operating for 72 to 96 hours.

To fill that critical gap, the FCC, FEMA and others are looking at Deployable Aerial Communications Architecture (DACA) for emergency communications, hoisted above the Earth on aircraft, drones, helicopters, satellites or balloons.

But getting the equipment airborne is only the first challenge. Using DACA in real-world emergencies will require multiple coordination points to avoid a range of concerns.

One worry is potential interference with ground-based wireless systems that may still be operating after a disaster, or that are brought back into service following the disruption. Gregg Riddle,

A balloon carrying DACA equipment is prepared for launch.

OCEUS NETWORKS

former president of the Association of Public-Safety Communications Officials (APCO International), for example, last year applauded an FCC inquiry into the technology as a first step toward "identifying whether and how DACA can be used ... without creating interference to other emergency radio communications." Avoiding interference will require coordination with the National Telecommunications and Information Administration (NTIA), which regulates radio spectrum.

The FAA will be involved to prevent collisions between balloons or drones carrying communications gear and other aircraft. In addition, areas near Canada or Mexico need coordination with the U.S. State Department, if operations, aerial equipment or spectrum use might impact a neighboring country.

So just how well would a balloon-based communications system work, and could local authorities launch and manage it? To find out, Reston, Va.-based Oceus Networks and two of its partners — Space Data Corp. of Chandler, Ariz., and NTIA Public Safety Communications Research of Boulder, Colo. — conducted a test in July in Adams County, Colo., one of the first areas to pilot FirstNet, a nationwide public safety wireless network. The test temporarily used FirstNet bandwidth to avoid interference issues and a special "steerable" balloon package.

What's a 'Steerable' Balloon?

Balloons have their limitations. Weather balloons fly at relatively low altitudes and drift out of range, requiring periodic launches to sustain communications with the target area. Balloons can also be tethered, but at such low altitudes, area coverage is restricted. For the Adams County test, a series of hydrogen-filled high-altitude balloons provided a lift into the stratosphere, which at moderate latitudes ranges between 30,000 and 160,000 feet high. The "steerable" part includes technology that lets the balloon drop sand to ascend and vent gas to descend. Up and down is good enough to catch a ride with the wind. For the test, Space Data provided meteorological support.

"I was really impressed at how well the guys could pilot the balloon," said Jim Patterson, vice president of Oceus Networks Public Federal Solutions. The day of the test, the jetstream was blowing about 120 mph toward Denver, which caused the balloon to move toward that city, he said. But once the balloon reached 50,000 feet, a 6 mph breeze pulled it back toward Boulder, near Adams County.

"They targeted the recovery point very early on in our launch, and they hit it exactly," Patterson said. "Potentially you can kind of orbit over an area." The higher the altitude, the greater the coverage area. At 75,000 feet, the area targeted for coverage was about 38 square miles.

Payload and Hardware

According to Doug Sharp, Oceus Networks' director of engineering, the communications gear carried by the balloon is developmental. "At this point, there are not a lot of commercial payloads rated for that altitude," he said. The test payload weighed about 50 pounds and consisted of a full 4G long term evolution (LTE) network in a box, or "network on wheels" minus the wheels.

"It was a full, self-contained deployable network that we flew on the balloon," Sharp said. (Specifically it was a 20-watt LTE 10 megahertz Y frequency division duplex carrier in Band 14, according to Sharp.)

For the test, the team wanted to use traditional on-the-ground equipment, which included Motorola Solutions' dongle for access to the public safety LTE network, a modem that's designed for use in vehicles and an LTE-enabled smartphone. Tests were conducted using the different devices. "All communicated to the balloon, but it's not limited to those," Sharp said. "Any Band 14-certified device could be utilized."

Down to Earth

Do first responders think public safety communications via a balloon is more than hot air? Bill Schrier, who was involved in the development of FirstNet and now works for the Washington state CIO, articulated some concerns about balloon-based communications, including vulnerability to wind currents that accompany hurricanes, tornadoes and windstorms. He added that covering such a large area on the ground would mean hundreds or thousands of responders would all share the same bandwidth and signal. In addition, connecting the transmission equipment in the balloon to the Internet — known as backhaul — would rule out fiber and make microwave transmission difficult.

Sharp acknowledged that there are still issues to hash out before real-world deployment, but he said the test confirmed that communications from a high-altitude platform could cover extended distances.

Sharp said that focusing the LTE coverage area would be important to avoid saturating the bandwidth and there are some backhaul options that weren't included in the first test phases, such as a dedicated microwave backhaul using steerable high-gain antennas or even Wi-Fi or WiMAX technology.

"A second possibility is to utilize the newly standardized feature of LTE for in-band backhaul," said Sharp. "This would result in reduced user-to-user throughput, but would facilitate simpler backhaul configurations."

What Did We Learn?

