Deloitte.

Delivering the digital city
Building a best-in-class customer
experience in smart cities

Deloitte Center *for*
Government Insights

About the authors

William D. Eggers is the executive director of the Deloitte Center for Government Insights and author of nine books, including Delivering on Digital: The Innovators and Technology That Are Transforming Government. His commentary has appeared in dozens of major media outlets including the New York Times, Wall Street Journal, and the Washington Post. He can be reached at weggers@deloitte.com or on Twitter @wdeggers.

Steve Hurst is managing director in Deloitte's US Government and Public Service digital practice. He is responsible for helping state and local governments adopt and expand their digital capabilities, including constituent portals, business portals, digital studio, identity management, master data management, and advanced personalization and interaction methods. Hurst has 30 years of experience consulting in the public sector.

Mahesh Kelkar is a research manager with the Deloitte Center for Government Insights. He specializes in smart cities and closely tracks the federal and state government sectors, focusing on in-depth research into the intersection of technology with government operations, policy and decision-making. Connect with him at mkelkar@deloitte.com or on Twitter @Mahesh_Kelkar

About the Deloitte Center for Government Insights

The Deloitte Center for Government Insights shares inspiring stories of government innovation, looking at what's behind the adoption of new technologies and management practices. We produce cutting-edge research that guides public officials without burying them in jargon and minutiae, crystalizing essential insights in an easy-to-absorb format. Through research, forums, and immersive workshops, our goal is to provide public officials, policy professionals, and members of the media with fresh insights that advance an understanding of what is possible in government transformation.

Consumers today enjoy the convenience of digital service delivery that many private sector companies now put at their fingertips. So, most people want—and expect—the same level of service from government that they receive from online retailers. Failing to meet that expectation can increase the perception of poor government service. But while many city governments are becoming more digital, there often remains a gap between what citizens want and what they currently get.

In a survey of more than 3,000 US citizens in 2016, 85 percent of respondents said they expect the same or higher quality from government digital services as they do from commercial organizations, and more than 40 percent were dissatisfied with government's digital services.[1] As with any provider of goods and services,

governments struggle to provide great service without an integrated, digital workflow. It isn't that government is unaware of the imperative to go digital. In a Deloitte survey of 1,200 government officials from more than 70 countries, 82 percent said that improving the customer experience and increasing transparency are prime objectives of their organizations' digital strategy.[2]

A constituent-centric digital transformation can help create cities that are not just labeled *"smart,"* but that are also *responsive* to their citizen's needs. These digitally advanced cities can, in fact, go one step further than just *responding* to customer needs; they can *anticipate* their unspoken needs. Here are 10 key strategies that cities can consider adopting to jump start their journey and create more digital and responsive cities.

1. Create an end-to-end customer experience

Customer experience is not a buzzword, it's an imperative. City governments are increasingly focused on providing a great experience to their residents, businesses, and their own employees.

The city of Buenos Aires provides an example of how cities can bridge the gap between citizens' expectations and the actual delivery of an end-to-end experience. With close to 15 million inhabitants,[3] the Buenos Aires metropolitan area is the most populous region in the country. But despite the enormity of its population and a vast public infrastructure, Buenos Aires, nevertheless managed to build a sophisticated citizen response system for dealing with a variety of problems, from broken streetlights to graffiti and fixing potholes.

But this was not always the case. Until just a few years ago, the city's internal complaint management system was largely ineffective and slow. Citizens could log complaints or service requests through a call center, but the city often took close to 600 days to resolve an issue.[4]

To tackle this, the city embraced digital technologies and launched a mobile app that citizens could use to register complaints directly or through social media. For instance, when a resident sees a problem like a manhole cover missing or a broken sidewalk, she can tweet a picture to the city along with a short description. The app, using an integrated geographic information system (GIS) technology, sends the location of the complaint to the ministry and work is assigned to the nearest work crew or vendor

to resolve the issue. To close the loop, a city street inspector—using a mobile device—validates the work was done and uploads a picture through the app showing the issue was resolved.

The new system helped the city become more responsive to citizens' demands. The average time to resolve a complaint plunged 93 percent without additional budget, allowing the city to fix more problems in less time.[5]

By making the customer—residents, businesses, and employees—the focal point of its transformation, Buenos Aires has been able to use digital workflows to build a more responsive system for its constituents.

