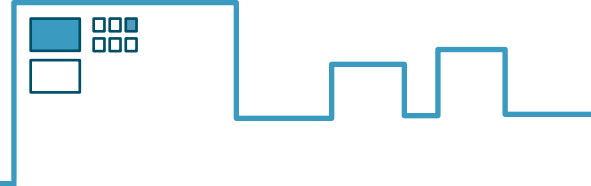




# Smart Cities for All

Inclusive Innovation Playbook

# Foreword:



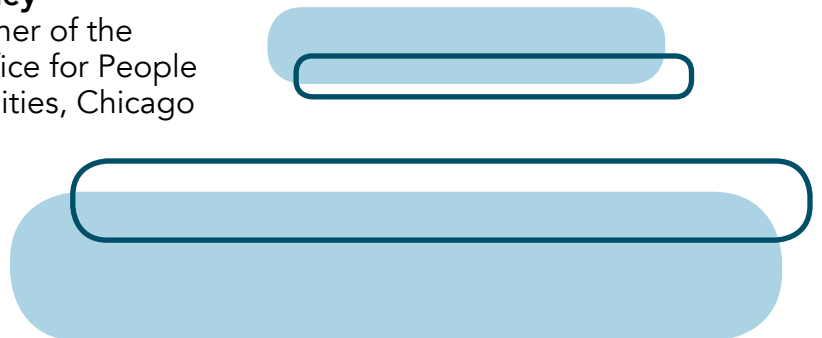
**Chris Penrose**  
President of Internet of  
Things Solutions, AT&T



We're proud to have supported the development of this important new resource for Smart Cities. At AT&T, we continuously look for ways we can use the power of our network to build a better tomorrow. One way we bring that to life is through our Smart Cities solutions. By using Internet of Things (IoT) innovations, we're helping to transform cities, improve sustainability, and enhance the lives of the people who live there. We are committed to bringing Smart City benefits to all citizens, including aging adults and those living with disabilities. From transportation to public safety to smart lighting, our vision is to build a more inclusive Smart Cities ecosystem. It's part of our IoT for Good mission to use technology to address global challenges and engage all citizens for the greater good.



**Karen Tamley**  
Commissioner of the  
Mayor's Office for People  
with Disabilities, Chicago



The Mayor's Office for People with Disabilities (MOPD) is working to make Chicago the most accessible city in the nation on behalf of residents and visitors with disabilities. Innovation and technology are key to success. Chicago is leveraging technology to enhance delivery of city services through easy, reliable, cost-effective, and secure access to information. As our city becomes smarter, we are looking to our technology partners and our innovation ecosystem to include a focus on accessibility and digital inclusion as they develop products, services, and solutions. We were pleased to partner with G3ict, AT&T, and other partners to develop this Inclusive Innovation Playbook. Cities can take the steps outlined in the Playbook to create a commitment to innovating technologies that work for everyone.



### **Victor Calise**

Commissioner of the Mayor's Office for People with Disabilities, New York City

The New York City Mayor's Office for People with Disabilities (MOPD) is committed to making New York the most accessible city in the world. As part of our efforts, we are leveraging technological advancements to improve accessibility in all facets of life. For example, the fully accessible LinkNYC kiosks have transformed the way the nearly one million New Yorkers with disabilities receive information. The City's first-ever Digital Accessibility Coordinator reviews agency websites and other digital content to ensure that everything we put out is fully accessible. Technology has the potential to truly change the way people interact with each other and their environment. The needs of people with disabilities are too often left out of new innovations, which is why the disability community needs to be included in every step of the design process. Tools such as this Playbook can provide best practices to ensure that accessibility is at the forefront of inclusive technologies that work for everyone.



### **James Thurston**

Vice President for Global Strategy & Development, G3ict

In 2016, G3ict partnered with World Enabled to launch the Smart Cities for All global initiative. The work of Smart Cities for All confirms that today the exciting technologies and smart solutions that cities around the world are deploying do not work for everyone, including persons with disabilities and older persons. Smart Cities have a culture of innovation. Smarter Cities have a culture of inclusive innovation. At G3ict, we believe a key to closing the digital divide for persons with disabilities is to work with cities to support their innovation ecosystems in being more diverse and creating exciting technology solutions that are accessible. We believe there is both a human rights case and a business case for inclusive innovation. The goal of this Inclusive Innovation Playbook is to help cities infuse inclusion into their innovation ecosystem. We are grateful to all our partners for their contributions to this new tool. In particular, we are thankful for the ongoing collaboration and support of the AT&T Corporation. Their leadership, expertise, and commitment to cities that are both innovative and inclusive have been invaluable to G3ict and Smart Cities for All.

## Acknowledgments

The development of this Inclusive Innovation Playbook has been possible as a result of the strategic guidance, leadership, and generous funding of AT&T.

As part of the development of this Playbook, Smart Cities for All held expert roundtable discussions in both Chicago and New York City. We are grateful to the cities of Chicago and New York for their partnership and commitment. We would like to thank the hosts for the two roundtable discussions, City Digital/UI Labs and Grand Central Tech.

Smart Cities for All benefited from close collaboration with both [CIV:LAB](#) and [FrancesWestCo](#) in developing this Playbook.

This Inclusive Innovation Playbook is possible due to the insights, experiences, and knowledge of a large number of global experts and organizations.

### We would like to acknowledge their critical contributions:

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Quemuel Arroyo, NYC Department of  
Transportation

Aaron Bangor, AT&T

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Monica Duhem, HearColors

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Jonathan End, Seamless Docs

Tim Fleming, AT&T

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Bridget Hayman, Access Living

Adam Hecktman, Microsoft

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Shaina Horowitz, New Lab

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Micah Kotch, Urban-X

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Anita Perr, Ability Project

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## Playbook Objectives

The [Smart Cities for All](#) global initiative is working to eliminate the digital divide for persons with disabilities and older persons in cities and urban environments worldwide. The objective of this Inclusive Innovation Playbook is to help cities, their partners, and stakeholders define inclusion as part of the technology innovation process and integrate it into urban innovation ecosystems (e.g. incubators, accelerators, investors, etc.). Other entities with an interest in both innovation and inclusion (e.g. universities, economic development zones, national governments, etc.) will also benefit from the Playbook.

This Playbook is intended to support a range of people working across multiple roles in urban innovation ecosystems. This includes entrepreneurs, developers who design technology and Smart City solutions, policy makers, incubator and accelerator program managers, investors in technology innovation, civic hacking community leaders, and neighborhood activists. It will also be of interest to technology suppliers to Smart Cities, Smart City program managers, academics researching innovation and Smart Cities, and disability organizations and advocates working to make innovation and Smart Cities more inclusive.

This Playbook has been designed to complement other tools that make up the [Smart Cities for All Toolkit](#). The toolkit serves to enhance understanding of how cities can be both smarter and more inclusive as they invest in, develop, and deploy technology. Each tool can be used either standalone or in conjunction with others.

## Innovation and Smart Cities are Leaving People Behind

Technology and innovation <sup>1</sup> are transforming our world but not benefiting everyone. Technology continues to advance rapidly into our daily lives. According to the International Telecommunication Union (ITU), there are more than 8.16 billion mobile telephone subscriptions in the world today. That is several hundred million more subscriptions than there are people in the world. Many of the subscriptions are in developing economies. More than 70% of youth worldwide are online today <sup>2</sup>.

Cities around the world are undergoing a dramatic digital transformation. They are using technology products and smart solutions in creative ways to: allow people to report issues like potholes, water leaks, or broken traffic lights; create direct and personalized channels to issue city alerts; facilitate digital or contactless payments for city services; and allow people to remotely manage court cases and legal proceedings. The market for the broad range of technologies to support this digital transformation of cities will reach \$2.5 trillion by 2025 <sup>3</sup>. All of these metrics and trends continue to grow and are spurred on by ongoing technological innovation.

Technology products, services, and innovations can be designed to be used by a wide range of users, regardless of their abilities or disabilities. Accessibility and universal design make it easier for anyone to see, hear, and use a technology device or service and to customize their digital environment according to their own preferences, needs, and abilities. However, we know that today technology and innovation do not benefit everyone. In particular, innovations and technology solutions often are not designed to work for the more than one billion persons with disabilities around the world. For example, according to the G3ict [Digital Accessibility Rights Evaluation \(DARE\) Index](#), the majority of countries around the world, 55%, have no policy for accessible government

websites and e-government services. Just 35% of countries today have a policy to promote internet use by persons with disabilities. And only 33% have policies today to ensure the accessibility of mobile telephony <sup>4</sup>.

The impact on daily life today of a lack of inclusion and accessibility in technology and innovation can be easy to see, especially in Smart Cities. For example, a digital payment system that times out and does not allow a sufficient period to read and process content might not work for a person with a cognitive disability. A mobility as service solution for planning and executing a trip across several different modes of transportation that does not provide alternative text for non-textual information like graphs and pictures might not work for someone who is blind. A kiosk for voting, making payments, or printing tickets that does not have appropriate height and spacing of the screen and controls or physical clearance might not work for someone in a wheelchair.

“

It has never been more obvious to me that accessibility needs to become a FIRST design principle. In the same way that the web underwent an overhaul making it standard for all websites to be mobile friendly, it is time for the web to start making accessible websites the standard.