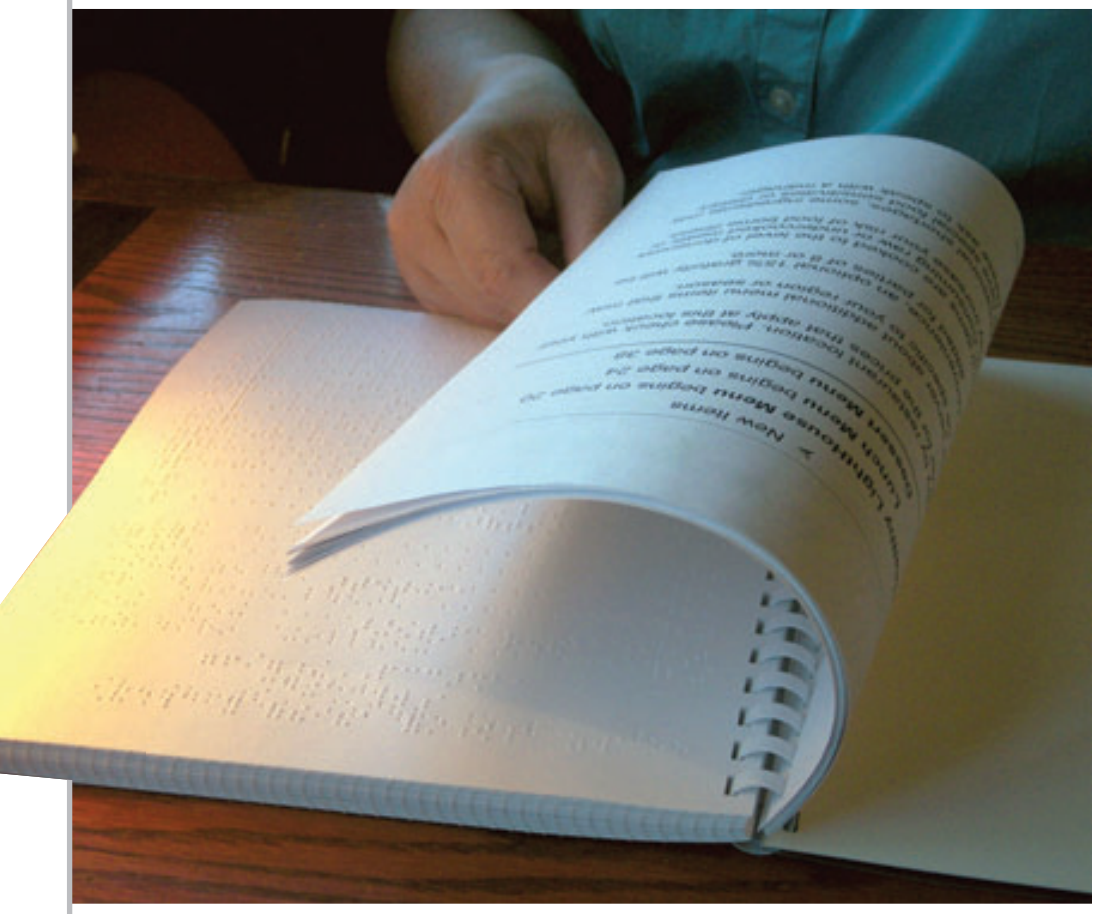
One thing the team learned was not to launch a high-altitude balloon on July 2. "We launched this on World UFO Day," Sharp said. "And the switchboard lit up, as I'm sure it did at the police station. Our balloon payload was 75,000 feet above Denver and people could see it from the ground."

Other lessons learned included the effects of cold, thin air and low pressure on electronics, which are being applied to future platforms, Sharp said.

"We were able to close the link from the ground to the air and at various distances run data rates of anywhere from 5 megabits per second to 20 megabits on the downlink to the local stations, and we were able to close the link and communicate with the payload. We are still looking at do we have enough data to tell us about the overlap to public safety communications."

Although the test used a balloon, emergency communications gear can just as easily be lifted by helicopter or other means. The real value, Patterson said, is what you can do with the bandwidth. "People can wear biobelts so you can keep track of where they are, beam video back and forth, give real-time situational awareness with whiteboarding and exit routes. It's a very flexible, dynamic technology. We just tried one of the hardest-use cases for our experiment." GT

whanson@digitalcommunities.com
twitter@DCommunities



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Would You Like Braille With That?

Idaho uses specialized software and printing technology to make Braille menus for restaurants across the state.

By Sarah Rich / Staff Writer

In 2011, a group of 20-somethings gathered at a restaurant in Boise, Idaho, to share a meal. Casual observers may not have noticed that each diner was blind or visually impaired. But since the restaurant didn't offer Braille menus, some of the diners struggled to order and needed assistance from other members of the party.

Later, the same group met at the Idaho Commission for the Blind and Visually Impaired where the facility's training center confronts issues impacting citizens with vision problems. Raelene Thomas, the commission's management assistant, said the incident triggered a discussion about the lack of Braille menus in Idaho restaurants.

The commission, which provides vocational training and assisted living for visually impaired state residents, responded with a free program to help alleviate the problem. The program, launched in 2011, lets Idaho restaurants submit menus to the commission and receive copies printed in Braille and large text. Thomas said roughly 2 percent of Idaho's population (about 2,500 individuals) has some degree of visual impairment.

Through a partnership with the Idaho Lodging and Restaurant Association, the Idaho Lions Club and Lt. Gov. Brad Little, the program has been able to serve restaurants on a statewide level.

Braille Meets World

The commission uses specialized software and printing technology to produce Braille and large-text versions of books and documents into Braille-friendly versions. That same technology assists commission staff with translating menu text for the visually impaired.

Kris Grant, the commission's receptionist who has a visual impairment herself, starts the conversion process at her desk by using a tool to magnify the menu's lettering. The enlarged text appears on a separate screen next to her computer where she transcribes the list of menu items into Duxbury Braille Translator software, which at first blush looks like a traditional word processing tool.

One day in mid-July, Grant typed up a menu for a local pizza restaurant in the Duxbury program. Her computer screen listed a variety of dining options and their respective ingredients — all of which were entered into the software.

The process may seem a bit tedious, but Grant said it's imperative to type the menus line by line into the software since the tool doesn't recognize symbols commonly found on dinner menus.

After some reformatting, the menu is embossed using a device that prints in Braille, the Juliet Pro made by Enabling Technologies.

After pulling the newly created menus from the printer, Grant's fingers glide across the bumps on the pages to read the text. "[The Braille menus make it so] blind people would be able to have access to the same information at the restaurants that everyone else does in print," she said.

Once printed, the new menus are sent to the participating restaurants for customer use.

Menus come to the commission from across the state, in addition to the other Braille conversion projects the commission is tasked with. To alleviate some of the workload, the organization outsources some of its Braille conversion and printing

jobs to the state prison. The commission donated Braille printing equipment to the prison so trained inmates could help complete the extra projects. So far, the prison has finished about 50 Braille menus and will continue to help as more restaurants join the program.

Since its inception, more than 100 Ohio restaurants have submitted menus for conversion. Restaurants that are part of nationwide franchises like Pizza Hut, P.F. Chang's and Buffalo Wild Wings have all gotten on board, according to the commission. Participating restaurants receive a free decal to display in their windows that states, "Large print menus available here," to help get the word out.

Thomas said the project has garnered so much interest that restaurants outside of Idaho have requested Braille versions of their menus. Most of those requests have been from neighboring states Montana and Oregon, although priority is given to in-state restaurants.

Thomas said no major costs are involved in the menu project, except for staff time and the purchase of specialized Braille printing paper — an expense of $45 per 1,000 sheets.

"[The Braille menus make it so] blind people would be able to have access to the same information at the restaurants that everyone else does in print.

Creating Awareness

As technology advances in nearly every scope of daily living, it also has helped assist individuals with vision problems. But some say assistive technology for the blind is underutilized.

Allison Shipp, an assistive technology specialist with the STAR Center, a nonprofit organization that works with the blind, said many individuals don't know about technologies capable of assisting the blind and that more education and awareness can help close that gap.

