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Governing Smart Cities

Policy benchmarks for ethical
and responsible smart city
development



Introduction

Cities and urban areas, the engines of economic growth, have faced their biggest public health and economic challenges in modern times due to the disruption caused by the COVID-19 pandemic. Now, city leaders are hard pressed to improve public health infrastructure and build resilience to counter further outbreaks. While vaccination programs will play a big part in getting them back on their feet, cities will be contending with the trail of economic destruction the pandemic left behind for some time.

Smart city technologies have a role to play in enhancing the responsiveness and resilience of cities to such shocks in the future as well as driving efficiencies and improving quality of life. But while this drive for resilience and efficiency could spur more investment in new technology to deploy new solutions, there is a need to ensure policies are in place that embed ethical and responsible governance. This will allow cities to move quickly in response to disruption without incurring risks around privacy, cybersecurity, or sustainability.

Some cities, however, are better placed than others to develop and implement governance policies on the ground. Knowledge-sharing will be crucial to making rapid progress in urban areas.

In an effort to help cities draw on best practices and build resilience, Deloitte has developed technological solutions, frameworks, and strategic approaches in key areas within the urban transformation sphere—including vision, governance, infrastructure, and funding among others—as well as invested in research to help cities better cope with future challenges. Further, our initiative “Urban Future with a Purpose” engages key stakeholders in a discussion of important trends cities need to be aware of.

Addressing urban challenges is also the focus of Deloitte’s current work with the World Economic Forum and the G20 Global Smart Cities Alliance, which seeks to develop and implement a roadmap to guide cities in the governance of smart technology. An initial step in the process has been to identify governance gaps by comparing current practices in select cities with a number of model policies that embody core principles of governance. This executive summary is based on the World Economic Forum report [Governing Smart Cities: Policy Benchmarks for Ethical and Responsible Smart City Development](#), which captures the findings from this review as well as from five supporting benchmark reports dedicated to each of the model policies.

The G20 Global Smart Cities Alliance and a new policy roadmap

Following the agreement by G20 Ministers in 2019, the G20 Global Smart Cities Alliance was established to help cities identify and adopt foundational policies for smart city technologies. The Alliance is committed to creating a policy roadmap as a baseline for sound technology governance, organized around five core principles:

- Equity, inclusivity, and social impact
- Privacy and transparency
- Security and resilience
- Operational and financial sustainability
- Openness and interoperability

These principles embody fundamental requirements that all smart cities should meet, regardless of their strategic objectives.

Model policies for the core principles

For each of the five core principles, the Alliance has developed model policies as guidelines for cities. The first five model policies were announced at the Smart City Live 2020 event. Each relates to one of the five core principles.

Core principle	Model policy	Description
 Equity, inclusivity and social impact	ICT accessibility in public procurement	Building ICT accessibility standards into procurement to ensure that digital services are accessible to those with disabilities
 Privacy and transparency	Privacy impact assessment	Defining processes to assess the privacy implications of new urban technology deployments
 Security and resilience	Accountability in cybersecurity	Defining key accountability measures to be taken in order to protect the assets of cities and their citizens
 Operational and financial sustainability	Dig once for digital infrastructure	Setting out planning policies that improve coordination among city stakeholders and reduce the cost and complexity of digital infrastructure rollout
 Openness and interoperability	Open data	Developing a model policy for an open data strategy in a city

Source: World Economic Forum

Pioneer cities

In publishing these initial five policies, the Alliance announced that policies and practices of 36 “pioneer cities,” selected from across the world, would be assessed to:

- Evaluate the usefulness of the policy roadmap
- Where possible, help move towards pilot schemes for the model policies
- Provide a baseline dataset as a benchmark for other cities to evaluate their own policies

Between January and March 2021, the pioneer cities took part in an assessment process to evaluate their policies against the five model policies in the policy roadmap. This involved gathering data from a survey and interviews with policy experts and city government officials, with individual city results kept confidential.

The findings from that process were aggregated to examine policies and practices in smart city governance and to recommend how city leaders could close governance gaps in their own cities. All 36 pioneer cities had at least one core principle to improve, and a majority needed improvements in three out of five core principles. Results are summarized below.