2. Differentiate between 'experience' and 'service'

Are customer service and customer experience synonymous? Consider the simple act of buying a book. Customer service would be limited to the actual transaction—with questions like "Was the book in stock?", "Was the salesperson friendly?", "Was there a line at the register?" Customer experience, on the other hand, starts from the moment the customer contemplates buying a book, to the point she finishes reading it and decides whether it is worth recommending to others.[6]

Similarly, city administrations could simplify processes to improve the overall customer experience of their users. Consider

Orange County (California) public works department's service request portal. Until early 2017, to report an issue residents first had to complete an online form, and then register a service request via a call to a help desk or by sending an email. It would take additional time for the staff to update the location information, before finally dispatching inspection and maintenance workers. Repeated calls and emails for status updates, and duplicate service requests further complicated matters. Realizing that this process was both inefficient and cumbersome for the citizens and its own employees, the public works department launched "*myOC eServices*"

in April 2017. This new web and mobile-enabled portal not only streamlined the service request process for residents, but also modernized the way the public works department addressed these requests and managed its resources. In addition, field staff can now access information on new complaints through their mobile devices and see the precise location and quickly locate the issue.

By August 2017, the department's average resolution time was down to 4 days from an average of 15 to 20 days, while the on-time completion rate had reached 72 percent from 57 percent.[7]

3. Create a uniform environment

Ever wonder what makes theme parks such a *"wow"* experience? It often has a lot to do with a uniform look and feel of a holistic environment from the start to finish. Throughout the park, you tend to find the same logo, designs, and payment methods, as well as consistent maps that make getting around easier.

Cities, too, could give residents and visitors a more consistent experience and a map-like guide directing them to various services and utilities. The city of Santander, Spain for instance, leveraged data obtained from about 20,000 sensors to improve service delivery. By building its "*Pulse of the City*" app, the city can now address multiple resident needs with a single interface. For instance, residents can now use real-time

traffic information to plan their commute, and also use the same city app to know when the next bus is arriving. An asthma patient can plan her day to avoid areas of high pollution, while another citizen can use the app to track the progress of a complaint filed for road maintenance.[8] This app, with consistent, uniform navigation, makes it easier for residents to take advantage of all that Santander has to offer.

4. Use design thinking principles

For cities to respond to the needs of their constituents, a first step to consider should be to *think* like their customers. Design thinking involves governments asking the question "What do our residents want, and what processes do we need to accomplish *their* goals?" instead of asking "What digital processes do we need to accomplish *our* goals?" As innovator and designer Tim Brown explains in a TED talk, design thinking makes us move away from choosing the best possible option from a set of alternatives, to asking the question, "Why are these our only alternatives?"[9]

The city of Cape Town is an early pioneer when it comes to design thinking. The administration supports and promotes co-design workshops across the city to raise awareness on design thinking among city officials and municipal departments.[10] The city also has a dedicated school—the Hasso Plattner Institute of Design Thinking at the University of Cape Town, better known as the d-school. The d-school works collaboratively and in strategic partnerships with a range of organizations and institutions in the innovation ecosystem in Africa to develop and strengthen capacity in human-centered problem-solving techniques.[11] Some of the tools used to improve urban environment include design storming, design dialogues and ethnography.[12]

5. Tap into the collective intelligence of citizens

Mobile technologies make it easier than ever to tap into the collective intelligence of citizens, capturing localized bits of knowledge, ideas, and opinions that can help promote smarter decisions.[13] By tapping into the distributed wisdom of residents, cities can help an order emerge from the complex, uncoordinated chaos of what urbanist Jane Jacobs called a "sidewalk ballet."[14] Digital tools can play an important role in tapping into this wisdom.

Consider the case of the city of Boston. The city's traditional food safety process, in which health inspectors selected restaurants randomly for further scrutiny, was not optimal. To better target the restaurants at risk of violation, the city partnered with Yelp and Harvard Business School to sponsor an open competition and made both Boston's restaurant inspection data and Yelp's restaurant reviews available to more than 700 contestants. The goal was to develop an algorithm that would predict health violations and enable city officials to better target restaurants for inspections.

The participants analyzed the text of the reviews, including common words and phrases, and the Harvard economists evaluated the submissions against the city's actual inspections covering 364 restaurants conducted in the six weeks following the competition. The verdict: Using the winning algorithm developed by harnessing the collective intelligence of the citizens would have made inspectors 30 to 50 percent more productive in finding violations.[15] Using digital tools, including social listening, to tap into the dispersed knowledge of residents can lead cities to better decisions and better outcomes.