"I definitely feel like the main barrier is people's lack of knowledge of these products," Shipp said.

But with programs like Idaho's Braille menu distribution, the underlying goal is to strengthen awareness on blindness and visual impairments, not necessarily the technology that goes with it.

"This is kind of above and beyond," Thomas said. "One of our focuses is outreach to the community and what can we do to bring awareness to those around us." GT

srich@govtech.com
twitter@sarahrichforGT

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Noelle Knoll, Managing Editor

Two for One

Michigan and Illinois will share a Medicaid Management Information System, potentially saving millions for the states and federal government.

By Brian Heaton / Senior Writer

Children are often told to share with siblings and friends, as it fosters good will and harmony. Leaders of Michigan and Illinois have applied that life lesson to technology, partnering so both states can benefit from Michigan's Medicaid Management Information System (MMIS).

Illinois will access Michigan's MMIS — which processes claims and manages Medicaid information — as a cloud-based shared service instead of purchasing its own new system. The partnership should enable the states to save millions in implementation and maintenance costs. Representatives from Illinois and Michigan believe the shared MMIS will be the first of its kind in the U.S.

Under federal law, all states must operate technology to support back-end administrative functions of their Medicaid programs. But the feds have signed off on the innovative arrangement. The Centers for Medicare and Medicaid Services has confirmed the shared system meets federal standards and regulations, according to a joint news release by Michigan and Illinois.

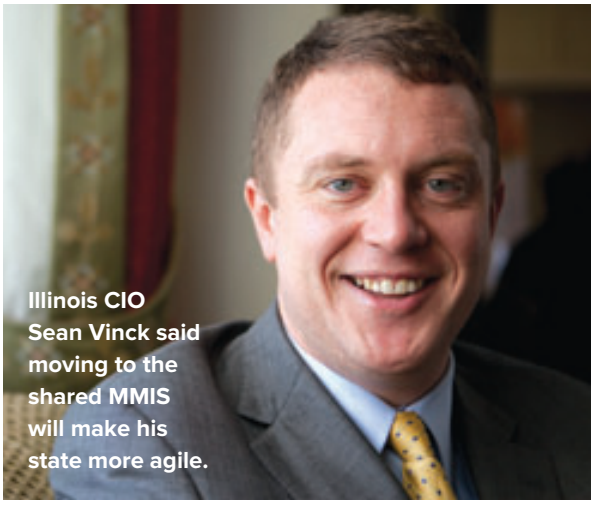
Building a Partnership

Michigan's MMIS was implemented a few years ago by CNSI, an IT solutions provider based in Maryland. Illinois had discussed internally how to modernize its 1970s-era, COBOL-based Medicaid system for quite some time. Stephen DePooter, CIO for the Illinois Department of Healthcare and Family Services, said the state considered purchasing a stand-alone system, but thoughts changed when Michigan unveiled its MMIS.

Once Michigan's system was certified by the federal government, Illinois started exploring whether Michigan's system could support it as well, and a partnership was born.

Discussions progressed throughout 2012 and into 2013 to identify commonalities and differences in how the states processed Medicaid information. No "show stoppers" were noted, and any changes to Michigan's system were deemed to be configuration adjustments rather than major code changes. That cleared the way technologically for the two states to use the same MMIS.

"The fact we can minimize our risk over a traditional stand-up of a customized system and leverage Michigan ... was an easy sell to the internal folks," DePooter said.



Illinois CIO Sean Vinck said moving to the shared MMIS will make his state more agile.

Illinois CIO Sean Vinck said he and DePooter engaged their state's procurement office early in the process to make sure the idea of partnering with Michigan wasn't seen as an attempt to circumvent competitive bidding, but as a rational way to address the state's needs. The state's procurement code allows an exception to competitive bidding for intergovernmental agreements.

The Illinois Department of Healthcare and Family Services and Michigan Community Health Department executed a preliminary intergovernmental agreement in December 2012 to determine whether an MMIS-as-a-service model

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would work. Further amendments to that initial agreement were made to continue the process. Another preliminary intergovernmental agreement is under discussion to cover the next phases of the project.

Illinois officials said the partnership presents little danger to the state, noting that they can separate from the contract and pursue alternative options without penalty.

DePooter said the cloud-based approach would enable Illinois to disconnect from Michigan fairly smoothly, given the complexity of the system. In addition, preparations done for the partnership will benefit the state even if the current arrangement runs into trouble. For instance, data and procedure modernization puts Illinois in a better position to implement its own system or partner with another state if necessary, he said.

Vinck agreed and said the change management process required for moving onto Michigan's MMIS will make Illinois more agile. "The state is not prejudicing itself by entering into this partnership on the back end," he said. "We materially improve our position even if at some point in the future, the state of Illinois needs to find an alternative method of getting an MMIS-like service."

Michigan will be responsible for the MMIS' operations, said CIO David Behen.

JESSICA MULHOLLAND

DAVID KIDD

Responsibilities & Benefits

According to Michigan CIO David Behen, his state will maintain full technical and operational responsibility for running the MMIS application. Michigan will provide application, infrastructure and operational support as a service to Illinois.

Michigan has approximately 30 percent excess capacity in its MMIS, so Behen doesn't expect any performance impact on his state by hosting Illinois. Michigan also will work with Illinois to build a Web portal for Illinois users to access the MMIS, including establishing additional security measures to prevent cross-state data access.

DePooter said the core system will continue to operate in Michigan, but the technology will access the data of all Illinois agencies and departments that are involved with Medicaid claims. A majority of that Medicaid data is housed in the state's enterprise data warehouse, which will continue to be run by Illinois.

Illinois technical staff will shift their priorities from maintaining an MMIS to performing data analysis and system support for agencies. The move lets Illinois use IT resources more efficiently, which should result in better service for state agencies, DePooter said.

Illinois and Michigan should both see significant cost savings as a result of the partnership. And since MMIS implementations are mostly federally funded, Uncle Sam makes out on the deal as well.

Illinois estimated the cost of building a stand-alone MMIS at $190 million versus $85 million to join the shared system. Because the project implementation is 90 percent federally funded, Illinois will save roughly $10 million by sharing Michigan's MMIS, while the federal government will save approximately $76 million, according to a news release issued by the states.

Michigan should also see an estimated 20 percent reduction in operation and maintenance costs as Illinois will pay to use the system as a shared services customer. The states believe Michigan will save approximately $10 million over five years through the relationship. Illinois and the federal government also estimate saving $57 million and $196 million, respectively, for operational costs over a five-year period versus Illinois purchasing its own stand-alone MMIS.

