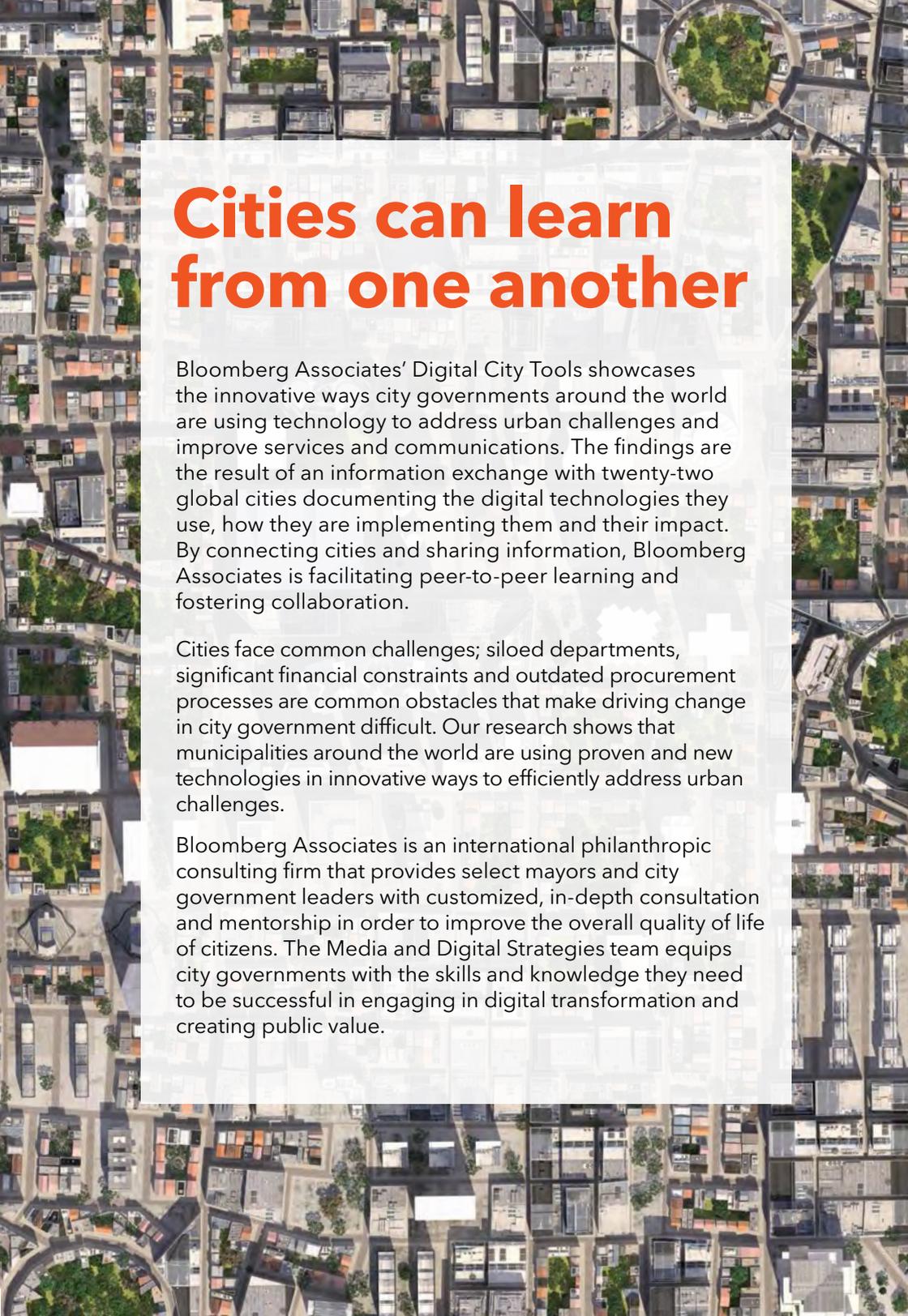


An aerial photograph of a city street intersection, showing buildings, cars, and a large orange text overlay. The text overlay is a solid orange rectangle with white text. The background shows a city street with buildings, cars, and a large orange text overlay.

Bloomberg Associates

Digital City Tools

Technologies cities use
to interact with citizens



Cities can learn from one another

Bloomberg Associates' Digital City Tools showcases the innovative ways city governments around the world are using technology to address urban challenges and improve services and communications. The findings are the result of an information exchange with twenty-two global cities documenting the digital technologies they use, how they are implementing them and their impact. By connecting cities and sharing information, Bloomberg Associates is facilitating peer-to-peer learning and fostering collaboration.

Cities face common challenges; siloed departments, significant financial constraints and outdated procurement processes are common obstacles that make driving change in city government difficult. Our research shows that municipalities around the world are using proven and new technologies in innovative ways to efficiently address urban challenges.

Bloomberg Associates is an international philanthropic consulting firm that provides select mayors and city government leaders with customized, in-depth consultation and mentorship in order to improve the overall quality of life of citizens. The Media and Digital Strategies team equips city governments with the skills and knowledge they need to be successful in engaging in digital transformation and creating public value.

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An aerial, high-angle photograph of a large, diverse crowd of people walking across a cobblestone plaza. The plaza is composed of large, light-colored rectangular tiles arranged in a grid pattern. The people are dressed in casual winter clothing, including jackets, sweaters, and hats. They are moving in various directions, some in groups and some alone. The overall scene is busy and represents a public space in a city.

Rapid Technological Progress is Changing the Way Cities Are Managed

An abundance of new technologies are helping city governments be more efficient, effective, and responsive to their residents' needs.