Source: World Economic Forum

Model policy #1—ICT accessibility in public procurement (equity, inclusivity, and social impact)

This model policy requires a city’s digital services (ICT) to be accessible to everyone. However, the policy assessment found that less than 20% of pioneer cities consider accessibility standards regularly in the procurement of ICT. In addition, procurement should be supported by verification of conformance by vendors to accessibility standards. This was done by only a small proportion of the cities.

This lack of accessibility presents a risk of exclusion for large sections of the population. Cities should therefore consider adopting the model policy for ICT accessibility in procurement and should involve the ICT procurement function in developing it.

Model policy #2—Privacy impact assessment (privacy and transparency)

Cities need to identify values for privacy against which they can assess their smart city technologies and services. A policy on privacy impact assessments (PIAs) enables a city to establish a consistent method for identifying, evaluating, and addressing privacy risks in new deployments of ICT. By prescribing the processes that should be followed and the issues that must be considered when handling personal data, cities can address privacy risks in a manner consistent with public expectations. The policy assessment found that:

- Less than a quarter of pioneer cities conduct PIAs regularly, though more than half have clearly defined organizational values concerning privacy.
- Strong leadership by a senior officer is often needed to ensure that PIAs are conducted across functional boundaries to identify and mitigate risks to privacy. About half of the pioneer cities have designated senior officials with these responsibilities.
- A large majority of pioneer cities have legal compliance obligations for data privacy and data protection.
- Experience with smart city projects has demonstrated that public trust in how privacy is protected is a critical success factor and that engaging with external stakeholders can help build this trust. About half of the pioneer cities consult an external body to consider privacy impacts.

Cities do recognize the importance of privacy and data protection. However, the number of cities with legal obligations around privacy and data protection is greater than the number of cities with a formal PIA policy or other privacy safeguards in place. Even more concerning is the fact that the vast majority of cities do not have any policies or practices for conducting PIAs to mitigate privacy risks.

Privacy and data protection are frequently the public's biggest concern around smart cities. Cities should decide how they plan for community engagement and transparency to build public trust and overcome concerns.

Model policy #3—Accountability for cybersecurity (security and resilience)

As municipal authorities and services become more connected through procurement of smart city solutions, exposure to cyber risks increases indicating cybersecurity as a high priority for cities. Designating responsibility and accountability for cybersecurity is a step towards protecting a city and its public services against cyber threats. Within a city's administration, a senior officer or a group of key senior individuals should have the responsibility for cybersecurity and any breaches of security. Cities should also have a cybersecurity governance framework that is reviewed regularly.

To understand the potential cybersecurity risks, a senior responsible officer needs to have an up-to-date inventory of the city's ICT infrastructure and assets, including devices, users, networks, data, and applications.

This officer also needs to be informed about new technology deployments that will add to this inventory, ensuring that minimum standards are adhered to.

Compared to other model policies, pioneer cities have made good progress with accountability and cybersecurity. This may reflect the seriousness of the cyber threats cities face.

Model policy #4—Dig Once for digital infrastructure (operational and financial sustainability)

Digital infrastructure—wired and wireless connectivity—is the physical foundation for any smart city but rolling it out can be complex and costly. The largest single cost is typically the civil works required to lay fiber and install equipment. These works also typically result in significant disruption.

A “dig once” policy aims to simplify and accelerate the rollout of digital infrastructure, through collaboration among cities, connectivity providers, utility companies, and other stakeholders. For example:

- New buildings should be connected from the outset; ensuring the installation of conduits during construction avoids the need for further work in the future.
- Existing buildings should have “future-proofed connectivity” and the work of utility companies and connectivity providers should be coordinated to reduce the need for multiple excavations.

A “dig once” policy also reduces inconvenience and disruption to citizens, accelerates rollouts of infrastructure by connectivity providers, and reduces the administrative burden on cities and local authorities.