In addition, by using Michigan's MMIS — which is already certified — Illinois doesn't need formal federal certification for its system. Eliminating that nine-month process should significantly shorten the implementation time.

First Steps

Nick Lyon, chief deputy director of the Michigan Department of Community Health, said enrollment on the shared MMIS will begin in March 2014 and the system will be fully operational at the end of 2015. Behen added that Michigan has multiple project deployment phases planned to accommodate Illinois' impact on the system, including some initial technical work that started in October.

The two initial elements being added to the Michigan MMIS to accommodate Illinois are the Electronic Health Records Medicaid Incentive Payment Program and Provider Enrollment. Those programs will be deployed on Michigan's existing MMIS technical platform and according to Behen, will consume 10 percent or less of the system's overall capacity.

A third phase, called Service Implementation Assessment, is required to provide functional, architectural and technological analysis of the future cloud solution CNSI will provide. Once the assessment is complete, the states will discuss hardware, software and other technical components needed to implement MMIS on a cloud.

"This is really something I think will be seen as groundbreaking for these big systems," Lyon said. "I hope this is sort of a trend where you see states coming together to save the federal government a lot of money, and I think that works for the benefit of all." GT

bheaton@govtech.com
twitter@govtechbrian

CONTINUED FROM PAGE / 17

something you know, but this can be a simple four-digit PIN, as used with an ATM," Ehrensvärd said. "Software-based authentication, including SMS and mobile apps and Google authenticator, offers better security than username/password, but are exposed to mobile malware and are no longer accepted for high-security applications. LCD one-time password hardware tokens offer better security, but are clunky and often fail due to battery problems. Smart cards are costly to integrate, requiring readers, client software and a complex back-end infrastructure. However, as smart cards have proven to offer the best protection for a new generation of malware, Yubico is part of an open standards initiative, removing the cost and complexity for this technology to scale to the mass consumer market."

In January, *Wired* reported that Google's Grosse and Upadhyay are piloting a project that uses a Yubico YubiKey and user authentication ring — literally a ring a user wears and taps on the YubiKey for seamless authentication. But even that might not be enough.

"One of the main limitations of the otherwise-wonderful YubiKey is that it requires someone to have access to a functioning USB port," said Clay Calvert, director of cybersecurity for IT consultant MetroStar Systems. "For smartphones and tablets — not to mention many public computers — this is not an option. Google also is working on a ring (again, the kind you wear on your finger), which will have functionality similar to a smartcard. These rings can act like proximity cards, like the ones that many of us use to unlock electronically locked doors, and also similar to electronic passes used on toll roads."

Calvert said ring "readers" could be built into many modern smartphones using a technology called Near Field Communications (NFC). NFC chips are becoming more common in portable devices and could be included in regular computer input devices in the future. "So in theory, one could log in to a system just by putting your hand on the keyboard or mouse," he said. "The same technology could be used to log into Web pages and other network resources, thus greatly reducing the need for passwords."

The primary holdup for this method, like so many would-be password replacements before it, is getting website and user buy-in. Groups like the FIDO (Fast IDentity Online) Alliance, which formed last year, aim to help establish standards and interoperability for authentication devices in an effort to provide a workaround for those who hem and haw.

"No one wants to be told that their thumb is not registering as the correct thumb."

"FIDO takes a unique approach with an open protocol that applies to the existing field of authentication products, methods and standards, making them compatible now and adaptable to future innovations and generations of technologies and products," said FIDO spokeswoman Suzanne Matick.

Whether it's FIDO, Yubico, Google or someone else working to replace passwords, will it ever be enough to convince people to switch?

Claypoole said it's not about providing a better solution. Rather, the security measures we use today — passwords, for the most part — reflect our risk tolerance and desire for simplicity.

"Appropriate security depends on how valuable your transaction is and what other protections are available," he said. "You can spend millions of dollars on security systems and still never be truly secure, because every transaction and safe-keeping system has flaws, usually at the human level."

And it's at the human level where change needs to occur. The technology is already out there. GT

hcvande@gmail.com
twitter@govtechnews

Password Alternatives

Biometrics

Fingerprint scans, retina scans and facial recognition all offer a better solution for access management — and the scanners you need often are built into newer end-user devices. But biometric authentication hasn't caught on for several reasons: It's more expensive than passwords and the extra security may not be worth the hassle in some situations, especially in retail settings.

Picture- or Touch-Based Authentication

Experts expect these approaches to gain a foothold thanks to the growing popularity of touchscreen devices. Microsoft's Windows 8 created a lot of buzz with its picture password feature, which has users assign shape drawings and/or taps on a preselected image for authentication. Security company PixelPin offers something similar that has a user make four specific taps on a chosen photo.

USB Devices

Google is rumored to be working with Yubico, maker of the YubiKey, a one-time password device that works on any computer or phone with a USB port. Users plug the device into a USB port and then tap the device to send a password to their computer. The downside: Lots of mobile devices don't include a USB port.

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Tactics for 21st-Century Cities

Seven ways for modern cities to innovate.

Be it the burden placed on them by shrinking federal support, or the opportunity presented by modern technology, 21st-century cities are finding new ways to do things. For four years, Code for America has worked with dozens of cities, each finding creative ways to solve neighborhood problems, build local capacity and steward a national network. These aren't one-offs. Cities are championing fundamental, institutional reforms to commit to an ongoing innovation agenda.

Here are a few of the ways how:

1 / Create a space to experiment.
Cities should commit to innovation by creating offices or departments dedicated to trying things differently and making it safe for others to do so. Such risk aggregators are the first step toward reinvigorating a culture of experimentation within city hall.
Action item: *Create an office of new urban mechanics or appoint a chief innovation officer.*

2 / Use good data for better decisions.
Governments — especially cities — steward much data, and government officials can use it to make better decisions on resource allocation, performance improvement and even policies. But remember that not all data is created equally, and data gains meaning with context.
Action item: *Appoint a chief data officer or create an office of performance management/ enhancement.*

3 / Design for/with citizens.
In many ways, governments are like any other business: They need tools for customers (citizens) to interact with them. But governments can't slice their customers into demographic groups, targeting some and excluding others: Government serves us all. Through user-driven design, ongoing feedback, and rigorous testing and iterations, government websites can continually connect with more citizens, more effectively.
Action item: *Adopt the Gov.UK Design Principles, and require plain, human language on every interface.*