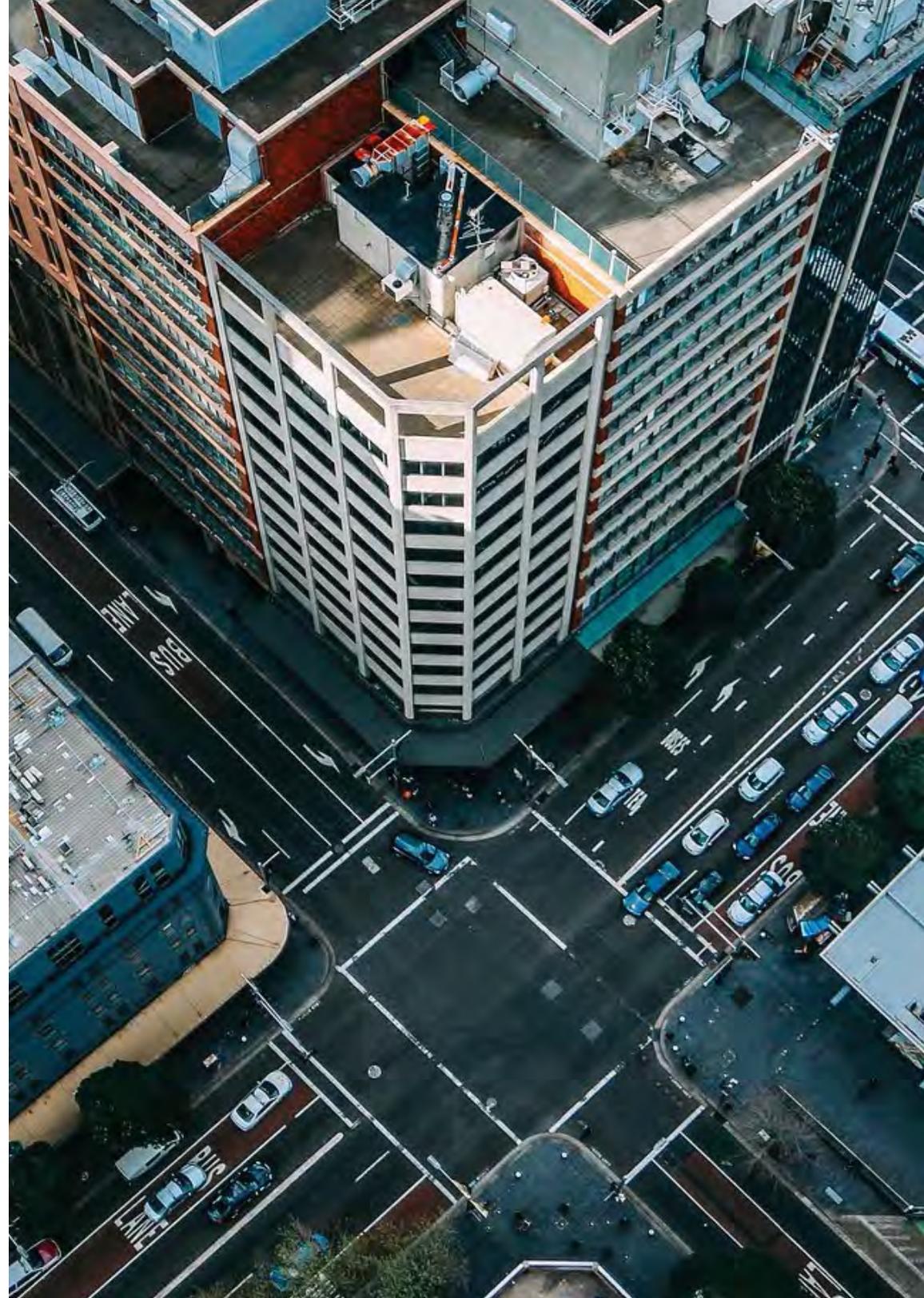
Project Overview

Bloomberg Associates' Media and Digital Strategies team reached out to digital leaders in government in 22 global cities including Chief Digital Officers, Chief Information Officers and Chief Technology Officers. Through online surveys, email correspondences, in-person meetings and in-depth phone interviews, the team gathered information about the digital tools in use, their providers, current digital organizational structures and digital communications policies.

The Bloomberg Associates team focused on eight key digital tools most frequently used to engage residents and visitors:

- Artificial intelligence
- Social media platforms
- Email marketing and newsletters
- Social media management tools
- Online chat support
- Text SMS
- Non-emergency reporting platforms
- Website content management systems

The Digital City Tools report showcases the innovative ways city governments are leveraging technology to be more efficient and responsive to their residents' needs. The report outlines a number of key findings and insights by digital tool. There are programmatic highlights from each of the participating cities and there are six case studies. We hope these examples inspire decision makers in shaping the cities of the future. Bloomberg Associates plans to expand the scope and reach of the report going forward.



Amsterdam Berlin Houston Chicago
 New York City Oakland Kansas City
Berlin San Francisco Berlin **Boston**
 Helsinki **Chicago** Houston Kansas City
 London Houston Melbourne **Copenhagen**
 Nashville **Denver** New York City
Detroit Oakland Berlin San Francisco
 Seattle Seoul **Helsinki** Sydney
Houston Tel Aviv Toronto **Kansas City**
 Amsterdam Berlin **London** Boston
 Chicago Helsinki Houston Kansas
 City London **Melbourne** Nashville
 New York City Oakland **Nashville**
 Paris **New York City** San Francisco
 Seattle Boston Sydney Boston
 Tel Aviv **Oakland** Toronto Amsterdam
 Berlin Boston Chicago **Paris** Copenhagen
San Francisco Denver **Seattle** Detroit
 Helsinki Houston **Seoul** Kansas City
 Chicago **Sydney** Helsinki Detroit
Tel Aviv Chicago Helsinki **Toronto**

New digital technologies are transforming the relationship between city residents and City Hall.



Artificial intelligence



Email marketing and newsletters



Non-emergency reporting platforms



Online chat support



Social media management tools



Social media platforms



Text SMS



Website content management systems



Key Findings

Cities use a full suite of digital tools.

All cities interviewed use a full suite of digital tools to help achieve their goals. Digital communications tools – specifically social media platforms, social media management tools and email marketing and newsletters – are ubiquitous. The adoption of artificial intelligence applications is expanding, particularly the use of chatbots, although cities have encountered challenges in making online chat support cost-effective.

City residents are no longer simply consumers of city services but active participants.

Governments are reimagining their use of technology with a goal of becoming more responsive and user-driven. Non-emergency reporting platforms, social media and text SMS are being leveraged by cities to crowdsource information, improve service delivery and deepen engagement and trust among residents.

Cities are testing how to leverage artificial intelligence applications.

The use of Artificial Intelligence (AI) by city governments is expanding. Among the twenty-two cities interviewed, five have adopted AI programs and six are currently piloting AI applications. The development of chatbots was the most commonly cited application, followed by classifying and escalating non-emergency reports. City respondents are using external platforms (such as Salesforce Einstein and IBM's Watson) as well as developing their own machine-learning capabilities in-house. The interviewed cities had consensus regarding AI's potential benefits for government, but less clarity around which functions should be automated and to what degree.

Digital roles in city government are increasing, but organizational structures, titles and responsibilities vary significantly.

All cities interviewed have multiple digital roles within their city government. Digital leadership within City Hall has traditionally been spearheaded by Chief Information Officers and often still is. However, digital leadership has expanded to include other city leaders such as Chief Digital Officers, Chief Technology Officers or Chief Innovation Officers.

Cities are not alike but face similar challenges.

The twenty-two participating cities are very different, with huge variances in population size and demographics, city infrastructure and city government structure. However, a majority of cities seemed to face similar challenges. Siloed departments, significant financial constraints and outdated procurement processes are common obstacles encountered. When discussing specific providers of digital tools, certain respondents explained their selection did not equate to an endorsement but reflected these constraints. So, driving change in city government is hard, but cities are finding innovative ways to overcome these challenges and to do more with less.

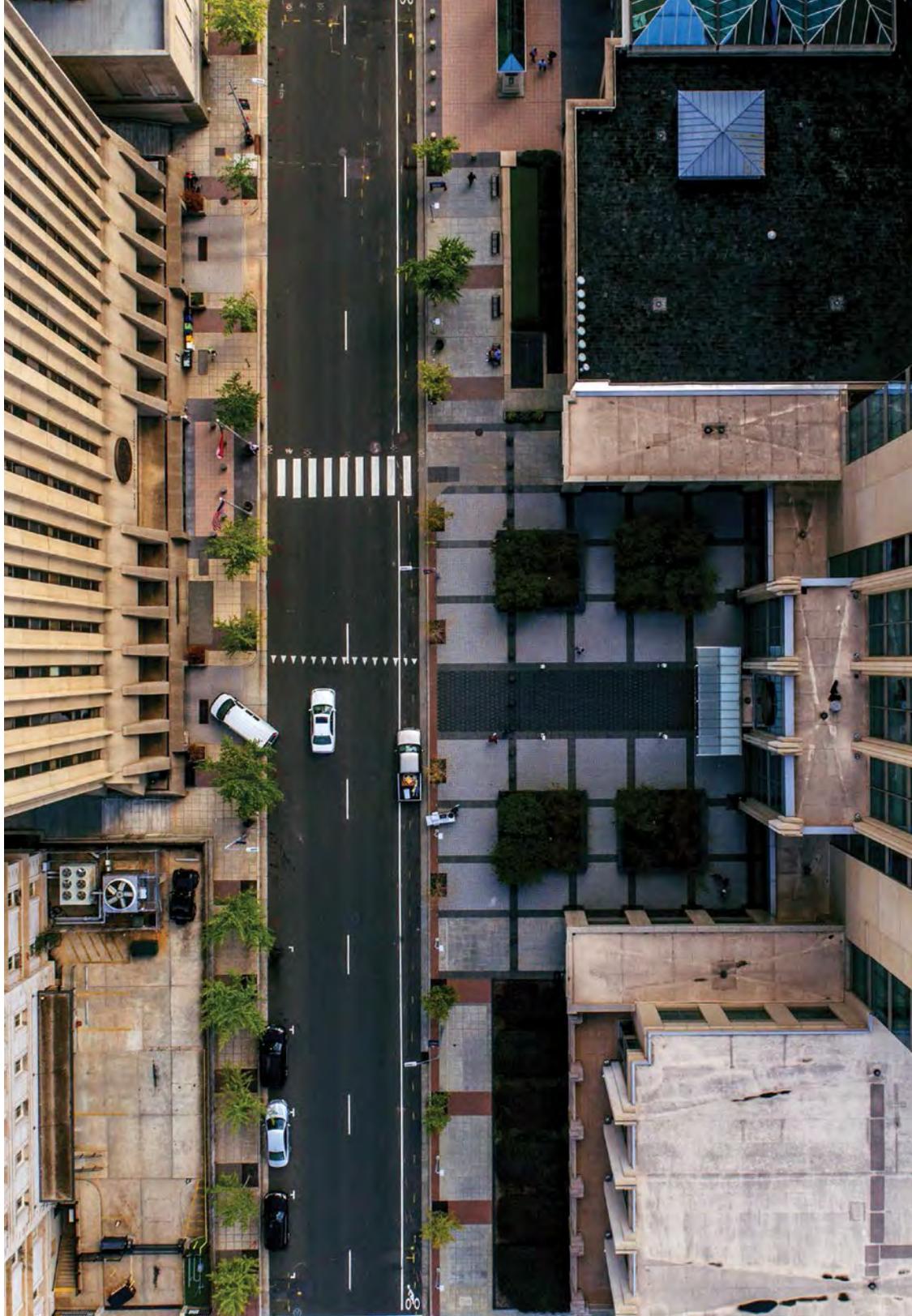
Cities expressed interest in developing common standards.