6. Adopt an iterative approach

Cities typically can't make the leap to responsive smart cities in a single leap. It will generally be an iterative process that continually builds on insights for enhancing services for residents. Creating a mechanism for dialogue between citizens and city governments can help officials learn what their biggest challenges are at any given time. Then, using tools such as design thinking, cities can move closer towards their goal of building a truly responsive city.

For instance, Orange County's myOC eServices tool discussed earlier was an initial step toward digitally transforming the public works department. Based on feedback from residents and its own employees, the department is planning a second phase of deployment to include additional services such as permitting, fee payments, weights and measures compliance, and interactions with the agricultural commission.[16] The journey to responsiveness often relies on the two-way dialogue enabled by digital tools.

7. Improve identity management/adopt a single sign on

Cities can upgrade their existing identity management system to eliminate the need to have multiple logins, passwords and the repeated re-entering of personal information for every government interaction. Ideally, cities should be able to leverage their existing identity management system. But whatever the starting point, enhanced identity management tends to be a big part of a world-class digital service.

For instance, India's ambitious "Aadhaar" project aims at providing a unique identification number to all residents of the country.[17] Such a unique ID can then be used to drive single sign-on capabilities within states and cities.

Moscow is already making progress in this regard. In 2010, Moscow launched its Information City program to guide the city's digitization plan. The program has three parts to it: smart infrastructure, citizen services and smart city government. One of the key capabilities developed was a single sign-on for citizens between federal and regional public services. The system works across multiple applications created on the city mobile platform such as mobile parking, mobile health, mobile education, mobile services, mobile voting and more.[18]

8. Create a city-wide data management system

Many cities today face an uphill task while managing their data assets. The growing ubiquity of sensors, the internet of things (IoT), and cognitive technologies are creating vast swathes of data that need to be managed. Integrating, protecting, and more importantly making sense of this data can be the next big frontier for cities.

The city of Columbus, Ohio plans to build a single digital platform for the city where all smart city applications can be integrated. This "Smart Columbus Operating System" would be a system-of-systems that

integrates relevant data into an overarching data platform. The city has begun building the platform that will connect data related to physical infrastructure (roads, traffic signal systems), various modes of transport (such as mass transit) and transportation service providers (aggregators and others) into an integrated platform. This integrated platform forms a very important part of the city's smart vision for the future of mobility.[19]

The city of Cascais in Portugal is attempting something similar. Building on its advances in mobility systems, the city plans to

integrate data and processes from all domains under a Control Coordination Center (C3). The C3 ultimately aims at integrating data from millions of objects across the city. Once in place, the C3 is expected to allow information from different domains to interact with one another. For instance, by juxtaposing waste management data with real-time traffic and road conditions data, the city can now identify not only the optimal routes for collection trucks, but also the best time for garbage collection.[20]

9. Get the governance right

While city services are increasingly being digitized, it is important that the digital strategy has a simplified governance structure. This can help keep citizens from getting frustrated trying to figure out how to use multiple digital tools. If different agencies have their own siloed websites, with their own unique look and navigation, it can often lead to a fragmented, confusing customer experience.

Having a central digital agency is one way to address this issue and provide a balance between organizational flexibility and user consistency.

Realizing the importance of sound digital governance, the Mayor of London appointed City Hall's first chief digital officer (CDO) in 2017. London's decision was inspired by the

digital transformation of gov.uk.[21] One of the biggest challenges that London faces is its vast size and diversity. The city is made up of 33 boroughs and provides 650 areas of service to around 250,000 citizens in each of the boroughs.[22] A core responsibility of the CDO is to coordinate the digital governance across London boroughs that are responsible for the delivery of various services.[23]

One of the CDO's top priorities is to bring together the fragmented local governments and foster collaboration using a common platform—the London Office for Technology and Innovation (LOTI). LOTI provides a common framework for the city's boroughs and other London public services to engage on bigger challenges such as those related to cybersecurity and legacy systems.[24]
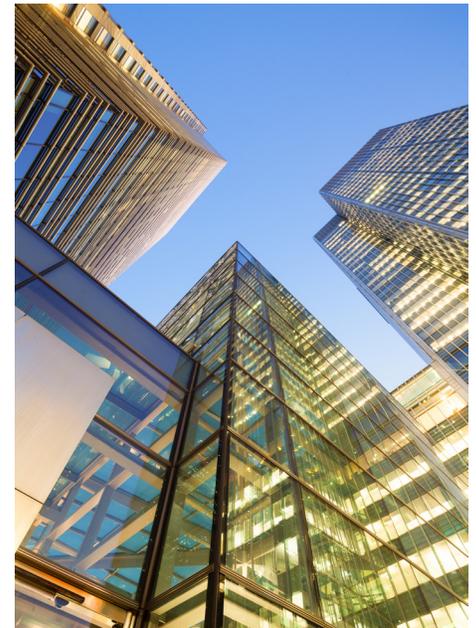
10. Find the ROI