4 / Don't be an island.
Our 21st-century public institutions were created with an 18th-century notion of technology. With no national communication infrastructure, we built cities as silos, each operating within a geographical proximity of its own as an autonomous, distinct unit, though they were tasked with essentially the same mandate. Things have changed. Cities can now work together to pool resources and share best practices.
Action item: *Share open source technology with a sister city or change procurement rules to make it easier to redeploy civic tech.*

5 / Tap into the community's capacity.
Technologists are helping write websites and build new tools in their free time; teenagers are texting in their input to city plans as they walk down the street; volunteers are coordinating emergency response with smartphones; and neighbors are hosting Meetups for community watch groups and cleanups.
Action item: *Work with the local civic tech community and engage citizens for their feedback on city policy through events, tech and existing forums.*

6 / Bias toward open.
Closed systems tend toward control, while open ones tend toward innovation. Open systems begin with the belief that the best idea won't always come from the people in the room, or in this case, city hall. Instead, as the Internet has evidenced time and time again, opening up access to data and opportunities leads to wildly emergent, amazing and valuable outcomes.
Action item: *Create an open data policy and adopt open data specifications.*

7 / Take tech seriously.
Technology no longer lives in the IT department. Each element of a government — trucks, buildings, pipes, services — has a technology component, and more often, Web-based and citizen-facing apps. That demands rethinking of how each of those very services could be delivered via technology. Thus, new skills and perspective must seep into city hall via fellowships, volunteers, trainings or hiring.
Action item: *Attract tech talent into city leadership, and create training opportunities citywide to level up the tech literacy for city staff.* GT

Abhi Nemani is co-director of Code for America.

5 Things to Look for in a Cloud Computing Provider

Government agencies are under unprecedented pressure to cut costs and improve agility. Austerity measures, during these tough economic times, are forcing state agencies to find new ways to reduce their budget deficits and address mounting debts. At the same time, state agencies are being asked to provide flexible services faster while ensuring greater transparency and top-notch customer service.

THE CLOUD IS CALLING!

46%

of state and local governments indicate their jurisdiction has implemented or is planning to implement a cloud offering.

WSCA-participating states can now leverage innovative contracting vehicles to more rapidly migrate to the cloud.

Not surprisingly, savvy government agencies are turning to cloud computing. In fact, according to a September 2013 Center for Digital Government (CDG) survey, "Cloud Adoption and Procurement Practices," 46 percent of respondents indicate their jurisdiction has implemented or is planning to implement a cloud offering. By putting key applications and services in the cloud, state agencies are discovering new and cost-effective ways to provide citizens with secure access to information and achieve significant business value with minimal capital investment.

In addition, state agencies must also meet the growing demands of a more mobile workforce. In fact, 46 percent of survey respondents have or will conduct an assessment to go mobile or support BYOD policies. And one in five respondents listed accommodating a mobile workforce as their No. 1 priority. By delivering key services straight to citizens' smartphones and tablets, cloud technology promises to help state agencies leverage mobility for the sake of citizen engagement.

But as cloud computing grows in popularity, the vendor landscape is becoming an increasingly confusing place. To be sure, the right partnership can deliver huge savings and efficiency gains. Consider, for example, the Western States Contracting Alliance (WSCA), which recently selected Unisys, in partnership with Amazon Web Services (AWS), to provide cloud implementation and hosting services to state agencies. As part of its cloud hosting initiative, WSCA's participating states will be able to leverage innovative contracting vehicles to more rapidly migrate to the cloud while slashing administrative costs and bolstering access to quality products and services.

So how can a state agency select the best vendor for its cloud undertaking? Here are the top 5 things government CIOs need to look for in a vendor for maximum savings, cost efficiencies and real business value.

1.Technology neutral.

There's no such thing as a cookie-cutter approach to cloud computing. For some applications and websites, the AWS public cloud provides the perfect combination of cost effectiveness and scalability. In other instances, where there are increased compliance requirements such as for the Health Insurance Portability and Accountability Act (HIPAA), Criminal Justice Information Services (CJIS) or Payment Card Industry (PCI), utilizing the AWS public cloud or hybrid IT with on-premises infrastructure can make it easier to audit and comply.

The key is an effective plan. Taking an inventory of all applications and using a tool-based approach to assess which ones need to be moved to a more modern IT environment is essential. There are an array of services available to help make these decisions.

Establishing a flexible and scalable plan is especially beneficial to agencies that are considering shared services agreements. In fact, 81 percent of survey respondents planning or considering shared services agreements for cloud services cite a vendor's technology independence or neutrality as very important. That's because a technology neutral vendor can ensure that a state agency's choice of cloud model isn't based on a vendor's preference but rather on the agency's core attributes, system requirements and desired service levels.

2. An ecosystem supporter.

It's not enough for state agencies to select cloud solutions based solely on cost considerations. To be sure, the right cloud model can reduce spending on technology infrastructure and cut capital costs. But a cloud computing vendor should also support an ecosystem

of multi-vendor offerings to ensure the proper planning, design and implementation of a cloud.

For example, as part of the WSCA cloud contract, participating entities can choose to utilize Unisys' Enterprise Broker Service (EBS), which provides a single dashboard for the provisioning and management of multiple leading public and private technology infrastructures. This service enables the execution of a technology-neutral approach, a better mapping of applications to the most suitable cloud provider, and because applications and data are not hosted on a single cloud technology, EBS also erases fears of single vendor lock in.

With this ecosystem in place, the right partner can guide an agency through the process of determining what applications belong in the cloud, cloud type and scope; and the requirements that must be met to deliver maximum uptime at an optimal price point. The result is a balanced cloud portfolio that carefully parses out workloads among infrastructures while maintaining a single view through a common service catalog and seamless management interface.

3. The ability to customize.

To make the most of cloud technology, state agencies need to be able to aggregate and customize basic cloud services to meet their unique requirements. For example, a state agency may wish to procure a set amount of capacity for a particular period of time. However, a less rigid agency may prefer to buy cloud capacity on demand or to schedule usage for off hours. Whatever the case, customization enables a state agency to derive greater efficiency and value from its cloud model.

In fact, many agencies turn to vendors such as Unisys to build cloud brokerage programs in order to uniquely integrate and customize disparate cloud services for specific agency requirements. Advisory services, cloud design and implementation are tools that can also be customized so that agencies benefit from the agility, flexibility and economics of cloud computing.

