TOP INTELLIGENTLY CONNECTED STORIES
Introduction

Communities are using sophisticated networks and the Internet of Things to address some of their biggest priorities. This collection of Government Technology’s top networking stories shows how states and localities are implementing intelligent and connected technologies to improve traffic safety, help people with disabilities, monitor air quality and more.

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National League of Cities Releases Small Cell Guide for Local Government

The equipment is popping up in urban environments across the country, and the NLC is trying to educate local governments before 5G hits.

BY BEN MILLER / AUGUST 31, 2018

As small cell wireless equipment — those little cell service-spreading doohickeys attached to structures such as streetlights and utility poles — proliferates across the U.S., the National League of Cities (NLC) is looking to help local governments make decisions about how to allow it.

It’s a move the Federal Communications Commission (FCC) has already undertaken, as it drafts a model ordinance for cities to adopt or build upon. The NLC saw some shortcomings in that effort, and decided to publish its own.

“One important thing to keep in mind is that no national model is ever going to solve everybody’s problems, and that was one of the issues with the [FCC] model from the outset,” said Angelina Panettieri, a principal associate of technology and communications for NLC.

Toward that end, the ordinance leaves a lot of room for local governments to make considerations about what they want to do — for example, holding public hearings for every small cell installation or gathering input on the general concept and then setting up an administrative review process to cut down on the amount of time it takes to approve each project.

That was the approach that Raleigh, N.C., took.

“They actually engaged citizens through a more formal process ... they really gave residents the opportunity to weigh in on the look and feel and design of this new equipment,” said Nicole DuPuis, a principal associate of urban innovation for NLC.

The organization also released a guide explaining the fundamentals of small cell technology and what it’s there for.

“Our focus has actually been on the guide for most of the last year and change,” Panettieri said. “We thought it was important that a nontechnical resource be available to local officials just to understand what small cell technology is and why it’s important to their communities so they aren’t completely caught off guard when [companies] come to them and want to build.”

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Small cells, which have a short range and are most often deployed in denser urban environments to serve high demand, are a part of the connectivity backbone cities are building out in anticipation of smart city-type technology like pedestrian-counting sensors, but telecommunications firms are looking at them in another way: preparation for 5G wireless.

“5G is going to use a higher portion of the spectrum that, because of the wavelength, is not going to be able to transmit very far,” she said.

The equipment does face local opposition in a lot of places. One sticking point is design — especially in places with older architecture, modern equipment can look out of place. A 2018 study by RVA Research, sponsored by the pro-broadband nonprofit Next Century Cities, found that the appearance of the equipment was the most common complaint about small cells.

The NLC guide includes a brief case study of how Boston worked with companies and community members to come to an agreement on how to help the equipment blend in more naturally with the cityscape.

Another is local concern about radiofrequency radiation and whether it might increase cancer rates — though there doesn’t appear to be much evidence that it does, scientists are still researching to more definitively answer questions. Furthermore, the FCC hasn’t updated its guidelines on safe levels of radio frequency radiation exposure since 1996.

“It’s reasonable for people to want to know that something close to street level is safe,” Panettieri said.

A lot of local governments might not have to worry much about small cell installations, since Panettieri said telecommunications companies have mostly targeted middle-sized and larger cities for the equipment.

Nonetheless, the number of deployments is likely to rise, with telecommunications firms planning to look more to small cells as they compete with each other to set up 5G networks.
California Governor Approves Bills Tightening Security, Privacy of IoT Devices

Senate Bill 327 and Assembly Bill 1906, signed Sept. 28 2018 by Gov. Jerry Brown, would require makers of Internet-connected devices to improve their security.

Gov. Jerry Brown has signed two bills that could make manufacturers of Internet-connected devices more responsible for ensuring the privacy and security of California residents.

The governor’s office announced on Sept. 28, 2018 that Brown had signed the legislation, Assembly Bill 1906 and Senate Bill 327. Both bills will become law on Jan. 1, 2020. That delayed effect, one of the lawmakers behind the legislation said, is designed to hold industry accountable but not stifle innovation or unduly burden it with regulation. Senate Bill 327 is the older of the two and was introduced in Feb. 2017 by state Sen. Hannah-Beth Jackson, D-Santa Barbara, but as currently amended, the senator told Government Technology, is “pretty much a mirror” of AB 1906, introduced in January by Assemblywoman Jacqui Irwin, D-Thousand Oaks.

Both require manufacturers of connected devices to equip them with a “reasonable security feature or features” that are appropriate to their nature and function, and the information they may collect, contain or transmit — and are designed to protect the device and its information from “unauthorized access, destruction, use, modification or disclosure.”

The bills also specify that if such a device has a “means for authentication outside a local area network,” that will be considered a reasonable security feature if either the preprogrammed password is unique to each device made; or the device requires a user to create a new “means of authentication” before initial access is granted.