**Jonathon Ende, CEO of SeamlessDocs**

”

[SeamlessDocs](#) is an eSignature and form automation platform specializing in working with government organizations to go paperless. Founded in 2011, it has quickly become a leading Govtech company. As a startup, it has raised over \$20M to build technology to help governments create more beautiful and accessible online experiences. It currently works with hundreds of governments, ranging from large states to small towns and municipalities.

But SeamlessDocs did not start out with a focus on accessibility as a market differentiator and competitive advantage. SeamlessDocs spent several years in a series of incubators, accelerators, and innovation programs across the United States. While they did have access to mentors and training, digital inclusion and accessibility were not included explicitly or as a focus in the programs. Only after graduating from these innovation programs, did SeamlessDocs decide to focus on accessible design and inclusion as a business opportunity. The company is committed to creating a beautiful front-end experience for

customers. They realized that accessible design is a best practice for user experience. The company also made the strategic decision to ensure that the one in four adults in the U.S. with a disability could use their products and services.

Once they identified the business opportunity and made digital accessibility their mission, SeamlessDocs took several key steps to commit to making accessibility an integral part of their philosophy. Through development upgrades, they made sure all their products comply with global ICT accessibility standards. The company also provides monthly training programs for employees on accessibility and inclusion. SeamlessDocs, a medium-sized and growing company, has hired a Chief Accessibility Officer to oversee their accessibility program and ensure their ongoing commitment. The company even made accessibility a key part of their marketing efforts, producing webinars, infographics, listicles, white papers, and blog posts that demystify what accessibility is, why it should matter, and how governments can become more digitally accessible.

In fact, according to a [Smart Cities for All survey](#), 60% of global experts say Smart Cities are failing persons with disabilities today. Just 18% of experts report that the Smart City initiatives familiar to them use international standards for ICT accessibility. Today's innovation ecosystems are not well prepared to improve on the existing digital divide for persons with disabilities. They are likely making it worse. Less than half, just 43%, of more than 175 entrepreneurs in technology incubators worldwide that were surveyed in late 2018 and early 2019 had a strong understanding of accessibility and inclusion in their own product development and user experience (UX) design processes. And fully one-third of the entrepreneurs surveyed worldwide were not sure if persons with disabilities could even use the technology products and solutions they are currently developing.

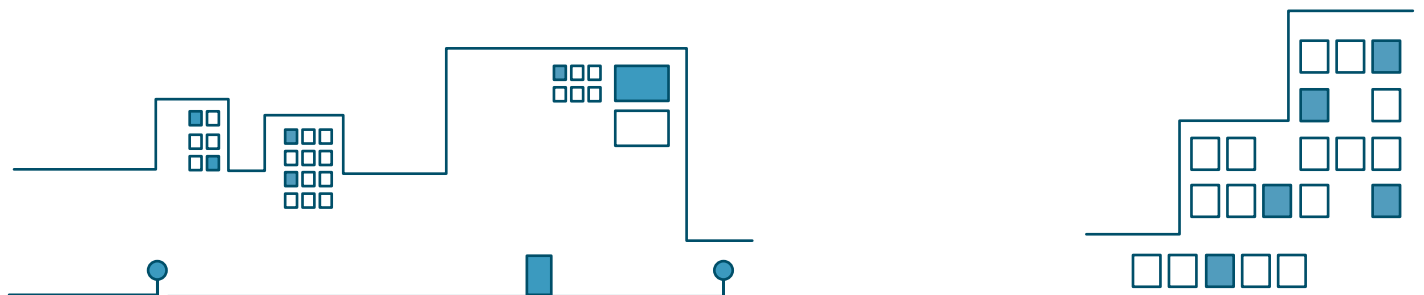
## Moving Forward – Building a More Inclusive Urban Innovation Ecosystem

At Smart Cities for All, we believe that inclusive innovation <sup>5</sup> leads to technology products and smart solutions that work better for everyone, including persons with disabilities and older persons. Closing the digital divide <sup>6</sup> for the disability and aging communities in Smart Cities will require infusing inclusion, accessibility, and [universal design](#) into the innovation of new technology solutions at a scale much greater than is happening today. Because today's technologies, products, services, and smart solutions for cities come from a broad range of suppliers and vendors, large and small and from around the world, it is imperative that the innovation process has a focus on accessibility and inclusion.

In the White Paper, [Smart Cities for All: A Vision for an Inclusive, Accessible Urban Future](#), AT&T and Business for Social Responsibility (BSR) outline four keys to success to ensure that Smart Cities are also inclusive cities:

1. Design for Inclusion
2. Engage Partners and Stakeholders
3. Promote Adoption of Technology, and
4. Foster the Entrepreneurship Ecosystem

This Inclusive Innovation Playbook builds on that important work by suggesting specific actions that Smart Cities around the world can take to support success keys 1 and 4, i.e. ensuring that design for inclusion is an integral aspect of entrepreneurship and innovation ecosystems. Importantly, this Playbook also points to specific actions related to success keys 2 and 3 as well, recognizing that closing the digital divide and engaging diverse communities are critical to inclusive innovation.





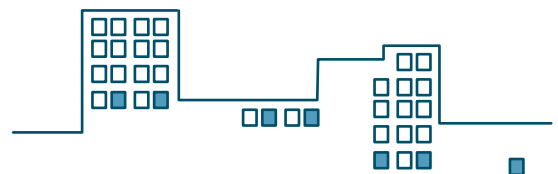
# Smart City Inclusive Innovation Playbook:

What can cities do to help their innovation ecosystem be more inclusive and result in products, services, and solutions that are more accessible and work for everyone?

The World Bank has identified five key factors <sup>2</sup> that are fundamental to the success and vibrancy of a city's innovation ecosystem. Each of these five factors may present accessibility barriers for persons with disabilities that must be addressed to improve inclusion. This Playbook suggests specific steps across each of the five factors that cities can take to make their innovation ecosystem more inclusive:

1. **People** – are the fundamental element that allow innovation to happen. Innovation results from the work and interactions of people. People are the innovation talent pool and provide the important support networks, e.g. as mentors, guides, and investors and are the testing ground for innovative products and services. Diversity among people increases the potential for innovation.
2. **Economic assets** - help transform ideas into practical innovation. Economic assets include: the size, amount, and diversity of companies and businesses; universities and research and development facilities; the maturity and size of the technology and creative industries; and the availability of investment firms.
3. **Infrastructure** - facilitates interactions among people and economic assets. Infrastructure supports access to people and knowledge and important random interactions among people. It includes transportation, broadband access, office space, parks and venues for events, festivals, cafes, restaurants, and theaters, etc.
4. **Enabling environment** – includes the city's public policies and the government commitment to promote innovation. Cities support the innovation ecosystem through a strong enabling environment, e.g. through policies and programs on open data, challenge programs, innovation promotion and incentives.
5. **Networking assets** - are important community-building activities such as skills training events, collaboration spaces, civic hacking communities, and mentoring programs, etc. These connections and communities sustain the social network of the ecosystem and help accelerate the ecosystem's growth by increasing the interactions among actors in the ecosystem.

The following Smart Cities for All Inclusive Innovation Playbook lays out five key “plays” that are based on these five success factors from the World Bank. To define these five urban innovation inclusion plays, the Playbook draws from successful practices and insights from the private sector, government, and civil society. Cities that want to ensure their innovation ecosystem is inclusive and results in products, services, and solutions that are more accessible and work for everyone can draw from among all five of the inclusive innovation “plays”.





# 1

## Play One: Achieve Inclusive Innovation through People

The **People** in a city are fundamental to innovation and their diversity increases the potential for innovation. Yet, in most urban innovation ecosystems the innovation talent pool and critical support networks do not include persons with disabilities. This is evident in the working paper, “How Inclusive is Innovation Policy?” from [NESTA](#), a global innovation foundation, that looked into innovation policies worldwide. It found that while initiatives to encourage wider participation in innovation are common, they tend to focus on some groups more than others <sup>8</sup>. For example, efforts to promote greater gender representation are more common and efforts to promote greater participation by persons with disabilities are less common. In fact, in the NESTA analysis, persons with disabilities were the least likely group to be targeted by governments for increased participation rates.

Smart Cities recognize that diversity supports innovation. They build and support more inclusive innovation ecosystems by setting the expectation for and helping achieve higher rates of participation by persons with disabilities in all roles and parts of the ecosystem, e.g. entrepreneurs, mentors, testers, developers, investors, civic hacking communities, etc.


### City Actions to Consider:

#### 1. Set goals and metrics for increased diversity across the entire innovation ecosystem.


- 1.1 Create specific goals to increase the participation of persons with disabilities across the innovation ecosystem and use metrics to track progress.
- 1.2 Require the tracking and reporting of demographics in return for any public funding and partnerships related to innovation.

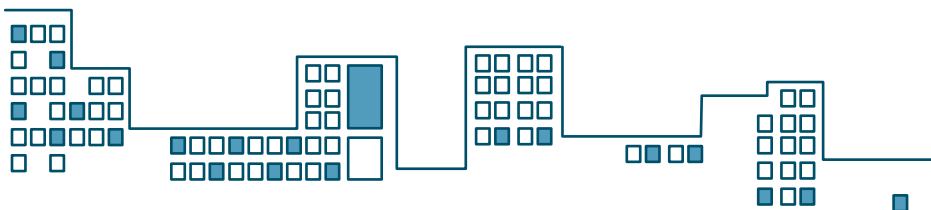
#### 2. Leverage recruitment and training for greater diversity.