Multiple cities expressed a need to develop common standards, particularly regarding the use of data, to ensure that technology is used by city governments in a way that maximizes its positive impact and minimizes the risk of harm.

Digital Tools Overview

	Artificial intelligence	Online chat support	Text SMS	Social media policies	Social media management tools	Website content management systems	Non-emergency reporting platforms	Email marketing and newsletters	Social media outreach	Digital roles
Amsterdam	●	●		●	●	●	●	●	●	●
Berlin			●	●	●	●	●	●	●	●
Boston		●		●	●	●	●	●	●	●
Chicago			●	●	●	●	●	●	●	●
Copenhagen			●	●	●	●	●	●	●	●
Denver			●	●	●	●	●	●	●	●
Detroit			●		●	●	●	●	●	●
Helsinki	●	●	●	●	●	●	●	●	●	●
Houston		●		●	●	●	●	●	●	●
Kansas City	●		●		●	●	●	●	●	●
London				●	●	●	●	●	●	●
Melbourne		●	●	●	●		●	●	●	●
Nashville	●			●	●	●	●	●	●	●
NYC			●	●	●	●	●	●	●	●
Oakland			●	●	●	●	●	●	●	●
Paris			●	●	●	●	●	●	●	●
San Francisco	●		●	●	●	●	●	●	●	●
Seattle		●	●	●	●	●	●	●	●	●
Seoul		●	●	●		●	●	●	●	●
Sydney				●	●	●	●	●	●	●
Tel Aviv			●	●	●	●	●	●	●	●
Toronto			●		●	●	●	●	●	●

Note: Orange circles indicate cities that have adopted digital tools. The digital tools snapshot does not capture cities that are testing certain tools. Digital tools are listed in order of least to most adopted by interviewed cities. Cities are ordered alphabetically.



Key Findings By Tool



Artificial intelligence:

- The use of AI by city governments is expanding. Five cities are actively using AI and six cities are piloting or testing programs using AI.
- Of cities that have adopted or are piloting programs using AI, the most common use-cases are chatbots and classifying and escalating non-emergency reporting platform cases (specifically 311).
- City respondents are using external providers (such as Salesforce Einstein and IBM's Watson), but there is no common provider used by cities.



Email marketing and newsletters:

- MailChimp is the most commonly used provider (cited by seven cities), followed by GovDelivery and Constant Contact (cited by five cities and four cities respectively). Often, multiple providers were cited by individual cities.
- Email marketing is usually managed at the department level instead of a centralized system.



Non-emergency reporting platforms:

- Almost all cities use non-emergency reporting platforms (used by 21 cities).
- Nine cities designed their own non-emergency reporting platform in-house, but a number of cities use external providers including Salesforce, SeeClickFix, and Socrata.



Online chat support:

- Seven cities offer online chat support.
- High operating costs of online chat support is a concern of cities.
- Salesforce is the most commonly cited provider.



Social media management tools:

- Cities most commonly manage their social media presence using Hootsuite (cited by 11 cities).



Social media platforms:

- All cities emphasize the importance of social media engagement. Cities use a full suite of social media platforms with an average of five social media platforms being actively used by each city.
- The most commonly cited social media platforms are Facebook (cited by 21 cities), Twitter and Instagram (both cited by 20 cities), and YouTube (cited by nine cities).



Text SMS:

- A majority of cities are using text SMS to communicate with residents (used by 16 cities).
- The most commonly cited provider is Everbridge (cited by five cities).



Website content management systems:

- Drupal and WordPress are the most frequently cited website content management systems (cited by nine cities and eight cities respectively).
- Cities often use multiple website content management systems (ten cities cited more than one cms).



Case Studies

Digital City Tools demonstrates that the digital revolution is having a dramatic impact on the way city governments operate across the globe.

Boston

Paris

Houston

Seoul

Kansas City

Tel Aviv



Boston

Reimagining a city's digital experience

Interactions with a municipality are generally initiated because of a need for information or support. Determined to help Boston's residents and visitors have easy access to the city's information portals, Mayor Martin J. Walsh appointed his city's first Chief Digital Officer and a digital team. He tasked them with recreating the City of Boston's website and reimagining the city's branding. A focus on design as well as navigation were paramount to the intended changes. At the time, more than 75 local programs, departments and initiatives used different logos and iconography and there were more than 20 variations of the city seal in use. The digital team found the public was confused and critical information from City Hall flowing out to new channels on social media was hardly recognized.

The Mayor and his digital team felt a focus on community should be the leading force behind the updated branding and website re-design. The Chief Digital Officer was determined that the public feel a part of the process. Changes to the city's website were to include three major goals; creating a user-driven experience, establishing easily recognizable graphics and publishing all content in easy to understand language. It was important to be accessible to all users including those who struggled with visual, hearing and physical impairments. Special attention was given to translation supports. It was also important that the information was replicable for broader digital and printed use.

The new branding and website, **boston.gov**, were introduced in July of 2016 just a year after the decision was made to update the site. Powered by Drupal and managed by the city's digital team, the website and the city branding it showcases have become a reference point for cities around the world seeking to transform their digital presence. Since January 2017, the average post reach went from the hundreds to now regularly reaching 10,000 – with frequent spikes surpassing 100,000.

"The improvements we're making to City processes are what will ensure that the City of Boston works more efficiently for its constituents for many years to come," shares Jeanette Falvey, the city's Chief Digital Officer. "To me, that's the beauty of digital: when it facilitates positive, tangible differences in peoples' lives."

Boston shares a number of materials on its website, including **Boston.gov/brand** and **Boston.gov/writing** for the City of Boston staff, for any other government entity or for individual needing some research-backed advice or support. Those pages have seen more than 80,000 combined views.



Houston

Leveraging social media in an emergency

Social media is ubiquitous and city governments recognize the importance and efficiency of its reach when trying to engage with their residents. In the event of a crisis or emergency, social media is a game changer. The City of Houston learned the importance and efficacy of a social media strategy during Hurricane Harvey. The city's staff used social media to disseminate live updates and to coordinate emergency assistance.

In August 2017, Hurricane Harvey impacted Texas as a Category 4 storm, the second highest storm rating possible. The City of Houston was one of the most affected areas, experiencing an unprecedented amount of rain that forced thousands of residents to evacuate their homes. The municipality and its residents used social media and by the end of the storm there had been more than 37 million related tweets.

The city's Office of Emergency Management activated the Joint Information Center (JIC) and called in trained public information officers to manage communications from the Houston Emergency Center – where they would remain throughout the hurricane. The Mayor's Office, the Houston Police Department, the Houston Fire Department, and the Office of Emergency Management worked together and coordinated social media messaging from the city's emergency command center.

Twitter, Facebook, Instagram, Nextdoor, and Periscope were important components of the city's communications strategy. An official livestream update was carried across these social channels every day. Most posts were multilingual to ensure that the city reached everyone in the community. The city debunked misinformation and re-posted news from critically important accounts like the National Weather Service, FEMA Region VI and the Harris County Office of Emergency Management. The city's public safety institutions used social media to call their residents to action. "Anyone with a boat who can volunteer to help, please call 713-881-3100," tweeted the Houston Police Department, that garnered thousands of retweets, likes and most importantly responses.