They define “connected device” as a device with an Internet Protocol (IP) or Bluetooth address, and capable of connecting directly or indirectly to the Internet.
Jackson said she’s had “concerns about privacy issues for many, many years,” and was prompted to act last year after hearing from constituents and learning that the My Friend Cayla smart doll, which had been banned in Germany due to concerns about the safety of children, had not been banned in the U.S. She questioned how IoT devices including microwaves, thermostats and security cameras were securitized and was shocked by the lack of security she found.

“This bill basically directs those manufacturers to equip their devices with reasonable security features,” Jackson said, adding she thinks the legislation is “the first of its kind” calling on companies to take responsibility for considering the security aspects of their devices as they’re developed and produced.

However, the question of what defines a “reasonable security feature or features” is one of several that industry groups — among them, the Security Industry Association, the National Electrical Manufacturers Association (NEMA) and the California Manufacturers and Technology Association (CMTA) — cited in their opposition to AB 1906.

In a statement provided to GT, the CMTA said the bills are an attempt to “create a cybersecurity framework by imposing undefined rules on California manufacturers,” but instead create a loophole allowing imported devices to “avoid implementing any security features.” This, it said, makes the state less attractive to manufacturers, less competitive and increases the risk of cyberattacks.

“We recommend an approach that would ensure that all connected devices are compliant and secure, no matter where they are produced. These two innovation-stifling measures not only fail to protect consumers, but will drive away California manufacturing investment,” the CMTA said.

The Entertainment Software Association, one of three industry groups including NEMA that are opposed to SB 327, said existing law already requires manufacturers to set up “reasonable privacy protections appropriate to the nature of the information they collect.”

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Jackson said the bills still leave it to industry to use “their best judgment” to determine reasonable security and disagreed with the idea that the bills might create a loophole for imported devices.

“The concern, I think, is misplaced, because when the products are sold in this country, they will have to meet those standards even if they’re manufactured elsewhere,” she said.

State law would have allowed the bills to become law if they were neither signed by Brown nor vetoed — but both pieces of legislation specified they must be signed by the governor and can only become law if the other bill is also signed. A member of Jackson’s staff characterized this as a provision aimed at ensuring both houses remain on the same footing.

Editor’s Note: This story has been updated to indicate that the Governor signed both pieces of legislation. An earlier version was published before this was reported.
As Smart Projects Take Shape, Officials See Cleveland’s IoT Collaborative as a Regional Boon

With recently awarded grant funds in hand, the IoT Collaborative is taking aim at making the region smarter and more responsive with the help of two uniquely situated universities.

BY SKIP DESCANT / FEBRUARY 20, 2018

The Cleveland region is set to explore Internet of Things (IoT) technology with help from two area universities.

Case Western Reserve University and Cleveland State University have joined forces with the IoT Collaborative to focus on the researching and testing of IoT devices and projects related to smart city, health care, energy and other areas. The collaborative is funded, in part, with a $1.75 million grant from the Cleveland Foundation awarded in late January.

“We really found it as a way for economic improvement,” said Leon Wilson, chief of digital innovation and CIO with the Cleveland Foundation. “And also, bringing a lot more brain talent into the region. But equally important, is where they were focusing their energy in: manufacturing, energy, health care.”

About three or four years ago, the electrical engineering department at Case Western Reserve University saw the ability to overlap IoT and data and analytics at the boundaries of the different disciplines, and set out to begin exploring how these could come together in a new area of study, said Ken Loparo, chair of the electrical engineering and computer science department at the university.

“As a result of thinking about, ‘What are the emerging challenges and opportunities that we face in a number of application sectors like manufacturing, energy, health care, critical infrastructure, and cities and communities?’ it became obvious that the whole idea of the Internet of Things and the deployment of sensors that are communication enabled, that are interacting with the physical world ... that led us to create something that we call ISSACS (Institute for Smart Secure and Connected Systems), and it’s all about sort of the Industrial Internet of Things,” he explained.

When Loparo uses the term “Industrial,” he’s not referring to consumer products of even manufacturing, but the widescale deployment
of smart technology across an area such as a neighborhood or city.

“We’re really talking about the ecosystem that would evolve around connected devices in what we call a cyberphysical world ...,” said Laparo. “You’re sucking data from that physical world, doing something with that data.”

Organizers of ISSACS knew they wanted the research to reach well beyond the halls of the electrical engineering department at Case Western. So they reached out to numerous other departments — arts and sciences, law, business, engineering, social sciences and others — to bring multiple disciplines and perspectives under an initiative to study IoT and smart technologies.

ISSACS then began exploring funding sources and opportunities, which is what brought the team to the Cleveland Foundation.

“They were extremely excited and supportive,” said Laparo. “They were looking at developing sort of their own digital strategy for Cleveland; but they wanted us to think outside of just CWRU, and to think of things as the city of Cleveland and northeast Ohio as a region.”