4. A secure solution.

The need to guarantee the safety and confidentiality of network data is growing exponentially among state agencies. So it's no surprise that 95 percent of respondents cite data security as extremely important or important in driving their decision to adopt a cloud environment. In fact, 71 percent of respondents identify data security as the main barrier to cloud adoption.

Allaying agencies' concerns is a widening assortment of security solutions. Take, for example, the Unisys Stealth Solution. This powerful tool renders users, data and infrastructure undetectable to cyber criminals regardless of whether a network is private or public.

By rendering workloads dark to the outside world, Stealth offers defense-grade security to the government sector without the need for expensive reconfiguring of the network. Servers are able to run side by side across both public and private clouds. At the same time, state agencies can rest assured that only members of a predefined community are granted access to highly sensitive workloads.

Through Stealth, the Unisys secure private cloud can protect communication among virtual machines while providing security among multiple tenants in a cloud. From a public cloud perspective, the AWS Cloud, coupled with Unisys Stealth, allows state agencies to migrate their high-value, mission-critical workloads for greater cost savings and peace of mind.

5. Expert advice.

State agencies have enough to worry about without having to become cloud computing aficionados. For this reason, savvy state agencies look to cloud vendors for expert advice on everything from capacity and risk management to balancing workloads.

This is certainly the case with state agencies that hope to achieve cost efficiencies through shared services. Thirty-nine percent of survey respondents have utilized or are planning to utilize shared services agreements for cloud services.

That's because cloud environments, whether private, public or hybrid, present the perfect opportunity for agencies of all sizes to share infrastructure and data center operational costs. However, assessing and building the best of shared services concepts requires a partner that knows how to stratify workloads across a variety of infrastructure types and balance risk for the distinct needs of various agencies.

SECURITY ON THE MIND

95%

say data security is extremely important or important in driving their decision to adopt a cloud environment.

71%

identify data security as the main barrier to cloud adoption.

With high-level guidance from an experienced vendor, a state agency can gain immediate access to industry best practices on shared cloud services. And as one of only a handful of vendors with experience in offering the public sector pure cloud contracts, Unisys is well equipped to offer guidance on how state agencies can contract for cloud services.

Conclusion: Answer the Cloud Calling

Austerity measures, a mobile workforce, shared services arrangements — they're all factors pushing state agencies in a single direction: to the cloud. But leveraging the cloud to cut costs and streamline operations takes more than simply purchasing a solution. By carefully vetting a vendor for technology neutrality, ecosystem support, customization capabilities, security and high-level guidance, a state agency can optimize its cloud undertaking.

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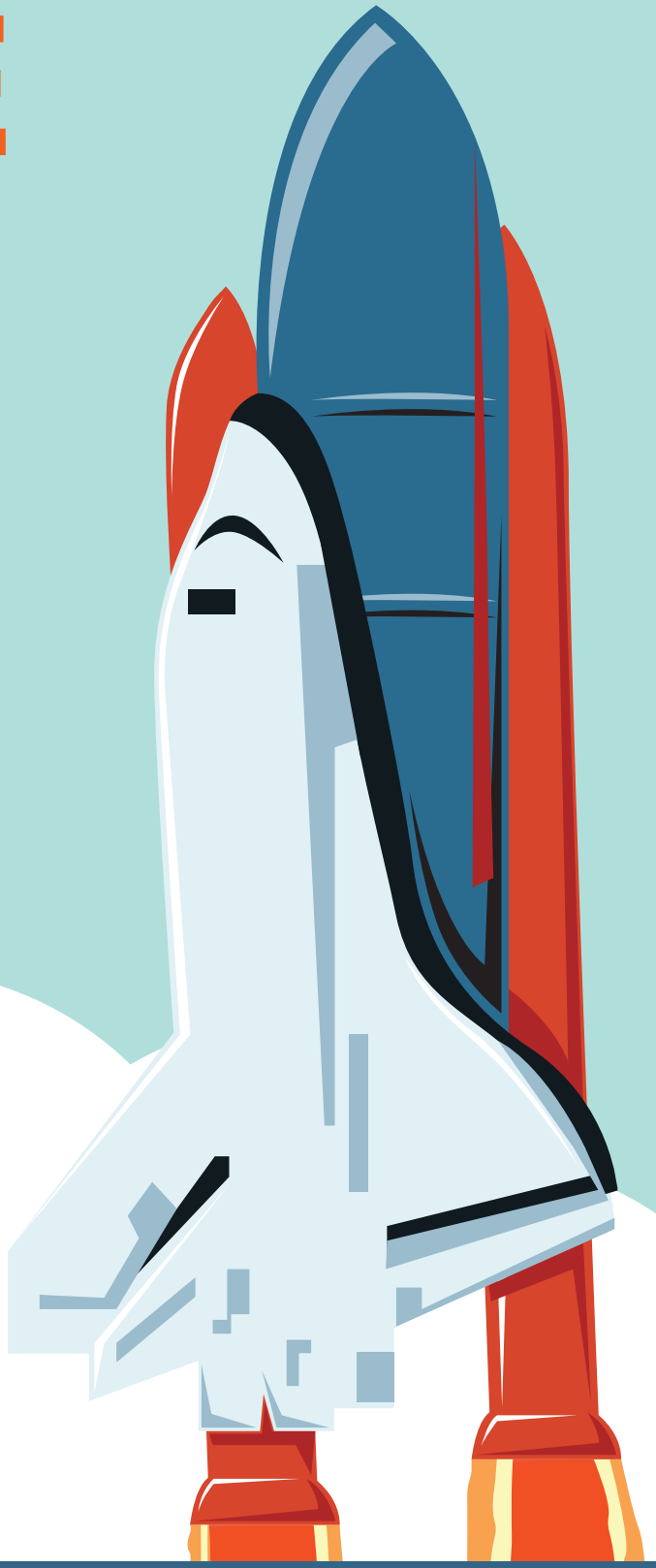

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By Miriam Jones | Chief Copy Editor

Send product review ideas to mjones@govtech.com, twitter@mjonesgovtech

Keyed Up

The 88-key Gyration Classic Compact Wireless Keyboard and the 101-key Gyration Classic Full-Size Wireless Keyboard feature sculpted keys, tactile-response typing, dedicated multimedia and Internet browsing keys, and an extended wireless range of up to 100 feet. They are Windows and Mac OS X compatible and have a 2.4 GHz RF USB receiver. The full-size keyboard uses four AA batteries, and the compact keyboard uses four AAA batteries. **www.gyration.com**