- 2.1 Ensure that the recruitment processes in the city and at city partners in the innovation ecosystem are accessible, including as defined by global technical standards, and open to the candidates with the broadest range of abilities.

- 
- 2.2 Encourage technical training, shadowing, internships, etc. for students with disabilities in order to promote greater diversity across the ecosystem.
  - 2.3 Offer incentives to support greater participation in the innovation ecosystem by persons with disabilities, like those offered to increase participation by women and minorities, e.g. grant programs, challenges to incubators and accelerators to increase participation by persons with disabilities, etc.
  - 2.4 Partner with national and local Disabled Persons Organizations (DPOs) to intentionally create more diversity across the innovation ecosystem. There are multiple ways to engage the community of persons with disabilities about solutions and technology developments. For example, there are centers for independent living across the United States. These centers specialize in referrals to disability resources and organizations, including as aligned to specific issues of interest (transportation, computer literacy, employment, social welfare, participation, etc.). In addition, many incubators and accelerators have alliances with universities. Those university partners often have programming and organizations for students with disabilities. Finally, in many countries there are national governmental agencies, DPOs, and other organizations that have a local presence and resources.
  - 2.5 Partner with others in the innovation ecosystem to encourage persons with disabilities to apply to incubators and accelerators and create inclusive and accessible technology solutions. In their report, *Creating Inclusive High-Tech Incubators and Accelerators*, J.P. Morgan Chase and the [Initiative for a Competitive Inner City](#) recommend a set of four strategies to increase participation of women and minority entrepreneurs in high tech incubators and accelerators. Look at adapting these to increase the number of entrepreneurs with disabilities:
    - Expand recruitment networks through diverse leaders and partners
    - Create diverse selection committees and adjust the selection process
    - Intentionally design programs for entrepreneurs with disabilities
    - Create an inclusive culture
  - 2.6 Involve persons with disabilities as experts and end users while conducting training and workshops for startups. Ensure that the new solutions are created in cooperation with persons with disabilities rather than for them.

### **3. Ensure that systems support a drive for more diversity.**

- 3.1 Require as part of the city's procurement process that vendors document user testing by persons with disabilities.
  - 3.2 Support the development of a database of testing resources that includes persons with disabilities.
  - 3.3 Encourage incubators/accelerators to ensure that both their built and digital environment is designed and maintained to be accessible for all.
- 



# 2

## **Play Two: Increase Inclusion in Innovation through Economic Assets**

A city's **Economic Assets** are critical to the innovation process and to its smart programs and solutions. These assets are centered around business, industry, and commerce. They make the financial decisions and investments that bring ideas into practical innovation. Today, most often and in most Smart Cities, urban innovation ecosystems simply do not consider accessibility and inclusion of persons with disabilities. Very often when they do, it is not from an economic, business, or financial perspective but only narrowly from a legal compliance or social responsibility perspective.

Smart Cities can build and support more inclusive innovation ecosystems by working with and through the economic assets to change the conversation about inclusion and accessibility from one based on legal compliance to one shaped by business opportunity and technology leadership.

### **City Actions to Consider:**

#### **1. Build and share across the ecosystem a compelling business case for why inclusive innovation benefits companies creating technology products and services, including for cities.**

- 1.1 Cooperate with the leading companies (e.g. technology, investment, consulting) and university partners to build a compelling business case.
- 1.2 Make sure to use a quantitative approach (money, number of customers, ROI, etc.). Leverage city datasets to identify the size of the prospective market, specifically pointing to lost profits due to the limitations of the product audience.
- 1.3 Make the case that universal design and technology equity are a core part of growing a business. The market opportunity of delighting millions more potential customers through inclusive innovation is considerably larger than just meeting minimum technical standards. Recognize that a growing population of older persons adds to the sizeable market of persons with disabilities.
- 1.4 Point to the scalability and high demand for accessible solutions. Retrofitting existing products and solutions is always more time consuming and costly than introducing accessibility and universal design early on.
- 1.5 Include reminders about the necessity of meeting existing legal requirements, like the Disability Discrimination Act in the United Kingdom and the Americans with Disabilities Act in the United States.

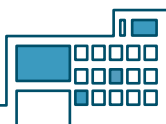


## Inclusion makes business sense

In 2019, Accenture partnered with Disability:IN and the American Association of People with Disabilities (AAPD), to publish a report detailing the relationship between how inclusive a company is of persons with disabilities and its financial performance. [Getting to Equal: The Disability Inclusion Advantage](#) reveals the positive correlation between disability inclusion and the financial performance of companies. They found that in the United States, companies that embrace best practices for including persons with disabilities outperform other companies in revenue (28% higher), net income (100% higher), and profit margins (30% higher).

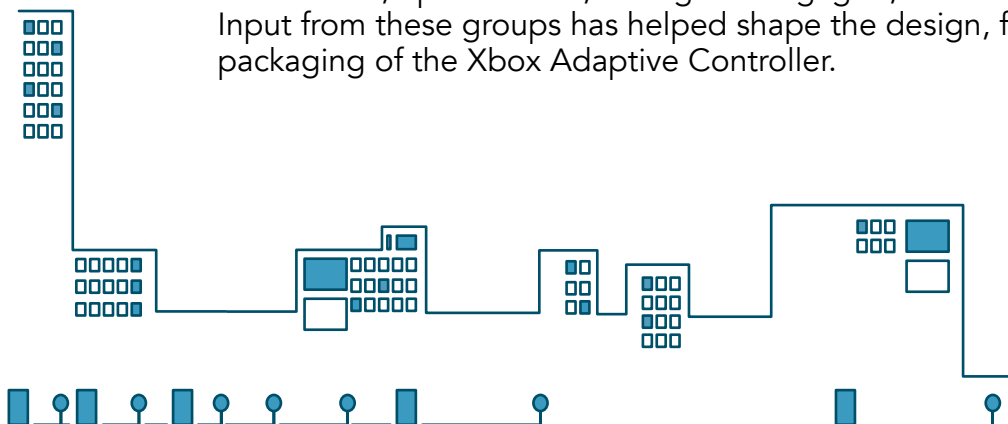
In its analysis, [Return on Disability](#), points out that the global population of persons with disabilities, more than one billion people, constitutes an emerging market the size of China. The close friends and family of persons with disabilities add another 2.3 billion potential consumers who likely make decisions that consider persons with disabilities. According to Return on Disability, persons with disabilities, their families, and close friends control over \$8 trillion in annual disposable income.



For additional information on making the case for inclusion and accessibility, see the [Smart Cities for All Digital Inclusion Toolkit](#), including our tool on [Communicating the Case for Stronger Commitment to Digital Inclusion in Cities](#).



## 2. Build and share across the ecosystem a compelling technology case for why inclusive innovation benefits companies.

- 2.1 Help shift development focus from legal compliance and meeting minimum accessibility technical standards toward the more innovative and profitable opportunities of human-centered design for products and services and leveraging leading-edge technologies like IoT, AI, machine learning, AR, VR, etc.
- 2.2 Spotlight design thinking as a technology industry leading-edge approach to ensuring exceptional experiences for the broadest number of customers. Technology that's designed through inclusive practices pays off in many ways including increased access and providing more emotional context.
- 2.3 Consider the needs of older persons and users with disabilities during the ideation and design phases of product life cycles. Use standards like [ISO Guide 71 / ISO 22411](#) to ensure users with a range of abilities are part of ideation and design.
- 2.4 Elaborate on universal design as the new trend in ICT development based on examples of leading companies, e.g. AT&T, Microsoft, Google, and Apple.
  - For example, Microsoft designed its new [Xbox Adaptive Controller](#) primarily to meet the needs of gamers with limited mobility. They designed and built it through strong partnerships with The AbleGamers Charity, The Cerebral Palsy Foundation, SpecialEffect, Warfighter Engaged, and many community members. Input from these groups has helped shape the design, functionality, and even the packaging of the Xbox Adaptive Controller.






AT&T's Corporate Accessibility Technology Office (CATO) and Chief Accessibility Officer, Suzanne Montgomery, are adopting a range of creative approaches to build greater awareness across the company of how persons with disabilities use digital technology. One of these is the portable Accessibility Awareness Lab. Launched in 2017, the Lab provides employees with concrete experiences to support increased empathy and stronger skills. The goal is to help AT&T designers, developers, and all employees truly understand the difference they can make through their work by removing digital barriers for millions of people. These digital barriers can be just as difficult to overcome as physical ones.

The Accessibility Awareness Lab pairs off-the-shelf technologies used regularly by AT&T product developers with common assistive technologies used by persons with disabilities. It includes computers, mobile devices, TV remote controls, and other consumer technologies along with assistive technologies like [screen reader software](#), [switch devices](#), and a [refreshable braille display](#). Lab participants work their way through a series of exercises that demonstrate the frustrations someone might encounter using an inaccessible product or service in their daily life. The Lab supplements these exercises with resources on inclusive design techniques.