The Cleveland Foundation encouraged a collaboration with nearby Cleveland State University (CSU), which has a privacy and cybersecurity center in its law school and focuses on the legal and regulatory aspects of data privacy and security. CSU also includes a college of urban studies, which often works with various cities and communities.

“So we partnered with Cleveland State and formed an academic partnership,” said Laparo.

The IoT Collaborative was born.

The partnership among university, private and public sectors has the potential to grow the Cleveland region as a place for research and development, officials explain.

Exploring IoT-related research in say, health care, opens up opportunities to expand bio-medical and other related industries in the Cleveland region, said Shilpa Kedar, program director for the Cleveland Foundation’s Economic and Workforce Development.

“We think that not only grows the industry — the bio-medical industry here — but also directly impacts the quality of life of the citizens,” she added.

The money provided by the Cleveland Foundation will be used, in part, to “attract star faculty,” said Kedar.

“Attracting star faculty will require a lot of startup funding, and that’s where the bulk of the dollars, we expect, will go,” she added.

The collaborative will determine what projects and what research angles it pursues.

“We are not in any way being prescriptive around that,” said Kedar. “That is truly going to be a function of what corporations step up and decide to engage with the university.”

The collaborative has two projects involving Cleveland — both in the beginning stages — related to roads and buried infrastructure and another related to the opioid crisis in the region.

“This is a great opportunity for us to engage without community partners,” said Laparo.

“We’re also trying to make the campuses sort of living laboratories. Because very often, when we end up talking to people in the city and community about deploying technology within the city infrastructure, they would really like to see it deployed someplace else first,” he added. “And so the campus just becomes a wonderful opportunity to begin to test out some of the infrastructure and use it as a demonstration site.”
Air Quality Sensor Pilot Offers Lessons for Other IoT Installations

Portland, Ore., and Portland State University partner on sensors to improve air quality monitoring and delve into how other cities and municipalities can explore their own sensor projects.

BY BEN LEVINE / APRIL 3, 2018

In this installment of the Innovation of the Month series, we explore how Portland, Ore., is testing sensor pilots to help improve air quality monitoring, and then look at how other cities and municipalities can explore their own sensor pilots.

MetroLab’s Executive Director Ben Levine sat down with Christine Kendrick, air quality lead/smart cities coordinator at the city of Portland; Linda George, professor of environmental science and management at Portland State University; and Andrew Rodgers, director of research and applications strategy at The Enterprise Center in Chattanooga, Tenn., to learn more.

Ben Levine: Can you describe what Portland’s air quality sensor device pilot focused on and what motivated your respective institutions to address this particular opportunity?

Christine Kendrick: Our communities want more information about localized air quality. Ambient air quality monitoring at high spatial resolutions is resource-intensive to install and maintain, and air pollution is not homogeneous across the urban landscape. We know that there are limitations in current sensor technology for air pollutant measurements at the lower ambient levels found in U.S. cities.

SenSevere RAMPS installed at OR DEQ monitoring station for co-located field deployment in the City of Portland Air Quality Sensor Pilot.

As a first step, we wanted to explore the uses of sensors, recognizing the current technology limitations. The City of Portland Air Quality Sensor Device Pilot is testing new models of more affordable air quality sensors to see if they can provide reliable air quality data from the roadside environment.

Using multiple types of co-located deployments in our project design allows us to better understand the limitations and uses of the type of data achievable from lower-cost devices. Can they be used to identify relative differences in air pollution between...
locations? Or assess pollution levels before and after construction projects in the roadway or built environment? Or can they help identify where additional resources should be invested for air pollution monitoring with higher-grade instruments?

The pilot involves three types of co-located deployments:

- Testing sensors against known concentrations of gases and particles in the Sustainable Atmospheres Research (STAR) Lab at Portland State University (PSU).
- Co-locating sensors together at an Oregon Department of Environmental Quality urban ambient monitoring station.
- Co-locating different types of sensors at three signalized intersections on a major urban arterial roadway.

Finally, this project also serves as a pilot for:

- The deployment of a distributed sensor network or Internet of Things (IoT) project in the public right-of-way.
- Management and analysis of data collected across multiple locations in real time.

Methods to add attachments to the city’s streetlights and traffic signals, which will all help to inform additional citywide policies and guidelines.

Linda George: The PSU STAR Lab has been interested in exploring and understanding urban air pollution for the last decade. In order to assess this variability with observations, we need much lower cost measurement devices. In addition, we are also very interested in understanding the drivers of spatial variation and what can be done to reduce air pollution where levels are elevated. We collaborate with transportation engineers, urban planners and epidemiologists to explore these issues. This project gives us an opportunity to provide feedback to developers of low-cost sensors as cities consider taking them up for widespread use. We have designed a state-of-the-art testbed for air pollution sensor testing against Federal Reference Method (FRM) instruments.