The policy assessment found that:

- Less than half of pioneer cities have a “dig once” policy in written form but more than half implement “dig once” in practice.
- A list of notifiable activities ensures that authorities are informed when construction, street work, and other activities are planned—providing an opportunity to facilitate collaboration and minimize disruption (a requirement for achieving “dig once”). Only a half of pioneer cities maintain a list of notifiable activities.
- Cities need governance processes to coordinate and drive connectivity rollouts. The governance structure, which must be agreed upon locally, can range from a steering group to a more formal arrangement. Only a third of pioneer cities have a governance process to drive connectivity rollouts.
- Complex political structures can be a problem for governance and coordination. Many pioneer cities with multi-layer governance, such as a national government and city government, struggle to achieve coordination between multiple stakeholders.

“Dig once” is a concept that cities are instinctively familiar with. Even so, many cities struggle to adopt it despite the benefits it offers for digital infrastructure rollout.

Model policy #5—Open data (openness and interoperability)

The concept of open data calls for data to be freely accessed by the public to use as they wish. Since its first appearance over a decade ago, the impact and adoption of open data has grown. Open data policies enable cities to respond to the challenges and opportunities that arise from increasing volumes of data and rapidly advancing data-intensive technologies. The policy assessment found that:

- The majority of pioneer cities are already implementing an open data program and most have a written policy, but only a third conduct periodic assessments of their open data practices.
- Most pioneer cities have a central data team that has organization-wide responsibility for data and open data management.
- The value and costs associated with open data platforms often depend on the degree to which they are integrated with the underlying data infrastructure of the city and its partners. When integration is lacking, data becomes more costly to publish and harder to link into services that require reliable, regular (or real-time) data. Direct integration between open data portals and data infrastructure is rare in pioneer cities.
- Organizations need to be convinced to join a city data platform and share their data. Collaboration through open data platforms is often hindered due to a low level of trust in data platforms and by an inability to demonstrate business or social value.

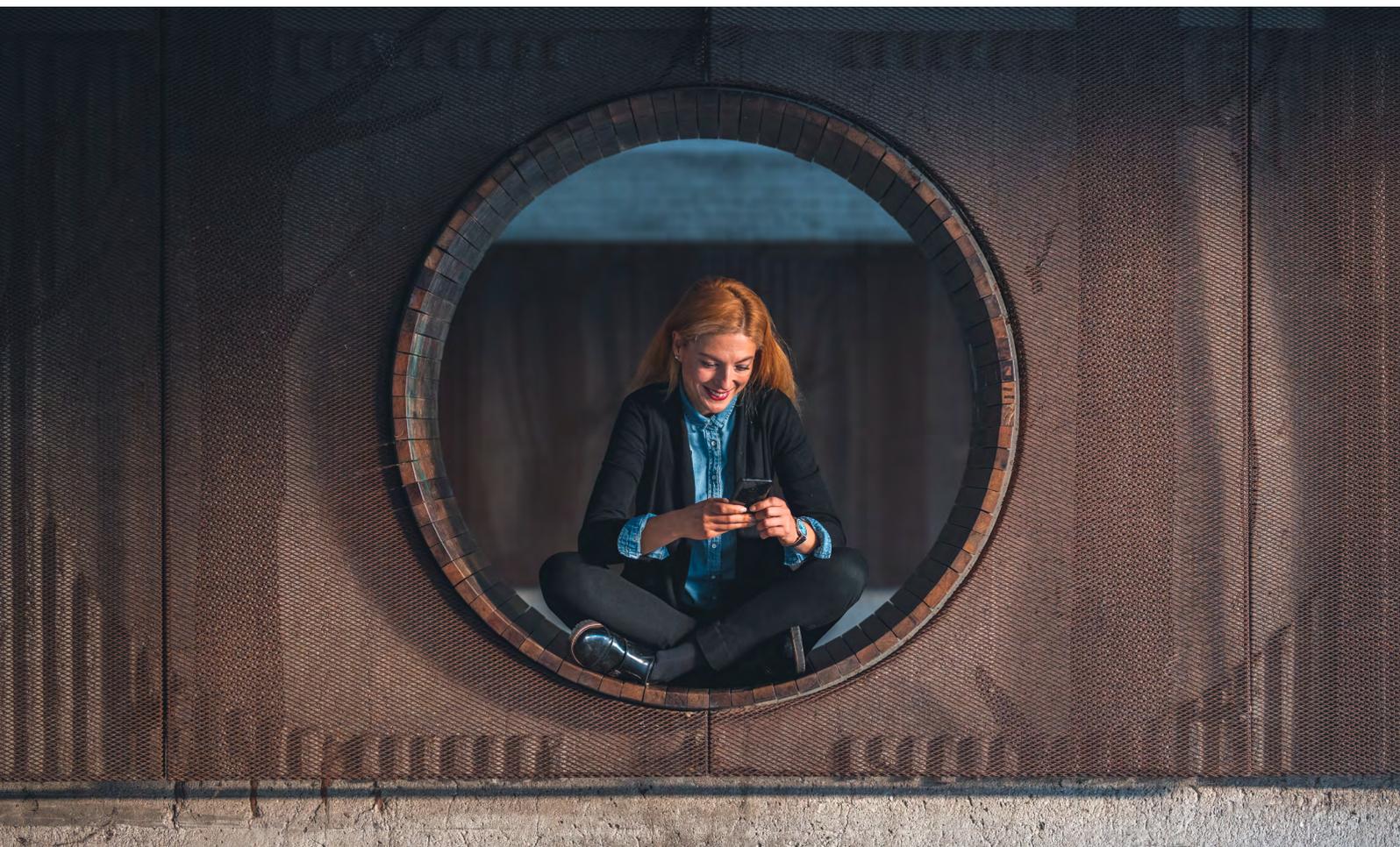
The pioneer cities apply many of the features of an open data policy, from centralized data teams to dedicated funding and open data portals. However, many of the problems surrounding open data remain, preventing cities from reaping the full benefits.