The comprehensive set of learning resources and tools includes a companion web site with recorded interviews of persons with disabilities explaining how accessible technology helps them in their everyday lives. It also includes a guide to understanding accessibility features on mobile devices, the business case for accessibility, and a guide for AT&T employees to better understand how they can use accessibility standards, training, and other resources to build products and services that are universally usable by customers and employees.

AT&T's CATO designed the Lab to be transportable so it can be requested and used by business units and product groups across the company to raise awareness and skills on accessibility and inclusion. In addition, each year, AT&T showcases the Lab in key cities with a large number of employees.



# 3

## Play Three: Increase Inclusion in Innovation through Infrastructure

A city's Infrastructure promotes innovation by supporting interactions among people, knowledge sources, and economic assets. That infrastructure is comprehensive, represents both physical and digital connectivity, and touches on all aspects of daily life. This includes transportation, broadband access, office space, parks and venues for events, festivals, cafes, restaurants, theaters, etc. However, we know that in most cities, infrastructure is often largely inaccessible to persons with disabilities. In the United States, people with disabilities are 20% less likely to have access to broadband connectivity <sup>9</sup>, a PC, or smartphone. In February 2019, [WebAIM evaluated for accessibility the top one million web sites](#). Nearly all of them, 97.8%, had accessibility failures. Research indicates 30% of individuals with disabilities in the United States have difficulty accessing transportation <sup>10</sup>. In addition, people with disabilities travel less frequently and rely on public transportation more than the general population <sup>11</sup>. According to U.S. Federal government estimates, 3.6 million persons with disabilities in the country do not even leave home as a result of travel limiting disabilities <sup>12</sup>.

Smart Cities can build and support more inclusive innovation ecosystems by taking specific steps to improve the accessibility of the city infrastructure, both the physical and digital connectivity provided by transport and communications networks.

### City Actions to Consider:

#### 1. Address the digital divide for persons with disabilities.

- 1.1 Assess the current digital infrastructure and level of access to it, including among persons with disabilities and older persons.
- 1.2 Create strategies with specific goals and metrics to bridge the digital divide for persons with disabilities by increasing access to broadband connectivity, connected devices, and the digital literacy skills needed to fully benefit from them.
- 1.3 Leverage existing city resources to provide access to the digital infrastructure to persons with disabilities, e.g. through community centers, social service and family support centers, libraries, etc.
- 1.4 Partner with communications providers to educate communities on the range of reliable and affordable internet options available to them.
- 1.5 In particular, ensure the digital accessibility of all innovation ecosystem venues, e.g. incubators, accelerators, labs, maker spaces, etc. to enable a greater diversity of participants, including persons with disabilities.



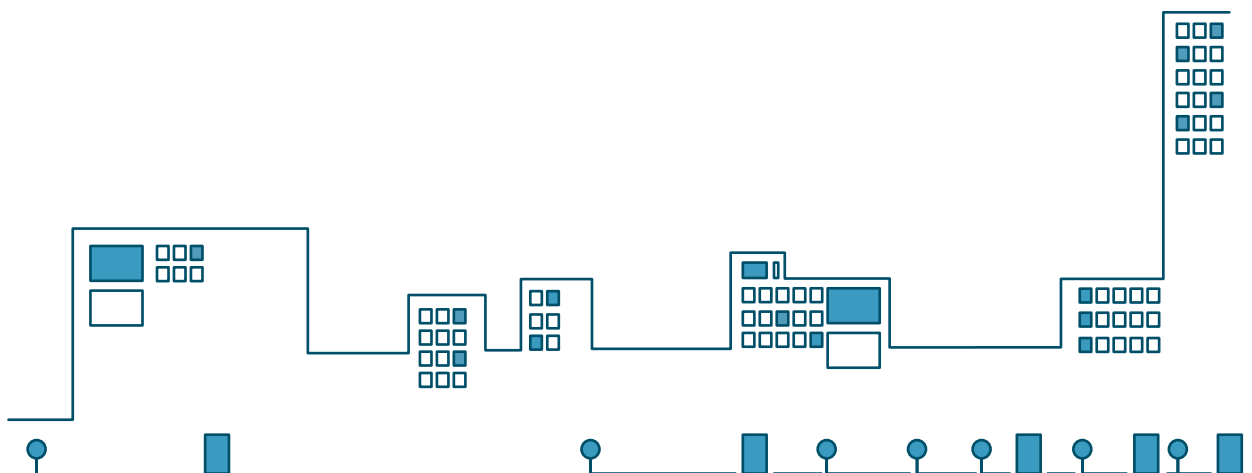


The Smart Cities for All Smart City Digital Inclusion Maturity Model is a tool to help cities worldwide assess and benchmark their level of digital inclusion and ICT accessibility. The Maturity Model, developed with support from the Microsoft corporation and in partnership with cities and experts worldwide, helps clearly evaluate progress towards achieving ICT accessibility and digital inclusion across a broad range of functions that are important to all cities like communications, procurement, training, and standards. It defines key performance indicators and metrics to support advancing accessibility and digital inclusion. It lays out five distinct levels of maturity for digital inclusion and accessibility progress across multiple dimensions that are important to all Smart Cities, including how the city uses technology and data. This tool includes a specific focus on addressing the existing digital and data divides for persons with disabilities.



## 2. Recognize that barriers in transportation and the built environment also impact whether persons with disabilities are able to participate in urban innovation ecosystems.

- 2.1 Assess the current level of accessibility of transportation systems and the built environment. Create improvement strategies with specific goals and metrics.
- 2.2 Leverage existing accessibility roadmaps the city has adopted, e.g., Americans with Disabilities Act (ADA) Transition Plan, to make it easier for persons with disabilities to participate in the innovation ecosystem.
- 2.3 Ensure the physical accessibility of innovation ecosystem venues, e.g. incubators, accelerators, labs, maker spaces, etc. so that all locations are easily accessible to a greater diversity of participants, including persons with disabilities.



# 4

## Play Four: Increase Inclusion in Innovation through the Enabling Environment

A city's public policies, programs, initiatives, and commitments can create an Enabling Environment that promotes innovation.

Smart Cities can use that enabling environment, including its city leadership, strategies, and priorities, to achieve a more inclusive innovation ecosystem. Inclusive Smart Cities recognize that they are uniquely positioned to design an enabling environment to influence the innovation ecosystem and encourage greater focus on inclusion of persons with disabilities.

### City Actions to Consider:

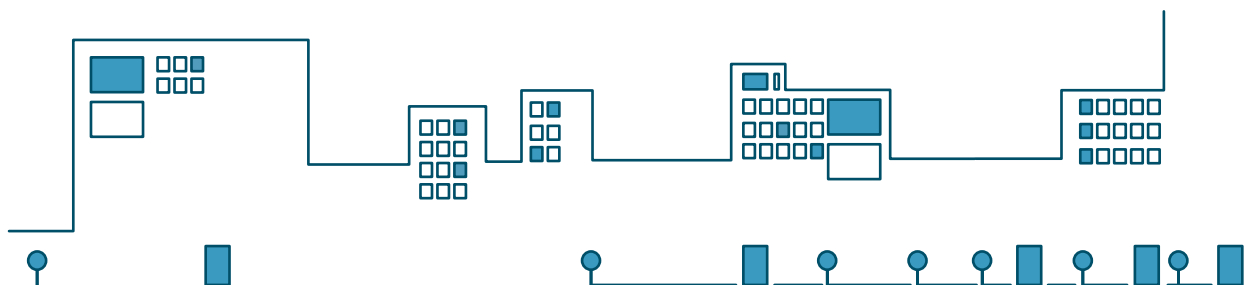
#### 1. Understand the current state.

- 1.1 Research and understand how the city's Innovation Ecosystem currently focuses on inclusion of persons with disabilities.
  - For example, what laws, policies, programs, etc. are supporting more inclusive innovation and which might be in the way of progress?
  - Define and collect data on inclusion in ecosystem programs, participants, and products/solutions.
  - Leverage open data and open government initiatives to create a better knowledge of persons with disabilities in the city and the innovation ecosystem.
- 1.2 Design and deploy a survey for innovation ecosystem stakeholders (entrepreneurs, mentors, testers, developers, investors, civic hacking communities, etc.) to identify whether they are aware of the digital inclusion and ICT accessibility standards, whether they apply them and if not, what are the barriers.
  - Consider using the [Washington Group Short Set of Questions](#) to align with global datasets on disability and inclusion.
- 1.3 Audit the city's own practices, processes, and policies that relate both to the innovation process and the deployment of innovations in the city.
  - Check if the city's existing innovation policies reference inclusion, persons with disabilities, accessibility, or universal design and whether key definitions are consistent with best practices.
  - Determine if the city's innovation policies and programs have a regular review and revision cycle as an opportunity to insert inclusion and accessibility and align to best practices.
  - Identify any existing national, state, or provincial policies and programs that might already require and/or support inclusion and accessibility in city innovation activities.