Levine: Who was involved with the City of Portland Air Quality Sensor Pilot?

Kendrick: The City of Portland Bureau of Planning and Sustainability pilot project is supported by a National Institute of Standards and Technology (NIST) Replicable Smart City Technologies Cooperative Agreement grant.

Philip Orlando, graduate researcher, working with the sensor testing chamber and Array of Things Node in the STAR lab at Portland State University.

Partners involved are Portland Bureau of Transportation, NIST, Portland State University, and the sensor providers (three devices from each provider): Apis, SenSevere, and Argonne National Laboratory at the University of Chicago.

Levine: What have been the biggest lessons learned? How can other cities/counties implement effective sensor pilots? Are there overarching governance and policy issues that must be considered?

Kendrick: There are new challenges at every step of the way in creating a sensor network. As we talked to colleagues in other communities we realized we were not alone in figuring out these steps.

Common issues included:

- Cultivating resources to address a wide range of needs (sensor validation, privacy, security, community engagement and more).
- This type of infrastructure for a city is a departure from past projects.

Through participation in the NIST Global Cities Team Challenge (GCTC) program, we had the opportunity to collaboratively compile these overarching governance and policy issues into the Recommendations for the Development & Implementation of Distributed Sensor Networks blueprint.

A recurring theme in the blueprint is that you need to ask yourself critical questions at each project stage to ensure the sensor network you are building truly fits the needs of your community. Putting together a multidisciplinary team will help you address the variety of challenges encountered and also help to build those lessons learned into new guidelines for your municipality.

For example, when reviewing air quality sensors, we had to create unique selection criteria to fit our project’s needs. This was not a review that could be conducted solely by the city’s procurement officers. Collaboration between me, an air quality scientist, and our procurement team with their expertise in our city’s legal and purchasing requirements and sustainability goals resulted in a unique process, and it’s one that can now be applied to a future technology project rather than creating it as we go.

Levine: How did you become involved with the blueprint for sensor network development?

Kendrick: While participating in the first Transportation SuperCluster Blueprint Workshop, the topic of sensors in the right-of-way kept coming up. Sensors were discussed as
a tool to help collect data for transportation projects. However, from the first months of our pilot and conversations with colleagues like Andrew who had conducted a variety of pilots, it was clear that creating, installing and maintaining a sensor network had its own set of issues and guidance needs.

For the second workshop in Portland, we created a work session focused solely on sensor networks. We got feedback from participants with backgrounds in the research, private and public sectors. Andrew and I then took the lead in creating the Sensor Network Recommendation blueprint. We were excited about creating this resource that could provide a stepping stone for those tasked with planning and managing similar projects.

Andrew Rodgers: While attending the first Transportation SuperCluster Blueprint Workshop, I realized that many communities were grappling with the same challenges that Chattanooga had regarding deploying technology projects, specifically IoT sensors, in municipal agencies that were used to dealing with a very different type of infrastructure. At the second workshop, the conversations at the session Christine facilitated really highlighted the need for a resource focused on providing a neutral entry point for newcomers. I saw working with Christine as a way to share and codify some of the early experiences we had as a community, along with some of my personal experiences managing early IoT systems in the manufacturing space.

Levine: What are the next steps for the City of Portland Air Quality Sensor Device Pilot and your work to exchange lessons learned from sensor deployments among communities?

Kendrick: The City of Portland Air Quality Sensor Device Pilot is still in progress. Next steps will be to document the maintenance required once devices are installed at the roadside and write a collaboration paper with NIST. We are also in the planning stages to create a community workshop focused on data sharing and how to best communicate short-term air quality measurements. We want to engage with various community groups to learn what other uses they see for air quality sensors. As discussed in the blueprint, coordinated effort and communication with stakeholders is key to understand the cultural, technical, and resource constraints of your community.

Continuing to collaborate across communities will allow us to learn about changes in available technologies. Writing proposals together is a great way to build on our initial sensor pilots. Opportunities for colleagues across institutions to meet in person like the Global Tech Jam in Portland in June 2018 are also additional tools to exchange lessons learned and explore sensor installations.

Rodgers: We’re actively working with other communities that are going through this process, through MetroLab and other organizations, these collaborations enable a two-way experience sharing that supports both those communities new to deploying these systems, the communities that may be looking to replace “legacy” systems in this rapidly evolving market, and the researchers who might be developing new systems to better address some of the concerns outlined in the blueprint.

About MetroLab: MetroLab Network introduces a new model for bringing data, analytics, and innovation to local government: a network of institutionalized, cross-disciplinary partnerships between cities/counties and their universities. Its membership includes more than 35 such partnerships in the United States, ranging from mid-size cities to global metropolises. These city-university partnerships focus on research, development, and deployment of projects that offer technologically- and analytically-based solutions to challenges facing urban areas including: inequality in income, health, mobility, security and opportunity; aging infrastructure; and environmental sustainability and resiliency. MetroLab was launched as part of the White House’s 2015 Smart Cities Initiative. Learn more at www.metrolabnetwork.org or on Twitter @metrolabnetwork.
Colorado is moving forward with the development of a “digital highway,” as the state sets the foundation for the rollout of “connected” vehicles that can share data with one another and transportation officials.