"We had already established ourselves as a trusted source with our community," explains the social media director from the Mayor's Office, Melissa Ragsdale Darragh. "When Harvey hit, citizens and media knew they could come to us for accurate and quick information."

The City of Houston had provided its communications team with emergency situation training but the storm posed unanticipated situations that demanded the team be nimble. The use of social media helped staffers reach constituents and colleagues in an efficient manner.

@HoustonTX, the official Twitter account of the Mayor's Office, had 36 million Twitter impressions within the two and a half weeks of Hurricane Harvey. One tweet was retweeted 102,000 times, earning 16.9 million Twitter impressions alone.



Kansas City, Missouri

Driving Change

Cars are rapidly becoming networked. Communication technologies are linking motor vehicles to data, enabling vehicles to supply drivers with useful information in real-time. Connected vehicles are able to optimize travel routes based on current traffic, identify the nearest available car park, or direct you to your next appointment. However, this functionality is dependent upon access to data.

The City of Kansas City, Missouri, teamed up with Avis Budget Group to explore the potential of connected vehicles and, as KCMO's Chief Innovation Officer, Bob Bennett explained, "lead the era of change, not try desperately to adjust to it."

In November 2017, Avis Budget Group announced the launch of its first-ever "Mobility Lab" that serves as a test bed for fully connected vehicles and operations in the greater Kansas City, Missouri area. Avis Budget Group's Mobility Lab comprises more than 20 Avis Car Rental locations, including Kansas City International Airport and Nebraska's Eppley Airfield and Lincoln Airport, and features a fleet of 5,000 connected cars. This connectivity allows for seamless communication with the company's fleet management platform and the Avis mobile app. This Lab also positioned the company to collaborate with the City of Kansas City as they drive change with Smart City initiatives.

The Kansas City and Avis team is laser-focused on deployable use cases that provide learnings to inform new models of mobility that: meet the evolving needs of connected cities, leverage assets that are in place or planned, engage communities in the design of new mobility services, and drive value to the City and partners.

Kansas City and Avis defined initial areas with joint interest across both the city's public and private sector. They are interested in testing whether connected vehicles could enhance the visitor's experience to Kansas City and their overall journey as a connected traveler. Kansas City attracts a growing number of tourists every year. In 2016, Kansas City welcomed 25.2 million visitors and approximately one in six were conference attendees.

The pilot's value proposition is to influence mobility routes and journey satisfaction to achieve improved value to traveler and the City. Content from the local community, in this case, the Kansas City Convention & Visitors Bureau, is being integrated to enhance overall journeys and increase visitation. This experience is delivered via Avis' mobile app, which surfaces insights using city data and connected vehicles to improve interactions and optimize mobility offerings.

"The KCMO - Avis Partnership enables both partners to aggressively use technology to engage 21st Century Citizens with 21st Century Tools," explains the city's Chief Innovation Officer, Bob Bennett. "As a transition to a world of connected vehicles, this partnership allows the city to best prepare for the data architecture requirements that will evolve. As a transition to a world of connected customers, this partnership allows Avis to customize the user experience."

With ambitions to be "the world's most connected smart city," Kansas City is ahead of the curve on data collection. Their data sets contain the city's traffic congestion data, local route knowledge, parking availability, to name a few. This partnership will deploy 5,000 additional sensors on KCMO's roads, gathering anonymized data for the city and fast-tracking their smart city ambitions.

The Kansas City and Avis teams recognize that this pilot will involve tackling hard questions around data ownership and data sharing in partnership arrangements. As levels of connectivity, and, subsequently, autonomy progress, the regulation of advanced vehicles, V2X data architecture and security will also evolve. But Bennett believes that city governments have an important role to play in these discussions and that Kansas City is particularly well-placed to do so with its existing data architecture and internet infrastructure.



Paris

Building an open source foundation for digital services

The City of Paris understood that a modern city should provide a suite of digital services to its residents. Accordingly, the city decided to invest in its digital infrastructure and create a foundation from which to develop digital solutions, ensuring that they were scalable and adaptable.

In 2002, the City of Paris created an open source Java-based platform to support the online services of its 20 districts. This open source tool, named Lutece after the ancient Roman name for the city, was designed modularly by the city's IT department to meet the specific needs of each district. Lutece has since become the foundation of all the city's online services and business applications, revolutionizing how Paris manages its digital services.

Today, many digital services are available through Lutece's open source plugins, from simple appointment requests and online forms to large applications, including Paris's participatory budget and its non-emergency service request portal, Dans Ma Rue ("On My Street"). Through these digital services, the city is fostering a culture of citizen participation and deepening government transparency.

Implemented four years ago at the beginning of Mayor Hidalgo's term, the Participatory Budget allows residents to vote on how the city spends its money. Last year, more than 100,000 Parisians voted to select over 200 projects, allocating 5 percent of the city's budget.

Projects are initiated at the district level and as citywide projects. Former and current projects include vertical gardens, urban farms, street art, supports for the homeless, co-working spaces for entrepreneurs and students and many others. Winning projects are all branded "fait avec les Parisiens" ("Made by Parisians").

Dans Ma Rue is a website and a mobile application that allows the reporting of service issues across the city. Downloaded more than 35,000 times per year, it has 4,000 frequent users that report on potholes, broken streetlights, noise and nuisances. Mobile users are able to use their cell phones' GPS and camera to quickly identify the location and condition of their service inquiry. The application is powered by Lutece and is used by more than 1,000 city staff – who handle more than 70,000 complaints per year.

Lutece is not only a development framework but also a large suite of ready-to-reuse applications specially designed for municipal governments. Several large French cities, including Lyon and Marseille, have implemented Lutece in partnership with the City of Paris. This arrangement allows partner cities to realize significant cost savings and materially reduce delivery times. Paris and all of the participating cities benefit from the development of additional modules within the network.

Cities have similar needs. Sharing open source software and know-how can reduce costs and risks and offer customized services in a very short time.

"We are proud to deliver these services to Parisians every day and to offer these capabilities to other cities around the world," says Pierre Levy, who leads the city's open source software development.



Seoul

Measuring population fluctuations through smart phone signal data

Seoul's Metropolitan Government realized that demand for public services was increasing despite the fact that its resident population was in decline. As the economic engine of South Korea, Seoul is a hub for business, education and tourism, attracting both domestic and international visitors as well as daily commuters from nearby satellite cities who are not captured in the city's official resident figures. The city needed to understand how daily changes in its non-resident population were affecting demand for city services.

Seoul boasts world-class information and communication technology (ICT) infrastructure. Ninety-one percent of the city's residents are smartphone users and soon Korea will offer commercial services on next-generation 5G networks, enabling faster speeds and more reliable Internet connections than ever before. By leveraging the city's advanced ICT infrastructure and publicly owned data, the municipality introduced a new population estimation method that used cell-phone-signal data.

Smartphones constantly emit signals (the most common of which use Long-Term Evolution, or "LTE" protocols) to telecommunication receivers in order to provide and maintain service. Smartphones will send out "pings" to the nearest receiver every few minutes, accounting for roughly 288 LTE signals from an individual phone each day. The city realized it could use the signal data from the Korea Telecommunication Corporation to count the number of smartphone users for each mobile base station at various times throughout the day.

After modifying the data to rule out demographic errors, such as the percentage of the population that do not use smartphones, Seoul calculated the de facto population for each of its 19,500 zones. These zones are hyper-localized areas with approximately 500 residents in each. In addition to population numbers, this technique was able to provide the city with information about the populations in each of these zones.

Seoul, a city with 10 million registered permanent residents, has a daily average de facto population of 11.5 million people. Moreover, the data revealed that the de facto population can vary by more than 3 million people. Equipped with this knowledge, the municipality is beginning to tailor its public services to meet actual demand at the local level.

The Seoul Metropolitan Government posts the daily de facto population data every day on the city's public data websites, Seoul Open Data Plaza.



Tel Aviv

Engaging residents through the DigiTel platform

Tel Aviv considers engagement to be the defining feature of a Smart City and empowering residents to act as partners in the management of their city. Determined to create a resident-centered city government, Tel Aviv developed a personalized web and mobile communications platform called the DigiTel Residents' Club.