- 1.4 Analyze feedback from citizens, including persons with disabilities and older persons, regarding the city's existing digital and smart services to identify areas for improvement and innovation. Feedback might come through formal city forums, social media, the city office for persons with disabilities, etc.
- 1.5 Determine if any citywide accessibility assessments/audits of public ICT and smart infrastructure assets and deployments using global ICT accessibility standards (e.g. EN 301 549, US Section 508, WCAG) have been performed to inform the innovation ecosystem.
- 1.6 Identify opportunities to align inclusive innovation objectives with other city priorities and strategies, e.g. economic development, resilience, sustainability, etc.

## 2. Leverage city assets to drive change.

- 2.1 Use the city's datasets to incentivize a greater commitment to inclusion
  - In return for access to valuable city datasets, require developers, entrepreneurs, and companies to include a focus on inclusion, attend accessibility training, or attain ICT accessibility certification.
- 2.2 Use the city's enormous purchasing power to shift the market
  - Create market demand – require accessibility in city ICT procurements. It is common practice today for governments to promote ICT privacy and security by including them as part of their procurement process. ICT accessibility can be added as a priority in a similar way. For more information refer to [Smart Cities for All Guide to Adopting an ICT Accessibility Procurement Policy](#).
  - Include accessibility as part of discussions with technology and smart solutions vendors (e.g. do vendors have experience making their products accessible? Can they explain what actions they are taking to meet ICT accessibility requirements and are they able to share the roadmaps or process guidelines?) Reference the [G3ict Guide for Engaging ICT Vendors](#) on the topic of accessibility.
- 2.3 Use the city's unique public policy power and budget to enable inclusive innovation
  - Fund only those incubators and accelerators that adopt the strategies in this playbook and make progress toward greater inclusion.
  - Provide incentives for startups and incubators that embrace the concept of accessibility and inclusion, i.e. those that apply universal design principles and/or global ICT accessibility standards.
  - Invest in creating the data and business case for startups and companies to design products and solutions that work for all people.
  - Support an increased number of trained accessibility professionals available to the city, startups, companies, and the innovation ecosystem. London provides an example of how a city can support an ecosystem of technology professionals with accessibility expertise. In London every day, 15,000 people use 700 apps powered by data generated by Transport for London (TfL), the city transportation agency. To support a greater focus on inclusion in the innovation ecosystem, TfL also provides regular accessibility training for its developer community.



- Budget resources for innovation projects and programs that leverage new and emerging technologies to focus on long-standing inclusion challenges.
- Rely on national and subnational laws (i.e. city, state, provincial) that support the inclusion of persons with disabilities support strategies for greater inclusion and diversity across the innovation ecosystem.

### 3. Lead by example - demonstrate a strong commitment to inclusive innovation and accessible products and solutions across the city government.

#### 3.1 Build a city brand around inclusion and innovation

- Support inclusive innovation as an explicit part of the city's digital inclusion and/or Smart City strategy.
- Define the city's business and rights case for ICT accessibility and digital inclusion with inclusive innovation as a key component.

#### 3.2 Make the city's own design systems and guides the leading example for inclusion

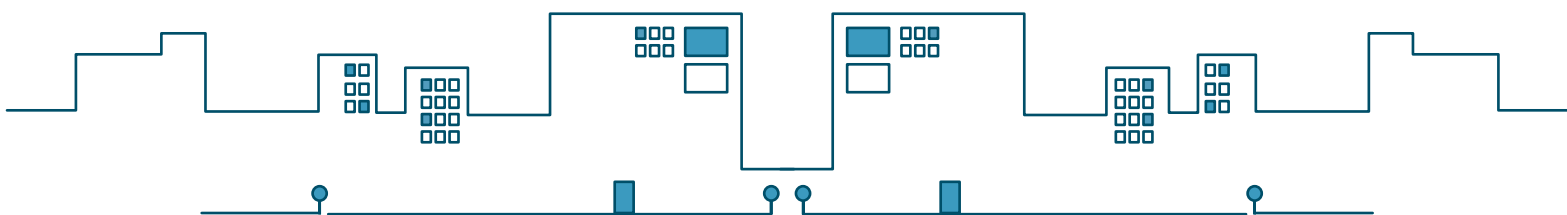
- Ensure that the city's own design systems and guides support accessibility and inclusion as part of internal development, design, and innovation programs.
- Consider using the city design guide to provide a seal of approval to the new solutions that comply with it.
- Raise awareness and build capacity among city officials and design and development staff through regular trainings, workshops, and internal communications on the design guide and inclusive innovation principles.

#### 3.3 Create a city certification of inclusive innovation for incubators, etc.

- Work with the expert community and civil society to identify opportunities to introduce an optional certification for business regarding accessibility/universal design.
- Establish a city certification process and requirements.
- Provide incentives in the procurement process to the companies having been through a certified incubator or accelerator.

#### 3.4 Tie inclusive innovation to real city needs and desired outcomes

- Identify pain points and weak spots that the city currently experiences that can be addressed by innovative new technology solutions. Put inclusion in a statement of needs/priorities for innovation projects.
- In consultation with DPOs, identify priority longstanding inclusion and accessibility challenges for persons with disabilities and older persons.
- Involve relevant city officials, accessibility experts as well as DPOs in the assessment of the proposed solutions to choose the ones that best address the identified challenges and problem areas.



# 5

## Play Five: Increase Inclusion in Innovation through Networking Assets

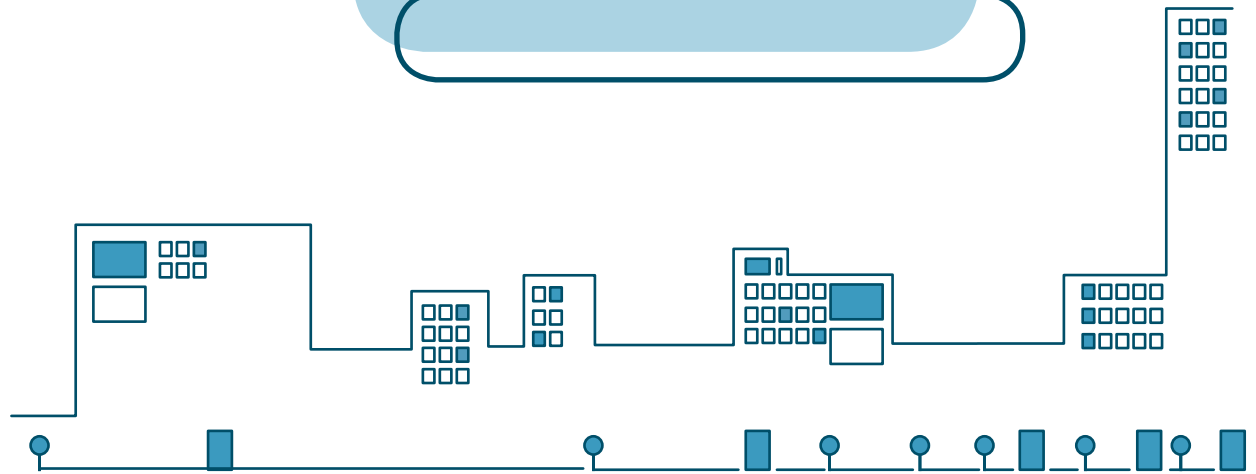
A city's **Networking Assets**, those critically important community-building activities such as skills training events, collaboration spaces, and mentoring programs, help accelerate the innovation ecosystem's growth by increasing the interactions among actors in the ecosystem. However, many of those assets and activities are not accessible to persons with disabilities. They are not participating in the increasing numbers of networking and interaction opportunities that sustain the social network of the ecosystem. Their perspectives are essentially excluded from the ecosystem.

Smart Cities can build and support more inclusive innovation ecosystems by taking specific steps to improve the accessibility and inclusion of its networking assets. By making these critical connections and communities more inclusive of persons with disabilities, Smart Cities can enhance the overall innovation ecosystem.

### City Actions to Consider:

#### 1. Raise awareness across the ecosystem about disability, diversity, accessibility, and inclusion.

- 1.1 Engage key innovation ecosystem actors, e.g. incubators, accelerators, growth promoters, innovation labs, academia, civic hacking communities, etc. through conferences, networking events, thematic workshops, technology and innovation meetups, etc.
- 1.2 Specifically target investors, including philanthropies, to bring their attention to the topic and share both the business and human rights cases for greater diversity and inclusion.
- 1.3 Develop or source disability and accessibility training and make it available to incubators and accelerators across the ecosystem.
  - The [International Association of Accessibility Professionals \(IAAP\)](#) enables the creation of accessible products, content, and services by promoting and improving the accessibility profession globally through networking, education, and certification.



- 1.4 In cooperation with local colleges and universities, bring the topic of accessibility and inclusion to the curriculum of technology students to ensure that universal design is a part of their DNA well before they first come to incubators.
  - Participate in the elaboration of the curriculum and involve DPOs in this work.
  - Take part in the education process through guest visits, guest lectures, mentorship, long-term projects, etc.
  - Encourage institutions of higher education affiliated with the city and the innovation ecosystem to include accessibility in STEAM programs. [Teach Access](#) is a leading example of strengthening the focus on accessibility in higher education curricula <sup>13</sup>.
- 1.5 Engage the C-suite. Make sure that corporate executives and city leadership with authority to drive sustained change understand the importance of accessibility and inclusion to innovation.