The Colorado Department of Transportation, in partnership with Panasonic Corp. of North America, is installing a network of roughly 100 roadside units along I-70 between Golden and Vail, a stretch of about 90 miles. The roadside devices will be able to communicate with the state’s Traffic Management Center, as well as connected vehicles.

In the next three to five years, a number of automakers, including General Motors, Ford, Toyota and Volkswagen, have announced plans to include connected vehicle technology on some or all of their cars.

The system will enable a “vehicle-to-everything” — known as V2X — environment where cars can share billions of data points an hour related to speed and other operations, which are fed into the system to generate alerts and other information.

With so much traffic data flowing into the state’s DoT, officials can analyze and manage traffic in ways that can only be dreamed of using current technology. The idea is to create a driving environment that operates more safely and efficiently.

“That is why, honestly, we’re making the investment that we are. We truly believe that this technology, and where this is going, is going to save lives,” said Amy Ford, chief of advanced mobility at the Colorado Department of Transportation.

“And it will also, in reducing crashes, etc., improve the capacity of our roadways,” she added.

The project comes on the heels of a smaller-scale pilot where Panasonic installed and tested five vehicle-to-everything roadside units, along with six of the onboard vehicle units, creating a connected system officials have loosely called an “Internet of roads.”

The 90-mile I-70 corridor will mark the state’s first full-scale deployment of the system, said Ford, adding that there are plans to use the technology all around the state.

The I-70 route was picked for several reasons: variable terrain in an area that often sees rain, snow and ice.

“It’s got sort of everything. If you can make all of this work here, it works everywhere,” said Ford.

Installing the roadside units will cost about $2 million to $3 million, and the partnership with Panasonic to develop the “data ecosystem” is expected to cost about $10 million for the next five years.

“So it’s about a $70 million program right now to essentially build the brain behind the scenes to allow for, frankly, the world’s first commercial-level deployment of this kind of connected vehicle eco-system,” said Ford.

The Colorado project could be a leader in the emerging field of connected vehicles and highways. However, other cities and states are also beginning to experiment in this area.

Columbus, Ohio, recently announced a project to install up to 1,800 on-board devices in public and private cars, as well as upgrade some 113 signalized intersections in its effort to create a “connected Vehicle Environment,” in a plan to test the technology’s efficacy at improving traffic safety.

Tampa Bay, Fla. is in the midst of a connected vehicle pilot, which involves some 1,600 private vehicle drivers who use the Lee Roy Selmon Expressway. That project is set to run through the end of 2019.

“Colorado is a global leader in creating an environment where V2X technology can thrive,” said Jarrett Wendt, executive vice president at Panasonic Corp. of North America, in a statement. “Their openness to deploying new technologies in a real-world setting is an exciting and innovative approach, allowing them to attract top industry talent and private investment to the state. And most importantly, deliver on their mission to improve the safety of Colorado roadways.”
Smart technologies, such as robotic telepresence and the Internet of Things (IoT), are capturing the attention of adaptive technology programs in state and local governments, as well as educational institutions, according to experts.

IoT and robotic telepresence are among the latest adaptive technology (AT) efforts states are deploying, as they seek to deliver on the 30-year-old Technology-Related Assistance Act of 1988, also known as the Assistive Technology Act. The law requires all states to operate an adaptive technology program to help people with disabilities. In fiscal 2017, state AT programs assisted 600,000 people, according to the Association of Assistive Technology Act Programs (ATAP).

State and local governments, as well as educational institutions, are trying to address a number of disabilities, including citizens who are deaf, deaf-blind, hard of hearing, have speech impairments, developmental disabilities, learning disabilities, are blind or have low vision.

Augmentative communication devices are among the top three categories for adaptive technology, said Susy Woods, public policy and education liaison for Illinois’ Assistive Technology Program. Illinois is also an agency member of ATAP.

Robotic telepresence, which allows users to communicate with others through a robot even though they are not physically present in the room, is gaining attention, according to Kim Moccia, program director for assistive technology at Minnesota’s Department of Administration. The state, for example, provides short-term loans of its double robot through its AT program.

“We plan to increase the number of robots in our inventory due to increased demand, especially by school districts,” says Moccia, who is also an ATAP board member.

A double robot is a combination Apple iPad and Segway scooter that uses video conferencing to allow a person with disabilities to move from room to work at school or at work without them having to be present.