Eye on You

The Canon VB-H610VE Full HD Vandal-Resistant Fixed Dome IP Security Camera features a clear polycarbonate dome mounted to an aluminum body. The unified enclosure has a dust- and water-resistance rating of IP66 and is designed to absorb violent impacts, or for use in areas that may be subject to abuse, such as correctional facilities, public transportation centers, shopping malls and schools. An optional heater allows the camera to be used in temperatures down to -22 degrees F. The VB-H610VE also features a built-in 111-degree wide-angle 3x optical zoom lens for clear, high-quality images and can capture potentially crucial image detail in low-illumination environments. **www.usa.canon.com**

Label Maker

For vibrant, full-color labels, Epson America Inc. introduces its ColorWorks TM-C3500 Label Printer with Just In Time Color Labeling. The ColorWorks TM-C3500 system is designed to meet the needs of users producing labels for high-mix, low-volume applications that require multiple label variations. The printer produces labels at up to four inches per second with high image resolution. The addition of black ink increases the range of color users can reproduce. The ColorWorks TM-C3500 is compact and supports all major label software applications. Easy installation and maintenance lets users monitor ink supply levels on an LCD and oversee multiple network printers in a system. **www.epson.com**

For more product news, log on to explore *Government Technology's* Product Source. **govtech.com/products**

CDE Celebrates the Top Innovators in Education!

THE CENTER FOR DIGITAL EDUCATION'S (CDE) 2013 YEARBOOK highlights 40 education innovators who are using technology to inspire their students, improve learning and better the K-20 education system. It also provides a recap of how much was spent on education technology, where the funding came from and what technologies have been garnering the most attention. Don't miss this unique and truly inspiring publication.

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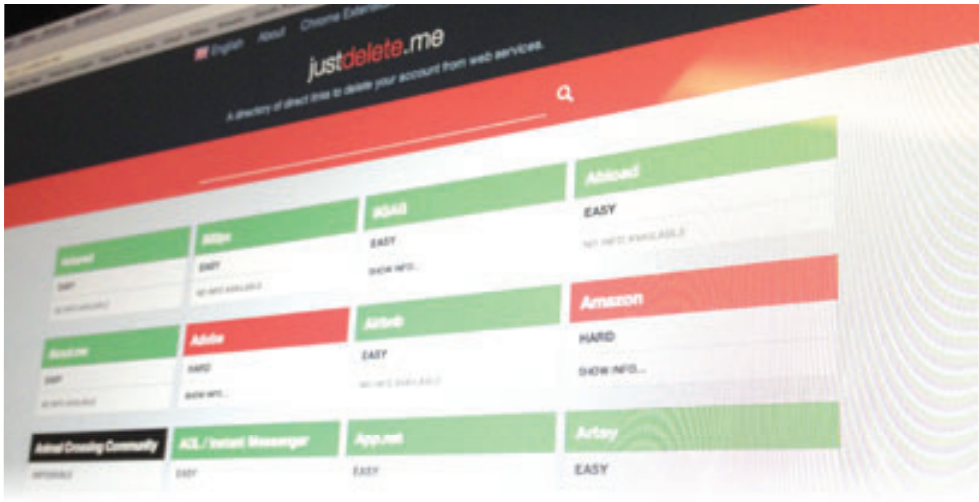
3-D Goes Mobile

Occipital, a San Francisco tech firm, raised more than half a million dollars in just three days to develop and market a 3-D scanner for mobile devices. The company's Structure Sensor attaches to an iPad or other device, allowing users to capture three-dimensional models of rooms, scan objects or play augmented reality games.

SOURCE: INHABITAT.COM



PULLING THE PLUG:

It's easy to sign up for Web services, but what happens when you're ready to ditch Dropbox or toss TweetDeck? Figuring out how to disconnect from these accounts can be tough, but JustDelete.me can help. The site offers a massive directory of links that take you directly to the page where you can cancel your account. It even warns how hard the online process will be — from "easy" for services like Grooveshark to "impossible" for Picasa — making JustDelete.me an indispensable tool for digital life. SOURCE: LIFEHACKER.COM

> "Ideally the environment itself would be able to detect a fall and send an alert to a caregiver."