## 2. Define roles across the ecosystem.

- 2.1 Define roles for promoting accessibility and universal design across city leadership (e.g. mayor, CIO, CTO, officer for persons with disabilities, relevant departments, etc.) and all actors participating in the city innovation ecosystem (e.g. management of incubators/accelerators/VC, large business, philanthropy, accessibility experts, academia, civil society, users, etc.)

## 3. Build bridges and connect communities.

- 3.1 Create or support a platform to convene different communities (e.g. legal, financial/VC, developers, government, DPOs, etc.) around inclusive innovation issues and objectives.



## Leveraging Atlanta's Innovation Ecosystem

In 2017, AT&T partnered with the City of Atlanta and Code for Atlanta to run the Atlanta Civic Coding Competition (C3). C3 brought together individuals and teams from the non-profit, start-up and educational communities to help solve some of Atlanta's toughest challenges. Ninety-two entrants leveraged data and technology to develop Smart City solutions to address daily infrastructure challenges facing Atlanta, including traffic issues, power outages, water leaks and more. AT&T supported the innovation competition with technology expertise, community relationships, and \$60,000 in cash prizes.

The winner of the coding competition addressed a longstanding transportation and accessibility challenge facing Atlanta and many other cities worldwide; the usability of paratransit services by persons with disabilities. The Paratransit Pal team developed a prototype application to make information about paratransit rides available to consumers in the clearest way possible. Many cities provide paratransit, or curb-to-curb transportation services, for persons with disabilities. In Atlanta, existing technology interfaces for paratransit services were often complicated for riders with cognitive, intellectual, and developmental disabilities. It was difficult for them to get critical transit information, like whether a bus is running late, in formats usable to them. Paratransit Pal uses Smart City technology including live data from digital infrastructure nodes to improve the accuracy of estimated vehicle arrival times and provide riders with one-button options to create rich incident reports. It also explored new options for displaying information at the right time and in a clearer way for the user.

The C3 coding competition leveraged Atlanta's innovation ecosystem to solve a complex problem with an innovative and inclusive smart solution.



### 4. Leverage the existing ecosystem.

- 4.1 Learn the current urban innovation ecosystem infrastructure:
  - Get to know the innovation ecosystem actors - incubators, accelerators, growth promoters, venture capital funds, academia, etc.
  - Identify the programs and events where the city can participate and bring a focus on inclusion and accessibility.
- 4.2 Present the complex problems the city is facing that can be addressed by innovative, accessible, and inclusive products to incubators, accelerators, VCs civic hacking communities, etc.
- 4.3 Make sure that universal design and accessibility requirements are clearly communicated in any innovation challenges or RFPs.
- 4.4 Provide accessibility and universal design tools, best practices, and mentoring to startups working on new solutions:
  - Engage experts in accessibility, disabled persons organizations, and persons with disabilities to provide first-hand experience and share existing challenges with startups in incubators, accelerators, and at civic hacking events.
  - Make sure that accessibility and inclusion information is added to the onboarding package for new companies joining incubators/accelerators/VCs.
  - Identify and point to development tools, e.g., web authoring tools, that are themselves accessible and incorporate accessibility by design.



## 5. Promote city-to-city collaboration.

- 5.1 Recognize that cities partner in many substantive areas (e.g. climate change, resilience, etc.) and propose the addition of inclusive innovation.
- 5.2 Make efforts to participate in Smart City events in different regions of the world to learn about new trends, available solutions, lessons learned, and best practices.
- 5.3 Establish direct connections with other cities deploying Smart City solutions that are accessible and inclusive. Ask them to share available guidelines, roadmaps, instructions, requirements, and other relevant documentation.
- 5.4 Organize or collaborate on online webinars, online or offline workshops, and study tours for relevant city officials to learn from the experience of other cities.
- 5.5 Organize or collaborate on joint challenges, contests, bids to identify the most promising companies, and inclusive solutions from around the world.
- 5.6 Leverage existing city membership organizations, e.g. ([Cities for Digital Rights](#), [United Cities and Local Governments](#), [National League of Cities](#), [U.S. Conference of Mayors](#), Rockefeller Foundation [100 Resilient Cities](#), Organization for Economic Co-operation and Development (OECD), Champion Mayors for Inclusive Growth Initiative, Alianza Smart Latam, etc.) to make inclusive innovation a focus and an area of collaboration.

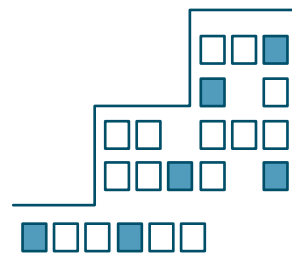


### Cities Cooperating on Innovation

The cities of New York and Barcelona partnered to address shared urban challenges. In 2017 they announced [a joint call for innovative solutions](#) focused specifically on an urban accessibility and mobility issue. The two cities partnered to challenge the global technology community to improve safety at intersections for blind and low-vision pedestrians. In New York City, they sought proposals for a wearable technology, smartphone application, or other technology solution to provide wayfinding assistance to New Yorkers with vision loss. In Barcelona, the challenge was led by the Department of Mobility and sought solutions to help blind and low-vision pedestrians more safely navigate intersections and single-level streets. The two cities encouraged solution providers to consider creative ways to leverage personal devices, location-aware technologies, and data sources ranging from [NYC Open Data](#) and [Barcelona Open Data](#) to signal timings. Solutions aimed to make street navigation accessible, safe, and empowering for blind and low vision pedestrians. Finalists were announced at the Smart City Expo and World Congress in Barcelona in November 2018.



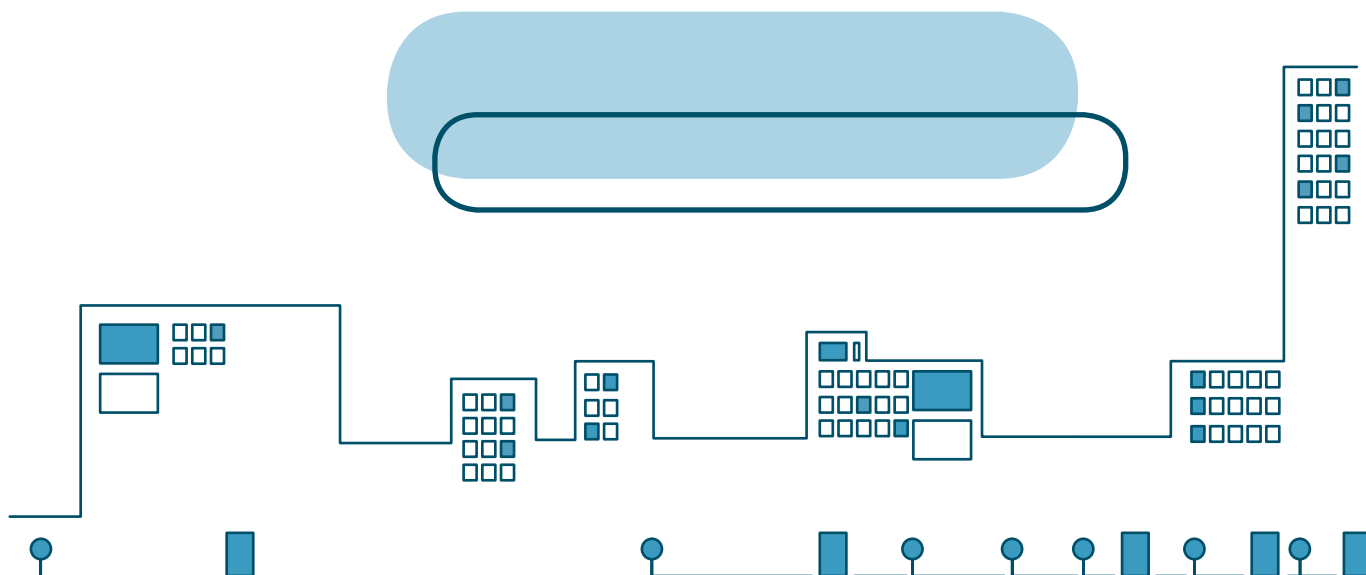
# Inclusive Innovation Playbook Checklist:



Every city and urban innovation ecosystem is unique. While the five key factors, or plays, described in the previous section are important to every city or urban innovation ecosystem, the specific actions that a city might take at any given time will differ according to many factors. This includes the organizational structure of the city, the existing level of awareness and understanding of accessibility and disability across the innovation ecosystem, and the size and complexity of that ecosystem.

The following table presents a checklist to help a city prioritize the best possible actions for that city to increase its focus on inclusion in the innovation ecosystem. The checklist is structured to help a city review the entire set of plays and actions and determine to what extent, if at all, those actions are happening, what level of priority an action might have for the city, and who at the city or in the innovation ecosystem might be the logical leader or responsible party for any relevant action.

For maximum effectiveness and to ensure that a common understanding is formed across the entire ecosystem, that all needs are noted, and that awareness is raised, consider creating a working group of stakeholders to review the plays and actions together. Stakeholders could come from various city departments and leaders within the innovation ecosystem (e.g. incubator managers, civic hacking community leaders, financial investors, etc.). As a stakeholder working group, review the checklist and determine a set of plays and related actions to create an Inclusive Innovation Playbook custom made for your city.