Text-to-911 services for deaf or hard-of-hearing residents are also spreading throughout the nation, including Palm Beach County, Fla., and Franklin County, Ohio. North Carolina is working with its Department of Public Safety to deploy text-to-911 services to its disabled residents, according to Tammy Koger, director of North Carolina’s Assistive Technology Program.

## Demand for Smart Technologies Expected to Grow

Home environment devices that allow the rising number of senior citizens to remain in their homes as well as assistive technology that addresses blindness or low vision are two other AT categories that states are trying to address, said Woods.

Amazon’s Echo and Apple’s HomePod allow users to use their voice to shut off lights and lock doors remotely.
and unlock doors. IoT devices, such as these, hold the potential for helping states cut long-term care costs for people with disabilities, say industry observers.

Meanwhile, the number of people with developmental disabilities continues to rise while the technologies to assist them are also expected to increase. For example, the number of children who are diagnosed with an autism spectrum disorder at the age of 8 has soared to one in every 68, based on a Centers for Disease Control and Prevention study — an increase of 150 percent since 2000, CNN reported.

“These figures will continue to rise because we have gotten better at diagnosing autism and at a younger age,” Woods explained.

Minnesota now has 16 police departments that are using the Vitals app, which allows families and caregivers to enter diagnosis information about their developmentally disabled family member, along with information on things that will trigger their behavior and ways to de-escalate such behavior. When an officer is within 30 to 80 feet of the developmentally disabled person, the information is shared wirelessly with the officer to guide them on the best way to approach the individual. More police departments are expected to sign aboard, according to Moccia.

**Awareness and AT Funding Remains a Challenge**

Following the reauthorization of the Assistive Technology Act in 2004, the U.S. Department of Education’s Rehabilitation Services Administration (RSA) now distributes money to mandated state AT programs. These programs serve four core assistive technology areas: demonstration and awareness training of AT projects, an AT equipment loan program for citizens, a re-utilization program where equipment in good condition can be reused for as long as the citizen needs it and state financing to help people borrow money at low interest rates for AT equipment purchases.

Historically, the federal budget has never fully funded the AT programs that the states are required to provide. However, in fiscal 2019, the budget will distribute an additional $38 million for state AT programs, Woods noted. The distribution is based partially on the state’s population and when they started their AT program.

In addition to the funding challenges, gaining awareness of AT issues and addressing them through policies and legislation is a challenge, according to AT experts.

“North Carolina needs more emphasis on technology-related policies, access to services and devices, and funding for these types of services and devices,” said Koger. “In addition, exposure and employment opportunities continue to be an issue specifically with individuals with the most severe disabilities and who utilize assistive technology.”
Columbus, Ohio, Shares Its Smart City Secrets in New Playbook

The online collection of case studies, strategies and other information will provide cities with insight into how Columbus is making public transit safer and easier to use.

BY SKIP DESCANT / NOVEMBER 14, 2018

Collaboration and transparency are often rallying cries of smart city advocates, with city officials and others usually happy to discuss the projects.

Columbus, Ohio, is taking this mantra a step further and has put together its “Smart Columbus Playbook,” an online collection of case studies, strategies, and other related information, including contracts, RFPs, as well as “Concept of Operations” and “System Requirements” documents for the city’s various projects.

“We wanted to start collecting what we were learning and kind of tell the story of Smart Columbus, and all of these unique projects, in real time,” said Jennifer Fening, senior manager of marketing communications at Smart Columbus.

Two years ago, Columbus was awarded a $40 million U.S. Department of Transportation Smart City Challenge grant to create a smart transportation system in which vehicles and roads communicate to make travel easier and safer. It also came with $10 million from Vulcan Inc., with a goal of reducing greenhouse emissions and auto commutes.

Since then, the city has become a national leader in its quest to remake public transit, accelerate the adoption of electric cars and explore the possibilities for autonomous vehicles.

The playbook, which will be updated weekly, is broken up into 18 different content categories that cover the breadth of the projects underway. Within each category is a suite of articles and other information. It will also include research, case studies and even videos around topics such as “Increasing EV Charging Access at Multi-Unit Dwellings.”

“We understand cities are hungry to find opportunities for how they can tackle climate, equity and other transportation challenges, such as safety and congestion, through technological advances,” said Loreana Marciane, strategy manager for climate and energy programs at Paul G. Allen Philanthropies, speaking during a Nov. 7, 2018, webinar to discuss the release of the playbook.

“And we hope that Columbus will be that model for everyone to look at,” Marciane continued, adding there’s “no one cookbook.”

“And so this playbook is meant to be an interactive process where Columbus will share with you what they’ve gone through, what are the programs they’re implementing and what are the elements they’ve learned,” said Marciane.

The playbook is directed toward other cities seeking to explore smart transportation and transit projects, the private sector and even the general public.

“One of the key programs within that portfolio is partnering with the private sector to drive behavior change, in the region, in the way we get around,” said Fening. “We’re creating programs that encourage employees to drive electric vehicles. And so, we want other companies to learn what private-sector leaders in the Columbus region are doing to create new benefits for employees, and just drive behavior change through the private sector.”