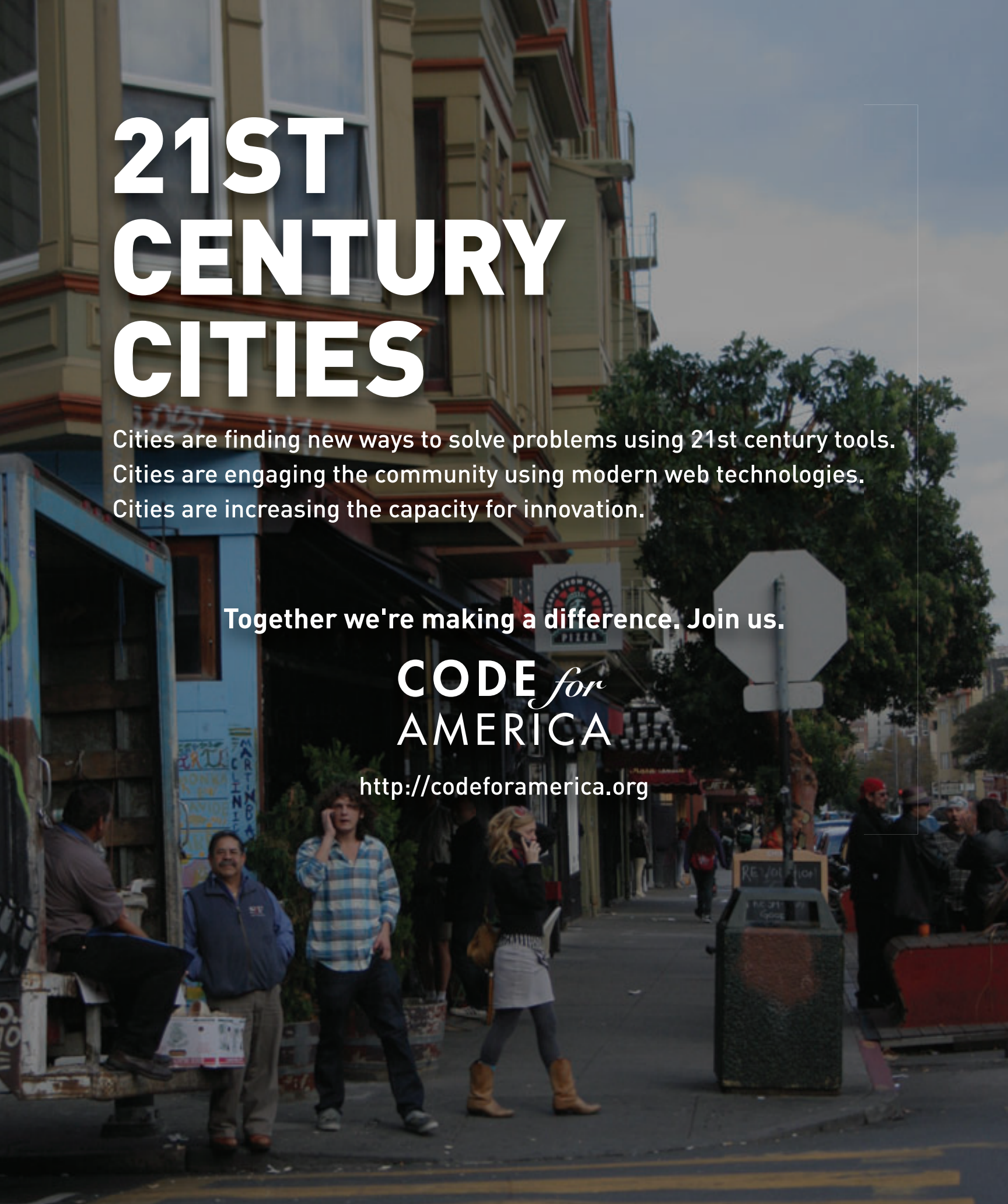
Safer for Seniors

Wireless sensor technology developed by University of Utah electrical engineers may help senior citizens live in their own homes instead of nursing homes. The system detects falls using an array of wireless sensors placed around the perimeter of a room. Sensors are placed at two levels corresponding to someone standing or lying on the floor. As each sensor in the array transmits to another, anyone standing — or falling — inside the network alters the path of signals sent between each pair of sensors. SOURCE: NEWSWISE

SPOTTING POLLUTERS:

Spanish scientists have developed technology that "sees" toxic tailpipe emissions as vehicles pass by. At the heart of the system is a modified infrared multispectral image camera, equipped with an internal wheel of lens filters. As the camera views the passing traffic, that wheel turns at high speed, allowing several different bands of light to be imaged independently for each vehicle. The result, say scientists working at Spain's Universidad Carlos III de Madrid, is emission signatures for individual cars. SOURCE: GIZMAG

Send Spectrum ideas to Managing Editor Noelle Knell, nknell@govtech.com, twitter@GovTechNoelle



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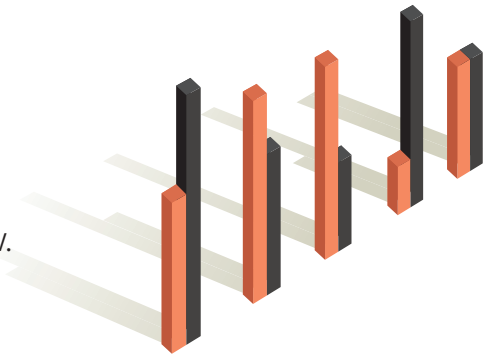
Stick with the Facts

Eight statistics every government leader should know.



I love hearing about the latest trends in technology, but sometimes it's hard to separate hype from reality. So how do you decide what to focus on? Personally, when I'm faced with that situation, I turn to recent studies and statistics. That's why I pulled together eight key statistics every government leader should know and what it means for his or her job.

1 / We Live Online — According to the Pew Research Center's Internet and American Life Project, 85 percent of adults use the Internet. Even more dramatic is who's using it: 98 percent of 18- to 29-year-olds, 83 percent of 50- to 64-year-olds, and 56 percent of those 65 and older. To me, this shows a dramatic shift in which people are prioritizing government services to be online for almost every demographic.

2 / Cellphones Are Everywhere — As of this summer, 91 percent of adults had cellphones (up from 73 percent in 2006), while smartphone adoption rates are growing even faster. As of summer 2013, 51 percent of adults have smartphones, an increase from 35 percent only two years earlier. This is being shown in mobile Internet traffic, which has gone from less than 1 percent of Internet traffic in 2009 to 15 percent in May 2013. Government needs to move to a mobile-first approach to services using these new devices.

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

3 / Mobile Commerce Is on the Rise — Mobile commerce is rapidly rising, with four out of five consumers using smartphones to shop, according to Internet analytics company comScore. And a number of consumers are going mobile only. Twenty-five percent of consumers engage in online shopping only via mobile devices, Prosper Mobile Insights reported. Governments need to start moving quickly to mobile commerce (not just e-commerce).

4 / Retirements Are Real — At the federal level, by 2016, more than a third of the workforce will be eligible to retire, according to the Government Accountability Office. This includes nearly 60 percent of senior executives and almost half of top managers. The situation is even worse at the state and local level. Succession planning needed to start yesterday.

5 / Interest in Public Service Is Waning — To solve the retirement gap, we need new blood. And the biggest group missing in government is the millennials. By next year, millennials will account for 36 percent of the U.S. workforce, and by 2025, they will make up 75 percent of the global workplace. Yet as of 2011, only 6 percent are interested in a career in public service, down from an all-time high of 10.2 percent in 2009, according to the Partnership for Public Service. Government agencies need to work hard to recruit millennials since they aren't currently looking on government agency job pages.

6 / Demographic Changes — According to Pew Research, Hispanics are the largest minority group, making up 16 percent of the U.S. population. By 2020, they will make up 19 percent and will represent 23 percent of the population by 2030. In addition, Asians will increase to 6 percent of the overall U.S. population by 2020. Government agencies will need to make sure their services reflect the cultural norms and languages of these communities, while also including them in outreach efforts.

7 / Cloud Is Here — As a technology leader, all trends point to the cloud. IDC predicts that public cloud spending will increase from $40 billion in 2012 to $100 billion in 2016. The move to the cloud has real implications in terms of ensuring that your employees have the right skills as it requires different procurement, technical deployments and vendor management.

8 / Rise of the Baby Boomers — The 65 and older population grew 18 percent from 2000 to 2011 and is only expected to increase as the oldest baby boomers have already started to retire. Think about ways to leverage the baby boomers: Can you engage them as volunteers in your programs? Can you make your town friendly to baby boomers so they retire in your district?

Use these statistics to start planning for your agency's future. The only constant is change, and government agencies need to be adapting to the changing landscape. GT

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