The platform provides residents with individually tailored, location-specific information ranging from last-minute ticket offers to advanced e-services. Parents are reminded when to enroll their children in school; culture-lovers receive text messages with low-price ticket offers; and sports fans are invited to enroll in the Tel Aviv marathon through the platform. It also enables two-way communication, serving both as an interface for the municipality to share live updates with residents through push notifications and as a platform for residents to participate in decisions that affect their neighborhoods. For example, residents can suggest public works projects near their homes or activities to be hosted at their local community centers.

"Tel Aviv is known as the 'Nonstop City' because of its bustling 24-hour-a-day environment of entertainment, dining, culture, sports, beaches and sun," says Liora Shechter, the city's Chief Information Officer. "The idea of DigiTel is not only to concentrate all the municipal services in one place, but to invent new and innovative services and to ensure our residents make the most of their city."

The DigiTel platform, developed in-house five years ago, is powered by Microsoft Dynamics Customer Relationship Management system and IBM Silverpop. Today, approximately 180,000 Tel Aviv residents are registered with DigiTel – 65 percent of the city's adult population. Registration numbers continue to climb, with approximately 3,000 new members joining every month. The dramatic growth in subscribers has enabled the municipality to create sub-communities for residents with specific characteristics and to ensure that Tel Aviv reaches residents with targeted information. "Mini-Digi" is a sub-community for mothers with newborns, while "Digi-Dog" is a sub-community for dog owners.

Equipped with data analytics and insights about each community, the municipality is better able to design services around their needs. The municipality established free infant feeding classes and a doctor's appointment reminder system for members of the Mini-Digi sub-community. The city is adamant that ensuring the protection of user data is critical to the platform's success. User data is not shared with external organizations and is only used to improve services for residents.

Moving forward, Shechter has bold plans for Tel Aviv, "I am not satisfied with offering the conventional services that a city should provide. What I am looking for is 'How can I be innovative and give new services to residents in a way that is customized to their specific needs?'"

The initial success of the project garnered Tel Aviv the title "Best Smart City in the World" at the Smart City Expo World Congress in 2014; in 2017, DigiTel won a bid to become the model for "DigiThane," a new digital engagement platform for the city of Thane in Maharashtra, India. Tel Aviv is in conversations with other cities about deploying DigiTel elsewhere.



City Snapshots



Amsterdam

Mayor: Acting Mayor Jozias van Aartsen

Population: 844,947

City Website: amsterdam.nl

 [@AmsterdamNL](https://twitter.com/AmsterdamNL)

 [@Gemeente Amsterdam](https://www.facebook.com/GemeenteAmsterdam)

 [@GemeenteAmsterdam](https://www.instagram.com/GemeenteAmsterdam)

Digital Leadership

Chief Technology Officer, Ger Baron, spearheads the city's digital initiatives and data analytics. He also leads "Amsterdam Smart City", a public-private partnership consisting of 11 partners that works on tech-driven solutions to the city's urban challenges.

Making Amsterdam smarter

Amsterdam is fully engaged in a digital transformation. Through "Amsterdam Smart City", the city experiments, develops, and scales solutions that improve residents' quality of life. One of the city's key learnings is that government needs to reinvent itself to ensure the city remains liveable and inclusive. The City chooses to use, contribute to, and develop open source projects; and develops the city together with its citizens through direct democracy platforms, emphasizing the importance of ethics in the digital age.

"In Amsterdam, we learn by doing. We are fast becoming a GovTech." - Ger Baron, Chief Technology Officer



Berlin

Mayor: Mayor Michael B. Hancock

Population: 3,605,000

City Website: berlin.de

 [@Berlin_de_News](https://twitter.com/Berlin_de_News)

 [@Berlin.de](https://www.facebook.com/Berlin.de)

 [Berlin.de](https://www.youtube.com/Berlin.de)

 [@hauptstadtportal](https://www.instagram.com/hauptstadtportal)

Digital Leadership

Chief Information Officer and Secretary of State in the Senate of the Interior, Sabine Smentek, is responsible for Berlin's eGov-strategy. Broad digitalization efforts are spearheaded by the Mayor's Office, while specific initiatives such as eGovernment and autonomous mobility are led by specialized departments.

Engaging citizens through the mein-berlin platform

Mein-berlin.de, a civic participation platform, enables residents to participate in decisions that affect their city including participatory budgeting and city planning. The platform includes a number of ways for residents to engage in dialogue including polls, discussion groups, and comment walls where you can rate comments. The city's goal is to localize decision-making power and harness the wisdom of the crowd.



Boston

Mayor: Mayor Martin (Marty) Walsh

Population: 673,184

City Website: boston.gov

 [@CityofBoston](https://twitter.com/CityofBoston)

 [@City of Boston](https://www.facebook.com/CityofBoston)

 [City of Boston](https://www.youtube.com/CityofBoston)

 [@CityofBoston](https://www.instagram.com/CityofBoston)

Digital Leadership

The City of Boston is currently searching for a new citywide Chief Information Officer and Director of the Department of Innovation and Technology. Chief Digital Officer, Jeanethe Falvey, leads the city's Digital Team; and Nigel Jacob and Kris Carter co-chair the Mayor's Office of New Urban Mechanics, one of the first municipal innovation offices in the world.

Making dealing with government in tough times easier

The tough truth is, everyone will need to order death certificates at some point and this process should be easy and affordable, but until recently, it was not. The City of Boston developed a digital solution to order death certificates by working closely with the Registry and Treasury Departments and piloting with Stripe for online payments. Using the Registry's existing database, and a React based framework now makes it easy to search for available records. As of March 2018, anyone can now buy death certificates online from 1956 to the present for anyone who died in Boston, or listed Boston as their home, for only \$14.



Chicago

Mayor: Mayor Rahm Emanuel

Population: 2,704,958

City Website: cityofchicago.org

 [@ChicagosMayor](https://twitter.com/ChicagosMayor)

 [@Chicago Mayors Office](https://www.facebook.com/ChicagoMayorsOffice)

 [City of Chicago TV](https://www.youtube.com/CityofChicagoTV)

Digital Leadership

Citywide Chief Information Officer and Commissioner of the Department of Innovation and Technology, Danielle DuMerer, leads efforts to leverage data and technology to make the City of Chicago more effective, efficient, and innovative. The Chief Information Officer works closely with the city's Chief Technology Officer and Chief Information Security Officer.

Collecting real-time data on the city's environment

The Array of Things (AoT) is an urban sensing project to collect real-time data on the city's environment, infrastructure, and activity for research and public use. AoT will essentially serve as a "fitness tracker" for the city, measuring factors that impact livability in Chicago such as climate, air quality and noise. The City of Chicago is a partner of the project and is funding the installation of nodes and supporting its network infrastructure.



Copenhagen

Mayor: Mayor Frank Jensen

Population: 1,307,000

City Website: international.kk.dk

 [@koebenhavner](https://twitter.com/koebenhavner)

 [@Københavns Kommune](https://www.facebook.com/KoebenhavnsKommune)

 [Københavns Kommune](https://www.youtube.com/KoebenhavnsKommune)

 [@KoebenhavnsKommune](https://www.instagram.com/KoebenhavnsKommune)

Digital Leadership

The City of Copenhagen has a decentralized governance system in which departments manage their own technology and innovation initiatives. Phillip Seidler is the City of Copenhagen's Web Coordinator.

Optimizing city services through robotics and machine learning

The city has launched a number of robotics and machine learning pilots to optimize city services. The city's technical support unit, in charge of security and streamlining systems and data processes, is currently deciding whether to base the artificial intelligence projects on a UI path.



Denver

Mayor: Mayor Michael B. Hancock

Population: 693,060

City Website: denvergov.org

 [@CityofDenver](https://twitter.com/CityofDenver)

 [@City and County of Denver Government](https://www.facebook.com/CityandCountyofDenverGovernment)

 [The City of Denver](https://www.youtube.com/TheCityofDenver)

 [@TheRealCityofDenver](https://www.instagram.com/TheRealCityofDenver)

Digital Leadership

Denver's Chief Information Officer, Scott Cardenas, leads Denver's technology services. He is supported by a Deputy Chief Information Officer, Chris Binnicker, and a Chief Technology Officer, Chris Todd.