Like all claims of transparency, Columbus will share more than its wins. “We also want to be transparent with what didn’t work,” said Fening. “If we can save a community from going down a path that we found less productive, and direct them toward a more productive path, that’s a win in our minds as well.”
Emerging Tech Finds Its Place Serving Citizens

Meeting the needs of 4 million residents is no easy task. But it’s one that IT leaders in Los Angeles accomplish each day with the measured application of technology.

BY EYRAGON EIDAM / FEBRUARY 13, 2018

In the public sector, technology isn’t about having the newest or the best. In fact, it’s quite the opposite in most cases. Governments, strapped by tight budgets and glacial procurement processes, are typically the last to have the newest stuff and are forced to be creative with what’s around them.

So, when a project is worth doing, it means taking a step back, surveying the landscape and embracing its particular challenges. For the local governments in Los Angeles, the second largest city in the United States (according to 2015 stats), this process still applies. Size, despite the misconception, does not always correlate with funding.

During a recent session at the Los Angeles Public CIO Academy, city and county IT leaders discussed the challenges they are leaning into and the problems their solutions were solving for Angelenos.

The Pools Have Eyes
For Mohammed Al Rawi, CIO of Los Angeles County Parks and Recreation, emerging technology is about more than business efficiency — it’s also potentially saving lives.

After a recent passive drowning at one county pool, which occurs when a swimmer faints and inhales water, Al Rawi’s team began to look at possible solutions that could better alert lifeguards to a potential incident.

Because of factors like surface glare and the hard-to-spot nature of this type of drowning, a specialized camera was deployed through one of the pool lights. The information is piped to an on-site server running analytics software that generates alerts to lifeguards via a wrist-worn device.

“In the past, the average time for rescue was 9 seconds, and with this system, it’s 1.7 seconds,” Al Rawi explained.

The “hacking,” as Al Rawi calls it, of the pool is just one of the ways his team is taking IT staff out of just fixing computers and copiers and making themselves valuable partners.
the rest of the enterprise can depend on for innovation. With more than 2,700 employees and 70,000 acres of parks and open space, the case for emerging technology must always add to what the agency is offering.

“There is always a risk and there is always a challenge to business owners to look into new things and explore new ideas,” he said. “This is true for private sector, so I want you to imagine what happens in public sector — it’s a challenge to the power of 10.”

Al Rawi’s job is also about rethinking what already exists and putting it into a different context. Take, for example, the Wi-Fi offered in some of the county parks. With the help of a Cisco solution geared toward tracking retail experience, the IT team was able to adjust the back end and deploy a valuable data-gathering tool.

By counting the queries smartphones sent to park Wi-Fi, the department was able to gather unprecedented insights into visitor behavior: Among those is the fact that some 11,000 homeless people slept in parks throughout the month of January.

Unlike the manual counts of the homeless they have relied on in the past, this system passively gathers actionable intelligence to better shape park services, Al Rawi explained.

“It’s changing the perception, proving that IT is a partner and not just an electrician to fix things. That it can really help you solve business problems is what makes me look forward to going to work every day,” he said.

Building a Smarter Library System

Much like L.A. County Parks and Rec, the county’s public library system is also using data to hone its services. Binh Le, assistant director for the department of the CIO with L.A. County Public Libraries, has also been relying on emerging technology to make the system of 87 libraries smarter and more effective.

“Last year, the library was able to extend annual operating hours, around 15,000 hours across our libraries,” Le said. “So, that poses a huge challenge on how we staff our libraries today. We have a limited budget and we are constantly asking our library staff to do more.”

And there are a few technologies that Le sees helping to meet these challenges — including artificial intelligence, intelligent things, applications and analytics, and immersive experience tools.

The deployment of sensor technology is offering a clearer picture of what visitors are coming to the library for, but it also allows insight into how the various branches could be staffed. In the past, any data gathered on the services patrons were using was done manually, “basically a pencil and a checkbox,” Le explained.

Now, heat sensor cameras track anonymized movement through participating branches, giving a glimpse into the migration of visitors. “By the end of this year, we are hoping to install an additional 100 sensors, and then more to come the following year,” he said.

When it comes to freeing up valuable staff time, Le said that AI and chatbot tech could take “low-end, repetitive tasks,” such as fielding frequently asked questions, and turn them over to a machine that answers not only accurately, but consistently.

“This really is a game-changer if we can implement these types of services,” he said. “That’s two staff every day, noon to 6 p.m., answering questions, and 10 a.m. to 8 p.m. answering phone calls on repetitive questions.”

“Our No. 1 question is how to reset a pin. So, if you are getting 50 of those questions every day, the bot can do that for you,” Le continued.