While the traditional definition of "return on investment" (ROI) is associated with analyzing cost incurred versus revenue generated, ROI from a city government perspective can be vastly different. ROI can go beyond mere dollars and cents to measure outcomes such as customer satisfaction and environmental impact.

The SFpark program in San Francisco is an example of this expansive notion of ROI. The pilot aimed to provide a demand-based variable pricing system for more than 8,000 parking spaces in the city,[25] with a total of 11,700 sensors installed across the city to detect parking availability.[26]

The cost of the total program was approximately $25 million.[27] The pilot was deemed a success based on various success criteria, with benefits ranging from an increase in utilization of SFpark garages by 11 percent, to a reduction in greenhouse gas emission by 30 percent and a fall in traffic volumes by about 8 percent.[28] Based on these encouraging results, San Francisco Municipal Transportation Agency (SFMTA) is now developing a proposal for further expansion of the program.[29]

Columbus, Ohio, too, offers a view into how cities look at ROI on their smart initiatives. When Columbus won the Department of Transportation smart city challenge, the city focused on a very different return from its proposed mobility system. The city wanted the new mobility system to be inclusive and help the city drive down infant mortality rate in the city.[30]

Some cities are on their way toward becoming more responsive to their constituent demands. The residents want the same level of service that they are receiving from the private sector. The journey toward being responsive will be different for each city. But these ten strategies could help guide that journey.

End notes

1. Peter Hutchinson and Steve Hurst, "Digital government: Great expectations, untapped potential," Accenture Consulting, 2016, https://www.accenture.com/t20161102T223245__w__/us-en/_acnmedia/PDF-35/Accenture-Digital-Citizen-Experience-Pulse-Survey-Highlight-Final.pdf.

2. William D. Eggers and Joel Bellman, "The journey to government's digital transformation," Deloitte University Press, 2015, https://www2.deloitte.com/content/dam/insights/us/articles/digital-transformation-in-government/DUP_1081_Journey-to-govt-digital-future_MASTER.pdf.

3. United Nations, "The World's Cities in 2016," 2016, http://www.un.org/en/development/desa/population/publications/pdf/urbanization/the_worlds_cities_in_2016_data_booklet.pdf.

4. Deloitte, "Client stories: Buenos Aires," accessed April 18, 2018, http://smartcity.deloitte.com/client_innovations/smart-cities-of-the-world-buenos-aires/.

5. Deloitte, "Client stories: Buenos Aires," accessed April 18, 2018, http://smartcity.deloitte.com/client_innovations/smart-cities-of-the-world-buenos-aires/.

6. William D. Eggers and Steve Hurst, "Delivering the digital state," Deloitte University Press, 2017, https://www2.deloitte.com/content/dam/insights/us/articles/4226_Digital-state-govt-enterprise/DI_Delivering-the-digital-state.pdf.

7. Deloitte, "Client stories: Orange County," accessed April 18, 2018, http://smartcity.deloitte.com/client_innovations/smart-cities-of-the-world-orange-county/.

8. Deloitte, "Client stories: Santander," accessed April 18, 2018, http://smartcity.deloitte.com/client_innovations/smart-cities-of-the-world-santander/.

9. Patrick Russell, "Design-Thinkers Will Build the Smart City," Medium, September 19, 2015, https://medium.com/city-smarts/design-thinkers-will-build-the-smart-city-72dd4894a21.

10. CoCreateSA, "Design-thinking training for Cape Town's future," accessed April 18, 2018, http://cocreatesa.nl/news/1045/.

11. University of Cape Town, "Research," accessed April 18, 2018, http://www.dschool.uct.ac.za/research-27.

12. Carol L. Stimmel, "Building Smart Cities," CRC Press, August 18, 2015, https://arthurlimantara.files.wordpress.com/2017/03/building-smart-cities.pdf.