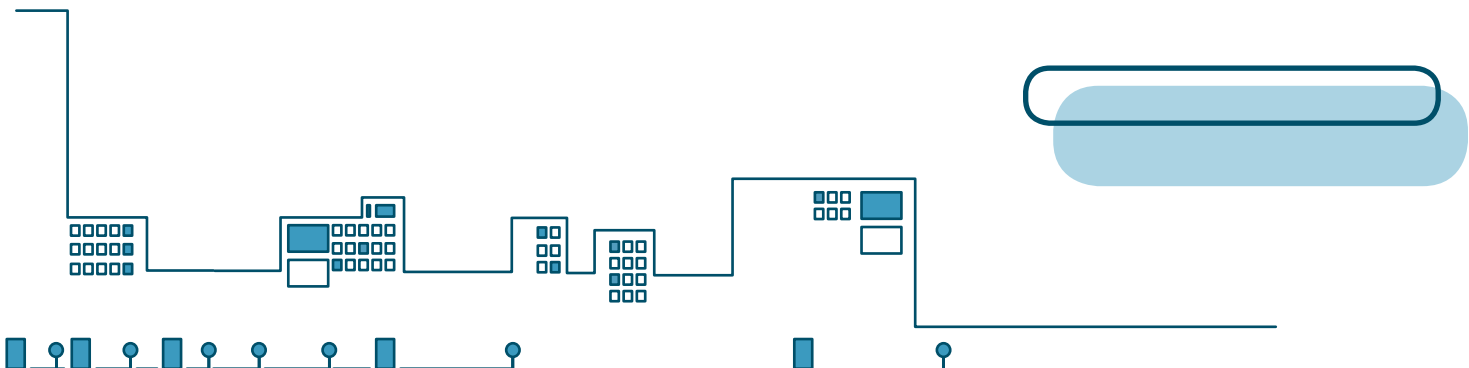


## Play One – Achieve Inclusive Innovation through *People*

	Checklist (For each of the suggested actions in this column, there is more detail in the previous section of the Playbook)	Happening Today? Not at All, Partially, Fully	Priority Level? (1-3)	Responsible Party?
Set goals and metrics for increased diversity across the entire innovation ecosystem.	<ul style="list-style-type: none"> <li>√ Create specific goals and metrics for increased participation of persons with disabilities.</li> <li>√ Require tracking and reporting of demographics in return for any public funding and city partnerships.</li> </ul>			
Leverage recruitment and training for greater diversity	<ul style="list-style-type: none"> <li>√ Ensure recruitment processes across city and innovation ecosystem are accessible.</li> <li>√ Encourage technical training, shadowing, internships, etc. for students with disabilities.</li> <li>√ Offer incentives to support greater participation in the innovation ecosystem by persons with disabilities.</li> <li>√ Partner with DPOs to create greater diversity across the innovation ecosystem.</li> <li>√ Encourage persons with disabilities to apply to incubators and accelerators.</li> <li>√ Involve persons with disabilities as experts and end- users in training and workshops for startups.</li> </ul>			
Ensure that systems support a drive for more diversity	<ul style="list-style-type: none"> <li>√ Require in the city's procurement process that vendors document user testing by persons with disabilities.</li> <li>√ Support development of a database of testing resources that include persons with disabilities.</li> <li>√ Encourage incubators/accelerators to ensure accessibility of both their built and digital environment.</li> </ul>			

## Play Two - Increase Inclusion in Innovation through *Economic Assets*

Possible City Actions	Checklist (For each of the suggested actions in this column, there is more detail in the previous section of the Playbook)	Happening Today?  Not at All, Partially, Fully	Priority Level? (1-3)	Responsible Party?
Build and share across the ecosystem a compelling business casve for why inclusive innovation benefits companies.	<ul style="list-style-type: none"> <li>√ Cooperate with partners from across the innovation ecosystem to build a compelling business case that is quantitative, emphasizes market opportunity, and details cost minimization.</li> <li>√ Continue reminders about the necessity of meeting existing legal requirements.</li> </ul>			
Build and share across the ecosystem a compelling technology case for why inclusive innovation benefits companies.	<ul style="list-style-type: none"> <li>√ Cooperate with partners from across the innovation ecosystem to build a compelling technology case that spotlights design thinking and universal design as leading-edge approaches in the technology industry.</li> </ul>			



## Play Three - Increase Inclusion in Innovation through *Infrastructure*

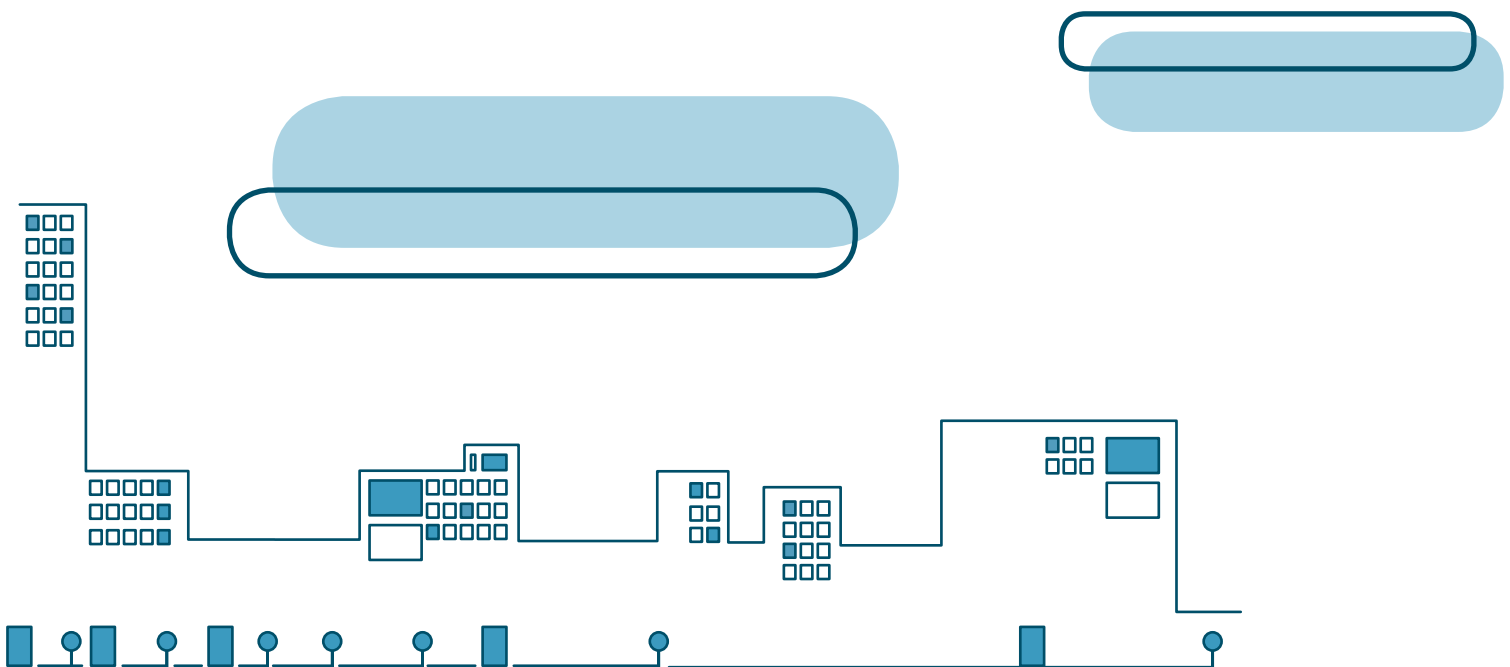
Possible City Actions	Checklist (For each of the suggested actions in this column, there is more detail in the previous section of the Playbook)	Happening Today?  Not at All, Partially, Fully	Priority Level? (1-3)	Responsible Party?
Address the digital divide for persons with disabilities.	<ul style="list-style-type: none"> <li>√ Assess accessibility of current digital infrastructure.</li> <li>√ Create strategies with specific goals and metrics to increase access to broadband connectivity, connected devices, and digital literacy skills.</li> <li>√ Leverage existing city resources and programs to provide access to digital infrastructure to persons with disabilities.</li> <li>√ Partner with communications providers to educate communities on the range of reliable and affordable internet options available to them.</li> <li>√ Ensure the digital accessibility of all innovation ecosystem venues, e.g. incubators, accelerators, etc.</li> </ul>			
Recognize that barriers in transportation and the built environment also impact whether persons with disabilities are able to participate in urban innovation ecosystems.	<ul style="list-style-type: none"> <li>√ Assess the current accessibility level of transportation systems and the built environment.</li> <li>√ Create improvement strategies with specific goals and metrics.</li> <li>√ Leverage existing city accessibility roadmaps the city has adopted (e.g., ADA Transition Plan).</li> <li>√ Ensure the physical accessibility of all innovation ecosystem venues, e.g. incubators, accelerators, etc.</li> </ul>			