Emerging trends in smart city governance

After a review of the pioneer city policy assessments, the main findings are as follows:

- Most cities are not adopting and implementing the five model policies. The vast majority have gaps in policy that they need to address.
- An open data policy appears to be the only one of the five model policies with fairly widespread implementation. This suggests that cities do not have the policies in place needed to protect the privacy of citizens as well as those that address inclusivity, cybersecurity, and operational sustainability.
- Pioneer cities cite a lack of capacity, leadership, and stakeholder coordination as the reasons for current governance gaps.
- Cities often rely on national policies, but this can mask an implementation gap or lack elements needed at a local level—a particularly serious issue as it relates to privacy protection.
- Pioneer cities view the G20 Global Smart Cities Alliance and its policy roadmap as a route to action but are asking for more support, largely in the form of technical assistance as well as in securing political buy-in.

Taken together, these findings suggest a serious lack of measures in key aspects of smart city governance, for which action is needed from governments at both the local and national level.



Conclusion and recommendations

The policy assessment has identified gaps between implementation and best practice in most cities. There is an urgent need to address these gaps in order to protect the interests of citizens as new technologies are deployed. The World Economic Forum report makes the following recommendations to stakeholder groups:

- **City leaders** should instigate a review of their policies to identify the significant gaps in their smart city governance and take measures to address them. The G20 Global Smart Cities Alliance provides a starting point for this process through its policy roadmap and pioneer city program.
- **City officials** should use the policy roadmap as a call to action to engage in a policy agenda.
- **National and regional policymakers** should engage with local government and the smart city agenda to ensure that guidance and regulations issued at a national level are in line with global best practice.
- **Third party organizations** have a role to play in providing more capacity and skills to local government. The pioneer cities frequently cited a lack of technical skills that third-party organizations can offer (e.g., to develop a city's open data platform).
- **Technology vendors and private companies** should work with public authorities to help bring their governance up to global best practice.

The G20 Global Smart Cities Alliance has a mandate to help cities close the governance gaps that the policy assessment has uncovered. Partners of the World Economic Forum are invited to support cities in their implementation, both globally and through the regional networks that the Alliance is creating.

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Learn more about Deloitte's Smart Cities & Urban Transformation

Through the Smart Cities & Urban Transformation practice, Deloitte has an ambition to improve citizens' quality of life, solve key urban challenges, and positively contribute towards the United Nation's Sustainable Development Goal 11: Make cities and human settlements inclusive, safe, resilient, and sustainable. The initiative offers up-to-the-minute thinking on how cities can use advanced digital technologies to address such key issues as mobility, data, and sustainability. Drawing on our global reach and cross-sector experience, Deloitte translates a holistic vision of smart cities into actionable, concrete solutions that can enable a brighter urban future.

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