Modernizing Denver 311, the city's non-emergency reporting platform

In 2015, the City of Denver decided to invest in and deploy Salesforce as their Customer Relationship Management (CRM) system. Salesforce CRM allows agents to solve resident issues faster due to its smart word search capability and enhanced data and reporting analysis. Today, Denver's 311 call length has decreased by 23 seconds and first call resolution increased from 46 to 60 percent.

The Salesforce CRM solution also allows Denver 311 to work with city agencies to identify opportunities where online cases can be automatically routed to the appropriate department for action, rather than using a Denver 311 agent as a "middle man". Today, agents auto-route 30-40 percent of cases and resolution time went from upwards of 25 days in January of 2016, to under two days. Lastly, the Salesforce CRM is integrated with a mapping system, enabling the city to track and address chronic issues.



Detroit

Mayor: Mayor Mike Duggan

Population: 672,795

City Website: detroitmi.gov

 [@CityofDetroit](https://twitter.com/CityofDetroit)

 [@City of Detroit Government](https://www.facebook.com/CityofDetroitGovernment)

 [City of Detroit](https://www.youtube.com/CityofDetroit)

 [@CityofDetroit](https://www.instagram.com/CityofDetroit)

Digital Leadership

Chief Information Officer, Beth Niblock, spearheads the city's technology strategy. The city is currently searching for a Director of Emerging Technology, whose role will entail leading an Innovation and Emerging Technology Team that partners "with city departments and agencies to identify and build digital tools that solve civic problems and information challenges."

Targeting occupied foreclosed homes for services

The Detroit Land Bank Authority (DLBA) has over 95,000 foreclosed properties in its inventory and needed a way to identify which properties were currently occupied to target those homes for outreach. A data scientist sponsored by Bloomberg Philanthropies and Bloomberg Associates built a model that uses a variety of data sources to provide a score estimating the likelihood that any Detroit residential structure is occupied. The DLBA is now using the output of the model to streamline buy backs, identify homes for demolition, and conduct outreach for social services.



Helsinki

Mayor: Mayor Jan Vapaavuori

Population: 643,272

City Website: hel.fi

 [@helviestinta](https://twitter.com/helviestinta)

 [@Helsingin kaupunki - Helsingfors stad - City of Helsinki](https://www.facebook.com/HelsinginKaupunki)

 [@helsinki helsingfors](https://www.instagram.com/helsinki helsingfors)

Digital Leadership

Markku Raitio leads Helsinki's Information Technology and Communications Department, which spearheads the city's digital efforts. In June 2018, this department will be re-organized into two separate units for communications, and technology. Helsinki is currently recruiting for the position of Chief Digital Officer.

Creating 3D models of Helsinki for the public

Helsinki's aspires to be the world's most functional city. To this end, the city has developed 3D models of the city to support the city's decision-making, and be a resource to others. Referred to as 'city information modelling' (or the CityGML 3D model), this digital tool uses an open data model to create 3D models of the city. The City of Helsinki believes the city's 3D maps will be useful for businesses, tourism, navigation, rescue authorities, telecommunication network construction, building management and regional planning.

"The main goal of the Helsinki 3D city models has been to form an open platform to gain more accurate data to support decision-making, and to advance our smart city goals. As a forerunner of open data, Helsinki wants to provide an open innovation platform for different development projects for everyone to use." - Markku Raitio, Chief Information Officer.



Houston

Mayor: Mayor Sylvester Turner

Population: 2,303,000

City Website: houstontx.gov

 [@HoustonTX](https://twitter.com/HoustonTX)

 [@Sylvester Turner, Mayor of Houston](https://www.facebook.com/SylvesterTurner)

 [Houston TX Dot Gov](https://www.youtube.com/HoustonTX)

 [@Houston](https://www.instagram.com/Houston)

Digital Leadership

Citywide Chief Information Officer, Lisa Kent, is responsible for the city's information technology direction. In this role, she is accompanied by a team of specialized Deputy Chief Information Officers. The Mayor's Office of Innovation, led by the Director of Innovation Jesse Bounds, spearheads Houston's efforts to be a leader in civic innovation.

Crowdsourcing emergency workers

During Hurricane Harvey, Houston's public safety departments were overwhelmed. There simply were not enough boats, ambulances, or fire trucks to meet demand. The Mayor's Office of Innovation worked with local "hackers" to deploy a web app to leverage local residents who were able to support emergency efforts and direct them to requests for emergency assistance. Described as an "uber for emergencies", the city is further refining the app to be formally rolled out in the future.



Kansas City, Missouri

Mayor: Mayor Sly James

Population: 481,420

City Website: kcmo.gov

 [@KCMO](https://twitter.com/KCMO)

 [@City of Kansas City, MO. Government](https://www.facebook.com/CityofKansasCity)

 [Kansas City, Mo. City Communications](https://www.youtube.com/KansasCityMo)

 [@KCMOGov](https://www.instagram.com/KCMOGov)

Digital Leadership

Citywide Chief Information Officer, Mary Miller, leads the city's Information Technology Department, and Chief Innovation Officer, Bob Bennett, spearheads the city's technological and innovation work.

Developing Smart City infrastructure

Kansas City, Missouri, (KCMO) has launched a suite of Smart City initiatives. Recognizing that the timelines of these initiatives exceed election cycles, the city has decided to partner with private sector entities on these projects and will release a comprehensive Smart City Request For Proposals (RFP) in May 2018.

Through the RFP, the city will select a program manager with proven experience, financial resources and professional expertise to build upon the city's Smart City capabilities including expanding public Wi-Fi and installing additional traffic sensors. The city will provide access to city infrastructure including light pole access, city fiber, buildings (for mounting sensors, access points or other infrastructure), as well as profit sharing opportunities associated with advertising sales that are generated via Smart City infrastructure. KCMO's Chief Innovation Officer will oversee program implementation and supervise the selected firm's representative in City Hall.



London

Mayor: Mayor Sadiq Khan

Population: 8,787,892

City Website: london.gov.uk

 [@LDN_Gov](https://twitter.com/LDN_Gov)

 [@London Gov](https://www.facebook.com/LondonGov)

 [Mayors Office London](https://www.youtube.com/MayorsOfficeLondon)

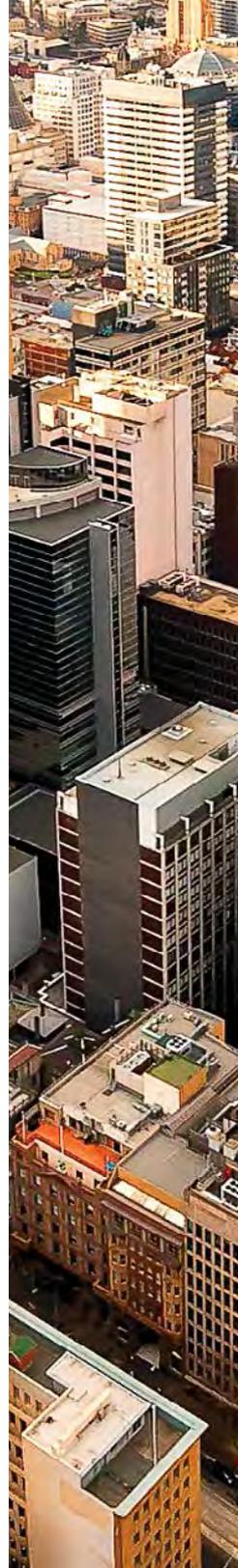
 [@LDN_Gov](https://www.instagram.com/LDN_Gov)

Digital Leadership

Head of Information Technology, David Munn, leads the technology services that support the work of the Mayor and the London Assembly. The capital's first ever Chief Digital Officer, Theo Blackwell, is spearheading efforts for a new city-wide collaboration deal to drive the digital transformation of public services through data-sharing and common standards.

Building coalitions to improve the city's digital landscape

London's 33 boroughs, each with an approximate size of 250k citizens, are responsible for the delivery of technology that underpins public service delivery for a wide range of services from refuse collection, local taxation to social care and housing. This landscape means a wide range of technologies are used and data is collected but at the borough level. Chief Digital Officer, Theo Blackwell, is building a coalition to empower the boroughs to join forces, share their data, and improve the city's digital services. The city of London will release a 'Smart London Plan' outlining a digital strategy for the city later this year.