What’s more, a chatbot can be on-call 24/7/365. Plus, a truly smart bot could handle more complex tasks as well, like stack mapping, voice recognition, suggesting books based on preferences and communicating with patrons in their primary languages.

Le said the county is currently working with Microsoft to develop a conversational agent for the library system.

When all is said and done, Le believes technology can serve as a full-time support mechanism for librarians and customers. The data that tools are pushing out is showing that paraprofessionals could take over many duties currently managed by librarians. A few shifts to the staffing model could free up librarians to focus on multiple locations and more demanding tasks.

Governing in the Fourth Industrial Revolution

Los Angeles is nothing if not gigantic. While some might argue its size gives it an advantage when it comes to leading in gov tech, others might say it makes it that much more difficult. The city’s diverse population only increases the challenges of serving every citizen equally and quickly.

As Deputy CIO and Assistant General Manager Joyce Jinde Edson explained, technology is the key to excelling in these conditions.

“In order to connect government to that diverse environment, we’ve got to do it digitally,” she said. “Really the only way we can do this is to use technology, emerging technology, not bleeding edge, but cutting edge, to our advantage.”

Like many other governments, the city of L.A. is seeing talent retire and skill gaps form. Budgets tend to stay level or decline, and it’s the same
EMERGING TECH FINDS ITS PLACE SERVING CITIZENS

Sensor data held by the U.S. Geological Survey and turning it into a regional earthquake early warning system. Holm said the project will ultimately give residents lead time before an earthquake hits their location. The GPS-enabled app would alert them to the impending quake, while providing other details like the duration and severity in their exact location.

“We are able with a mobile app to give one to two minutes of warning to a huge population that an earthquake is coming and how severe it will be at your specific geography,” she said. “By the end of the year, we will have this rolled out to every single person in Los Angeles who wants it.”

The machine-readable application programming interface (API) will also allow other automation around alerts, like raising firehouse doors and cranes in the port.

Editor’s note: The Los Angeles Public Sector CIO Academy is an event hosted by Government Technology.
A group of students at Stanford University have built a civic engagement platform aimed at fixing one of the biggest problems in American politics: the inability for constituents to feel meaningfully heard by their elected officials.

Dubbed Pulse, the platform went live as a pilot program in late July 2018 with the campaign of U.S. Rep. Eric Swalwell, D-Calif. Undergraduate students at Stanford are building Pulse in their off-time, with input from faculty but no formal university support.

In the wake of the 2016 presidential election, voters have sought to make their opinions heard within the political process in unprecedented numbers, inundating lawmakers’ social media feeds, phone lines and offices with communications. As a result, work has sprung up to help foster more satisfying engagement.

Many of these programs have essentially acted as a conduit for voters to call, email or Tweet at their reps. Pulse is a bit more comprehensive, its functionality more logistically minded.

One key difference between Pulse and similar platforms is that it has a public-facing component that makes it easier for voters to voice their opinions, as well as an internal dashboard that those who work in the offices of elected officials can use to organize, sort and easily decipher constituent feedback. There is also a component that requires verifying that one is a registered voter within the district of the elected official they are contacting, said Drake Hougo, CEO and team lead for the Pulse project.

Another component of the platform involves helping users stay informed. Pulse is non-partisan, and the goal is to work with members of both parties, as well as incumbent and challenger candidates. With that in mind, the informational component seeks only to simplify and convey the nuances of complex legislation in practical language that all users can easily understand. Government websites are, inherently, often written in a way that makes casual browsing difficult.

Hougo said the team is also dabbling with adding peer-to-peer and peer-to-representative messaging functionality, envisioning a day when a user can say they support a bill and leave a comment about why on Pulse, subsequently receiving a note back from their elected official after they did or did not vote for the relevant bill. As with all of Pulse’s functionality, the goal of this is a more immediate feedback loop, one that leaves voters feeling like their opinions matter.

It is perhaps fitting that this platform is being built by a team of developers who are undergraduate students, or, as some might say, youngsters. Part of the reason Hougo and team are so motivated to find a way to improve the feedback in American politics is because they see how technology has facilitated more efficient communication in other ways for their generation. Since millennials are likely to soon become the largest voting bloc, he sees the need for technology to adapt as especially urgent.

The plan is to first launch Pulse at the federal level. Once its number of users is significant within the offices of senators and representatives, Hougo said the natural next step would be to tailor it to state and local government as well. Federal politics generally fosters a higher level of interest among the population, even if it doesn’t always affect their lives as directly. Still, the team anticipates federal legislation and elections as being its most useful hook.

So far, the team is encouraged that there has been a high conversion rate for its pilot program. When voters in Rep. Swalwell’s district learn about it, they have so far been quite receptive. They’ve come to the site, registered and started expressing their opinions on bills. This, of course, is encouraging for the young developers.

“We’ve seen a positive response so far,” Hougo said. “We’re looking forward to building on it as the elections get closer in November.”
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