13. William D. Eggers and John Skowron, "Forces of Change: Smart Cities," Deloitte University Press, 2018, https://www2.deloitte.com/content/dam/insights/us/articles/4421_Forces-of-change-Smart-cities/DI_Forces-of-change-Smart-cities.pdf.

14. Jane's Walk, "The Sidewalk Ballet," accessed April 18, 2018, http://www.janeswalkottawa.ca/background/the-sidewalk-ballet.

15. William Eggers, Jim Guszcza, and Michael Green, "Making cities smarter," Deloitte University Press, January 23, 2017, https://www2.deloitte.com/insights/us/en/deloitte-review/issue-20/people-for-smarter-cities-collective-intelligence-decision-making.html.

16. Deloitte, "Client stories: Orange County," accessed April 18, 2018, http://smartcity.deloitte.com/client_innovations/smart-cities-of-the-world-orange-county/.

17. Unique Identification Authority of India, "About UIDAI," accessed April 18, 2018, https://uidai.gov.in/about-uidai/about-uidai.html.

18. Alex Scroxton, "Going mobile in Moscow: city digitisation the Russian way," Computer Weekly, April 11, 2017, https://www.computerweekly.com/news/450416621/Going-mobile-in-Moscow-city-digitisation-the-Russian-way.

19. Deloitte, "Client stories: Columbus," accessed April 18, 2018, http://smartcity.deloitte.com/client_innovations/smart-cities-of-the-world-columbus-ohio/.

20. Deloitte, "Client stories: Cascais," accessed April 18, 2018, http://smartcity.deloitte.com/client_innovations/smart-cities-of-the-world-cascais/.

21. Paul Johnson, "The Digital Transformation of london.gov.uk," Drupal, September 21, 2016, https://www.drupal.org/case-study/the-digital-transformation-of-londongovuk.

22. Teena Maddox, "Inside London's brilliant plan to update its smart city technology," Tech Republic, March 15, 2018, https://www.techrepublic.com/article/inside-londons-brilliant-plan-to-update-its-smart-city-technology/.

23. Theo Blackwell, "2017: looking ahead for digital transformation in local government," Medium, January 9, 2017, https://medium.com/@camdentheo/2017-looking-ahead-for-digital-transformation-in-local-government-d72394026480.

24. Lis Evenstad, "CIO interview: Theo Blackwell, London chief digital officer, Mayor of London's Office," Computer Weekly, February 18, 2018, https://www.computerweekly.com/news/252435313/CIO-interview-Theo-Blackwell-London-chief-digital-officer-Mayor-of-Londons-Office.

25. Linda Rosencrance, "San Francisco smart city pilots aim to make streets safer," IoT Agenda, November 2017, https://internetofthingsagenda.techtarget.com/feature/San-Francisco-smart-city-pilots-aim-to-make-streets-safer.

26. Eric Woods, "Results In for San Francisco's Parking Experiment," Navigant Research, October 1, 2014, https://www.navigantresearch.com/blog/results-in-for-san-franciscos-parking-experiment.

27. Eric Woods, "Results In for San Francisco's Parking Experiment," Navigant Research, October 1, 2014, https://www.navigantresearch.com/blog/results-in-for-san-franciscos-parking-experiment.

28. Eric Woods, "Results In for San Francisco's Parking Experiment," Navigant Research, October 1, 2014, https://www.navigantresearch.com/blog/results-in-for-san-franciscos-parking-experiment.

29. Linda Rosencrance, "San Francisco smart city pilots aim to make streets safer," IoT Agenda, November 2017, https://internetofthingsagenda.techtarget.com/feature/San-Francisco-smart-city-pilots-aim-to-make-streets-safer.

30. U.S. Department of Transportation, "Smart City Challenge," accessed April 18, 2018, https://www.transportation.gov/sites/dot.gov/files/docs/Smart%20City%20Challenge%20Lessons%20Learned.pdf.

Deloitte.

About Deloitte
Deloitte refers to one or more of Deloitte Touche Tohmatsu Limited, a UK private company limited by guarantee ("DTTL"), its network of member firms, and their related entities. DTTL and each of its member firms are legally separate and independent entities. DTTL (also referred to as "Deloitte Global") does not provide services to clients. In the United States, Deloitte refers to one or more of the US member firms of DTTL, their related entities that operate using the "Deloitte" name in the United States and their respective affiliates. Certain services may not be available to attest clients under the rules and regulations of public accounting. Please see www.deloitte.com/about to learn more about our global network of member firms.