## Play Four - Increase Inclusion in Innovation through the *Enabling Environment*

Possible City Actions	Checklist (For each of the suggested actions in this column, there is more detail in the previous section of the Playbook)	Happening Today? Not at All, Partially, Fully	Priority Level? (1-3)	Responsible Party?
Understand the current state of the innovation ecosystem	<ul style="list-style-type: none"> <li>√ Research how the city’s innovation ecosystem currently focuses on inclusion of persons with disabilities, e.g. review laws, policies, datasets, etc.</li> <li>√ Audit the city innovation practices, processes, and policies for references to disability, review cycles for changes, and alignment with existing state/provincial and national efforts.</li> <li>√ Analyze citizen feedback on existing city digital and smart services to identify areas for improvement and innovation.</li> <li>√ Determine if any citywide accessibility assessments/audits of public ICT and smart infrastructure assets and deployments have been performed.</li> <li>√ Align inclusive innovation objectives with other city priorities, e.g. economic development, resilience, sustainability, etc.</li> </ul>			
Leverage city assets to drive change	<ul style="list-style-type: none"> <li>√ Use city datasets to incentivize a greater commitment to inclusion, e.g. require accessibility training or certification in exchange for data</li> <li>√ Use city purchasing power to create market demand for inclusive innovation, e.g. require accessibility in city ICT procurements and discuss accessibility approaches with all ICT vendors</li> <li>√ Use the city’s unique public policy power and budget to enable inclusive innovation, e.g. funding and incentives for inclusive incubators and projects, building datasets, training IT professionals, etc.</li> </ul>			

## Play Four - Increase Inclusion in Innovation through the *Enabling Environment*

Possible City Actions	Checklist (For each of the suggested actions in this column, there is more detail in the previous section of the Playbook)	Happening Today? Not at All, Partially, Fully	Priority Level? (1-3)	Responsible Party?
Lead by example - demonstrate a strong commitment to inclusive innovation and accessible products and solutions across the city government.	<ul style="list-style-type: none"> <li>√ Build a city brand around inclusion and innovation</li> <li>√ Ensure that the city's own design systems and guides support accessibility and inclusion.</li> <li>√ Use city design guides to provide a seal of approval to any new technology solutions.</li> <li>√ Create a city certification of inclusive innovation for incubators, etc.</li> <li>√ Use inclusive innovation to solve real city needs and achieve desired societal outcomes</li> </ul>			





## Play Five – Increase Inclusion in Innovation through *Networking Assets*

Possible City Actions	Checklist (For each of the suggested actions in this column, there is more detail in the previous section of the Playbook)	Happening Today? Not at All, Partially, Fully	Priority Level? (1-3)	Responsible Party?
Raise awareness across the ecosystem about disability, diversity, accessibility, and inclusion.	<ul style="list-style-type: none"> <li>√ Engage key innovation ecosystem actors through conferences, networking events, thematic workshops, technology and innovation meetups, etc.</li> <li>√ Target investors and share with them both the business and human rights cases for greater diversity and inclusion.</li> <li>√ Develop or source disability and accessibility training and make available to incubators and accelerators.</li> <li>√ Bring the topic of accessibility and inclusion to the curriculum at local universities and colleges.</li> <li>√ Engage the C-suite, enlist corporate executives and city leadership to drive sustained change.</li> </ul>			
Define roles across the ecosystem.	<ul style="list-style-type: none"> <li>√ Define roles for promoting accessibility and universal design across city leadership and all actors in the city innovation ecosystem.</li> </ul>			
Build bridges and connect communities.	<ul style="list-style-type: none"> <li>√ Create or support a platform to convene different communities around inclusive innovation.</li> </ul>			

## Play Five – Increase Inclusion in Innovation through *Networking Assets*

Possible City Actions	Checklist (For each of the suggested actions in this column, there is more detail in the previous section of the Playbook)	Happening Today? Not at All, Partially, Fully	Priority Level? (1-3)	Responsible Party?
Leverage the existing ecosystem.	<ul style="list-style-type: none"> <li>√ Learn the current urban innovation ecosystem infrastructure, e.g. who are the actors and where can the city best engage them.</li> <li>√ Present the complex problems the city is facing to incubators, accelerators, VCs, civic hacking communities, etc.</li> <li>√ Make sure that universal design and accessibility requirements are clearly communicated in any innovation challenges or RFPs.</li> <li>√ Provide accessibility and universal design tools, best practices, and mentoring to startups working on new solutions, e.g. through onboarding processes, etc.</li> </ul>			
Promote city-to-city collaboration.	<ul style="list-style-type: none"> <li>√ Propose the addition of inclusive innovation to existing city-to-city collaborations.</li> <li>√ Participate in Smart City events to learn about new trends, available solutions, lessons learned, and best practices.</li> <li>√ Connect with other cities deploying Smart City solutions that are accessible and inclusive and request available guidelines, roadmaps, instructions, requirements and other relevant documentation.</li> <li>√ Collaborate on online webinars, online or offline workshops, and study tours for relevant city officials.</li> <li>√ Organize joint challenges to identify the most promising companies and inclusive solutions from around the world.</li> <li>√ Leverage existing city membership organizations to make inclusive innovation a focus and an area of collaboration.</li> </ul>			

# Endnotes:

<sup>i</sup> Innovation, as defined by the OECD, is the implementation or commercialization of a product or process with improved performance characteristics to deliver new or improved services to consumers. Cities and their urban innovation ecosystems, which the World Bank describes as the collection of stakeholders, assets, and their interactions in city environments that result in technology (in particular ICT)- based innovation and entrepreneurship, play a significant role in innovation and the growing role of technology in our daily lives.

<sup>ii</sup> <https://www.itu.int/en/ITU-D/Statistics/Documents/facts/ICTFactsFigures2017.pdf>

<sup>iii</sup> <https://www.grandviewresearch.com/industry-analysis/smart-cities-market>

<sup>iv</sup> <https://g3ict.org/digital-accessibility-rights-evaluation-index/>

<sup>v</sup> According to NESTA, a UK-based global innovation foundation, inclusive innovation policies are directed towards ensuring that the benefits and risks of innovation are more equally shared. These policies will actively consider whose needs are met by innovation and how excluded social groups could be better served, focus on initiatives that promote broad participation in innovation, and take a democratic and participatory approach to priority-setting and the governance of innovation. According to the InBIA, 69% of incubators in the United States have no demographic focus. 12% have a focus on college or university students. 9% have a focus on Hispanic participants and 8% on African American entrepreneurs. 6% have a focus on low-income participants and 4% have a focus on youth. They do not track or report how U.S. incubators focus on persons with disabilities.

<sup>vi</sup> Digital divide - whether and how persons with disabilities and older persons face barriers of access (e.g. connectivity, affordability) and adoption (e.g. digital literacy, relevance, consumer safety) to technology and digital services, including for Smart City programs and solutions. Other definitions: 1. A digital divide is an economic and social inequality in the access to, use of, or impact of information and communication technologies. [https://en.wikipedia.org/wiki/Digital\\_divide](https://en.wikipedia.org/wiki/Digital_divide) 2. The idea of the “digital divide” refers to the growing gap between underprivileged members of society, especially the poor, rural, elderly, and handicapped portion of the population who do not have access to computers or the internet; and the wealthy, middle-class, and young Americans living in urban and suburban areas who do have access. <https://cs.stanford.edu/people/eroberts/cs181/projects/digital-divide/start.html> 3. The term “digital divide” refers to the gap between individuals, households, businesses and geographic areas at different socio-economic levels with regard to both their opportunities to access information and communication technologies (ICTs) and to their use of the Internet for a wide variety of activities <https://stats.oecd.org/glossary/detail.asp?ID=4719>

<sup>vii</sup> The World Bank research and analysis on urban innovation ecosystems can be found at: <http://documents.worldbank.org/curated/en/623971467998460024/Boosting-tech-innovation-ecosystems-in-cities-a-framework-for-growth-and-sustainability-of-urban-tech-innovation-ecosystems>

<sup>viii</sup> [https://media.nesta.org.uk/documents/How\\_inclusive\\_is\\_innovation\\_policy\\_\\_Insights\\_from\\_an\\_international\\_comparison\\_v3.pdf](https://media.nesta.org.uk/documents/How_inclusive_is_innovation_policy__Insights_from_an_international_comparison_v3.pdf)

<sup>ix</sup> <https://www.pewresearch.org/fact-tank/2017/04/07/disabled-americans-are-less-likely-to-use-technology/>

<sup>x</sup> [U.S. General Accounting Office, 2003](#)

<sup>xi</sup> [Penfold, Cleghorn, Creegan, Neil, & Webster, 2008](#)

<sup>xii</sup> [Bureau of Transportation Statistics, 2018](#)

<sup>xiii</sup> Teach Access, a collaboration between members of higher education, the technology industry and advocates for accessibility, is working to ensure that accessibility principles and universal design are included in the curricula of computer science students, designers, and researchers in undergraduate and graduate schools as well as in continuing education courses. They build online learning tools to teach accessibility best practices and make them widely available to individuals, companies and organizations at no cost. <http://teachaccess.org/about/>

## Smart Cities for All

In 2016, G3ict partnered with World Enabled to launch the [Smart Cities for All](#) global initiative. Since then, Smart Cities for All has defined the state of ICT accessibility in cities worldwide and created tools and a path forward to improve the digital inclusion of persons with disabilities and older persons. Our goal is to eliminate the digital divide for persons with disabilities and older persons in Smart Cities around the world. We are partnering with leading organizations and companies to create and deploy the tools and strategies needed to build more inclusive Smart Cities.