Melbourne

Mayor: Acting Lord Mayor Arron Wood

Population: 4,850,740

City Website: melbourne.vic.gov.au

 [@CityofMelbourne](https://twitter.com/CityofMelbourne)

 [@City of Melbourne](https://www.facebook.com/CityofMelbourne)

 [Melbourne City Council](https://www.youtube.com/MelbourneCityCouncil)

 [@CityofMelbourne](https://www.instagram.com/CityofMelbourne)

Digital Leadership

Chief Information Officer, Colin Fairweather, leads the city's technology services. The City of Melbourne launched a Smart City Office in late 2015, which is led by Smart City Manager and Chief Digital Officer, Michelle Fitzgerald.

Modernizing waste collection

Melbourne's trash cans collect an average of 4,800 tons of trash each year. To make trash collection more efficient and to keep the city clean, the City of Melbourne deployed "BigBelly smart bins".

BigBelly smart bins are waste and recycling trash cans powered by solar energy. Each trash can has a waste capacity of 600 liters as opposed to regular public trash cans with a waste capacity of 80 liters. When the trash can is at 50 percent and 80 percent capacity, a notification is sent to the trash collector. The "BigBelly smart bins" reduce waste as well as the number of garbage trucks on the streets.



Nashville

Mayor: Mayor David Briley

Population: 684,410

City Website: nashville.gov

 [@MetroNashville](https://twitter.com/MetroNashville)

 [@Metro Nashville](https://www.facebook.com/MetroNashville)

 [Metro Nashville](https://www.youtube.com/MetroNashville)

Digital Leadership

Metro-wide Chief Information Officer and Director of the Information Technology Services Department, Keith Durbin, leads the information technology strategy and the metro's Smart City strategic planning and direction. The Chief Data Officer works for the Chief Information Officer and leads open data efforts.

Reducing effects of court no-shows

Nashville's Pretrial Services conducted a pilot for individuals charged in criminal cases, whereby they will receive text reminders about their court case appointments. This pilot sought to reduce the number of bench warrants issued, which is what happens when someone fails to appear and can lead to re-arrest, by using text as a means of communicating reminders to attend their court appearances. Early data indicates that the failure to appear rate declined for the participants in the pilot and they are now seeking to replicate the reminder service for other populations.



New York City

Mayor: Mayor Bill de Blasio

Population: 8,537,673

City Website: nyc.gov

 [@NYCGov](https://twitter.com/NYCGov)

 [@NYC Mayors Office](https://www.facebook.com/NYCMayorsOffice)

 [NYC Mayors Office](https://www.youtube.com/NYCMayorsOffice)

 [@NYCGov](https://www.instagram.com/NYCGov)

Digital Leadership

Citywide Chief Information Officer and commissioner of the Department of Information Technology and Telecommunications, Samir Saini, is responsible for the city's foundational IT infrastructure and systems as well as oversight of key technology initiatives, and the delivery of customized tech solutions to 100+ city agencies and entities. Chief Technology Officer, Miguel A. Gamiño, Jr., recently announced his departure from office; the city has not announced who will succeed him. The Mayor's Office of the Chief Technology Officer spearheads making broadband, smart city technologies, digital services, and the tech industry work for all New Yorkers.

Convening entrepreneurs and technologists to solve city problems

Launched in the Mayor's Office of the Chief Technology Officer in October 2017, NYCx is a municipal program that convenes entrepreneurs and tech professionals to participate in open competitions and solve urban challenges. The program's first project was the 'Governors Island Connectivity Challenge' that called on tech entrepreneur, startups and developers to design and test a low-cost, quickly-installable, gigabit speed broadband solutions on Governors Island, a former military base located nearby Lower Manhattan, as a model for all of New York City.



Oakland

Mayor: Mayor Libby Schaaf

Population: 420,005

City Website: oaklandca.gov

 [@Oakland](https://twitter.com/Oakland)

 [@City of Oakland - Local Government](https://www.facebook.com/CityofOakland)

 [City of Oakland](https://www.youtube.com/CityofOakland)

 [@Oakland](https://www.instagram.com/Oakland)

Digital Leadership

Chief Information Officer, Andrew “Pete” Peterson, leads the city’s technology department. Digital Engagement Officer, Mai-Ling Garcia, manages the city’s digital engagement strategy.

Designing digital services for the community

The City of Oakland created the ‘Oakland Design League’ – an interdisciplinary group of designers, developers, and content strategists – to redesign the city’s online presence to be more user-centered. The team has played a critical role in redesigning the city’s website and rewriting its content to be engaging and accessible for Oakland’s diverse community. Oaklandca.gov went live at the end of April 2018.

“The League’s combination of skill and mission means we’ve been able to scale our work and begin to measurably improve service delivery to the public.”
– Mai-Ling Garcia, digital engagement officer.



Paris

Mayor: Mayor Anne Hidalgo

Population: 2,241,346

City Website: paris.fr

 [@Paris](https://twitter.com/Paris)

 [@Ville de Paris](https://www.facebook.com/VilledeParis)

 [Mairie de Paris](https://www.youtube.com/MairiedeParis)

 [@Paris_Maville](https://www.instagram.com/Paris_Maville)

Digital Leadership

Paris’ digital services, including information technology, are led by Deputy Mayor Emmanuel Gregoire’s cabinet and Smart City initiatives are led by Deputy Mayor Jean-Louis Missika’s cabinet. Chief Information Officer, Nejia Lanouar, leads digital services, Chief Smart City Officer, Sabine Romon, leads smart city initiatives, and Chief Data Officer, Jean-Philippe Clément, leads data strategy. Pierre Levy leads open source software development.

Simplifying access to digital city services

The City of Paris developed “Mon Compte” (“My Account”), a single personalized account where residents can access all digital city services in one place including requesting a residential parking permit or applying for social housing. The platform enables residents to monitor their requests, ask questions and be redirected to the relevant services, and receive personalized content according to the individual’s selected interests. Mon Compte was developed by the city in-house, based on Lutece, the city’s open source Java-based platform.



San Francisco

Mayor: Mayor Mark E. Farrell

Population: 870,887

City Website: sfgov.org

 [@SFGov](https://twitter.com/SFGov)

 [@City and County of San Francisco-Government](https://www.facebook.com/CityandCountyofSanFranciscoGovernment)

 [SFGovTV](https://www.youtube.com/SFGovTV)

Digital Leadership

Citywide Chief Information Officer and Director of the Department of Technology, Linda Gerull, provides technology vision and leadership across the city. The technology management team also includes a Chief Innovation Officer, Chief Information Security Officer, Chief Data Officer and a Chief Digital Services Officer.

Establishing a robust system to process cannabis permits

On January 1, 2018, the State of California legalized the use of cannabis by adults 21 and older. The City of San Francisco quickly put in place systems to regulate both existing and new cannabis businesses, and to process cannabis permit applications. San Francisco's newly formed Office of Cannabis is using Screendoor to generate powerful online forms, manage responses, and evaluate submissions. For those who want a say in the city's cannabis related regulations, the city is using the Screendoor platform to receive written comments regarding the proposed rules and regulations to the Office of Cannabis.



Seattle

Mayor: Mayor Jenny A. Durkan

Population: 713,700

City Website: seattle.gov

 [@MayorJenny](https://twitter.com/MayorJenny)

 [@Mayor Jenny Durkan](https://www.facebook.com/MayorJennyDurkan)

Digital Leadership

Acting Director of the Seattle Information Technology Department, Tracye Cantrell, and Director of Digital Engagement, Jim Loter, lead all of Seattle's public-facing digital efforts. Chief Information Security Officer, Andrew Whitaker, ensures the city's information assets and technologies are adequately protected; and Chief Privacy Officer, Ginger Armbruster, implements and enforces the city's privacy principles.

Creating a team dedicated to improving the city's digital experience

In 2017, as part of the effort to consolidate IT into one centralized department, Seattle IT created the Digital Services Team within the Office of Digital Engagement. The team manages all public-facing City of Seattle web properties and plays a significant role in coordinating digital content strategy, user experience, and social media management throughout the City. Through this integrated team, Seattle IT has been able to achieve capacities, delineate roles, centralize design and distribution of content responsibilities, and begin the development of the citywide usability program. Specifically, they leverage their web content management system to meet a diverse set of requirements and content presentation, while enforcing consistent user experience, brand standards, and compliance with WCAG 2.0 AA accessibility standards. Digital services is an example of how Seattle IT has been able to pursue innovation in approach, organization, and distribution of responsibilities to balance city department's needs with citywide interests.



Seoul

Mayor: Mayor Park Won-soon

Population: 10,178,395

City Website: seoul.go.kr

 @Seoul_Gov

 @Seoul Korea

 Seoul U

 @ISeoulU

Digital Leadership

Chief Information Officer, Taekyoon Kim, leads technology services of the Seoul Metropolitan Government.

Using big data to tackle big challenges

Seoul is the first city in the world to measure the city's de facto population - the number of people in the city - through smart phone signal data. Leveraging big data and the city's world-class information and communication technology infrastructure, the city is able to monitor the number of people throughout the city's 19,500 localized zones in real time. Equipped with this knowledge, the municipality is beginning to tailor its public services to meet actual demand at the local level. The Seoul Metropolitan Government posts the daily de facto population data every day on the city's public data website, Seoul Open Data Plaza.



Sydney

Mayor: Lord Mayor Clover Moore

Population: 5,131,326

City Website: cityofsydney.nsw.gov.au

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Digital Leadership

Chief Technology and Digital Services Officer, Dr Tom Gao, and Chief Data and Information Management, Mark Goleby, jointly lead technology at the City of Sydney. The City of Sydney's digital strategy sets out the city's vision for a smart digital future for the people of Sydney.

Implementing a product management mindset to continuously improve services

The City of Sydney's What's On website is a long-standing, trusted and heavily used resource for finding out about events and activities in Sydney. The city recently redeveloped the site based on in-depth user research. Once re-launched in 2015, a product management mindset was used to ensure the platform was continuously improved in response to how people were using it. This constant test, learn and iterate process means that the city is always improving the experience the site's users.

Since redevelopment, What's On has seen year on year increases in growth, receiving 2.5 million sessions across 2016-2017 (a 28 percent increase). Close to 25,000 events have been listed, and over 10,000 users have registered to submit events on What's On. The implementation of a self-serve event submission workflow has also resulted in significant staff time savings previously spent manually editing event listings and fielding enquiries from the general public.



Tel Aviv

Mayor: Mayor Ron Huldai

Population: 438,818

City Website: tel-aviv.gov.il

 [@TelAviv](https://twitter.com/TelAviv)

 [@Tel Aviv City](https://www.facebook.com/TelAvivCity)

 [Tel Aviv Global](https://www.youtube.com/TelAvivGlobal)

 [@TelAviv](https://www.instagram.com/TelAviv)

Digital Leadership

Chief Information Officer, Liora Shechter, leads the city's technology department and the Smart City Executive Team. The Smart City Executive Team is an inter-departmental group that launches innovative initiatives and reports to the Head of Planning, Organization and Information Systems, Mr. Eran Avrahami.

Exporting government services globally

Tel Aviv developed DigiTel Residents' Club, a personalized web and mobile communication platform that provides residents with individually tailored, location-specific information ranging from last-minute ticket offers to advanced e-services. Following its success, Tel-Aviv is supporting other city governments around the world to apply the DigiTel model to their own city. In 2017, DigiTel won a bid to be the model for "DigiThane," a new digital engagement platform for the city of Thane in Maharashtra, India, and is currently in conversations with a number of other cities around the world.



Toronto

Mayor: Mayor John Tory

Population: 2,731,571

City Website: toronto.ca

 [@TorontoComms](https://twitter.com/TorontoComms)

 [@City of Toronto - Municipal Government](https://www.facebook.com/CityofTorontoMunicipalGovernment)

 [The City of Toronto](https://www.youtube.com/TheCityofToronto)

 [@CityofTO](https://www.instagram.com/CityofTO)

Digital Leadership

Chief Information Officer, Rob Meikle, spearheads the City of Toronto's digital efforts. The Chief Transformation Officer's mandate includes leading digital transformation initiatives.

Simplifying city services and payments

The City of Toronto is developing a "one stop shop" personalized login to the city's website where residents will be able to access services and make payments. The city is developing this platform in-house with a pilot scheduled to begin in the next two years.



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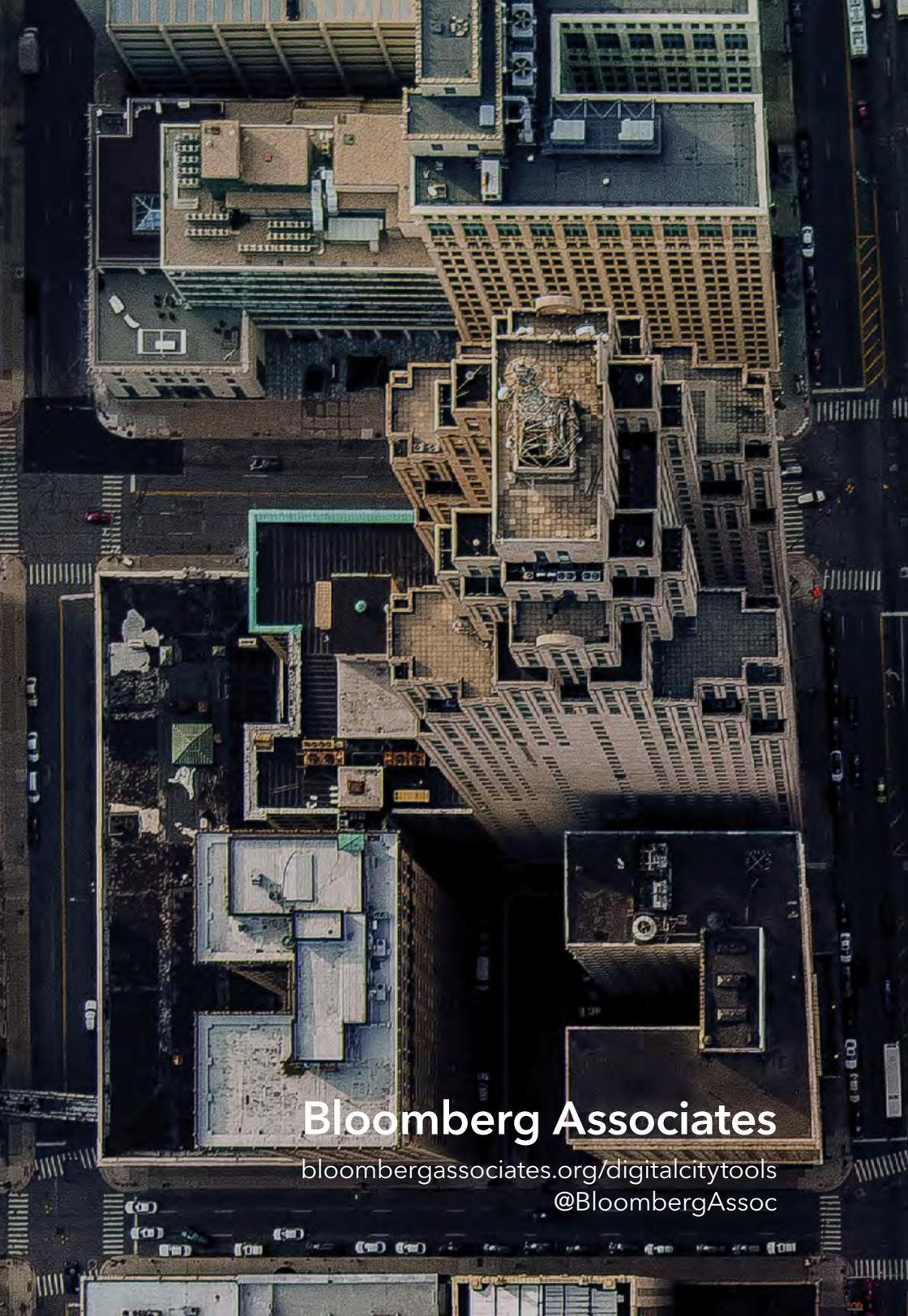
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