Digital Future Society

Beyond digital access as a human right in cities: proposing an integrated, multi-dimensional approach

A programme of

GOBIERNO DE ESPAÑA
VICEPRESIDENCIA PRIMERA DE GOBIERNO
MINISTERIO DE ASUNTOS ECONÓMICOS Y TRANSFORMACIÓN DIGITAL
SECRETARÍA DE ESTADO DE DIGITALIZACIÓN E INTELIGENCIA ARTIFICIAL

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About Digital Future Society

Digital Future Society is a non-profit transnational initiative that engages policymakers, civic society organisations, academic experts and entrepreneurs from around the world to explore, experiment and explain how technologies can be designed, used and governed in ways that create the conditions for a more inclusive and equitable society.

Our aim is to help policymakers identify, understand and prioritise key challenges and opportunities now and in the next ten years in the areas of public innovation, digital trust and equitable growth.

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Published
May 2023

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Introduction

Despite the threats posed to cities during the COVID-19 pandemic, the trend towards increased urbanisation is expected to continue, with an estimated 68% of the world's population (or roughly 2.2 billion new urban residents on top of the approximately 4.4 billion people already living in cities, expected to live in cities by 2050 (World Bank 2022; UN-Habitat 2022, p. 4). The policies and strategies that cities develop and adopt impact billions of people's lives, from land use to public transit, and waste removal to broadband connectivity.

Globally, public spaces and services are experiencing increased digitisation, especially in urban contexts. The rapid development of emerging technologies, paired with pressures from the COVID-19 pandemic and climate change crises have created conditions for accelerated digital transformations (Gangneux and Joss 2022). Household internet access has almost universally increased around the world since the early 2000s (ITU DataHub 2022). This trend is especially apparent in urban contexts, where population density and a concentration of economic and social activities can make internet infrastructure, networks, and devices relatively more affordable. Internet access is almost twice as high in urban versus rural areas, with a more pronounced gap in Africa and Asia (ITU 2022, p. 25). Cities are also more likely to have near universal mobile cellular-network coverage, with higher quality coverage compared to rural areas (ITU 2022, p. 35).

However, these statistics on internet connectivity and mobile network coverage only tell part of the story when it comes to digital access in cities. The digital divide is not exclusively a rural/urban one but also exists within cities (Reddick et al. 2020). Despite seemingly promising trends towards increased connectivity in cities, the COVID-19 pandemic, climate and political crises, conflicts, forced displacement, and deepening economic inequality have all exacerbated and further amplified existing digital divides, rendering access more difficult for systematically marginalised and excluded communities. These persisting urban digital divides undermine sustainable development, including UN Sustainable Development Goal (SDG) 11, which commits to "make cities and human settlements inclusive, safe, resilient and sustainable" (United Nations Department of Economic and Social Affairs n.d.). Lacking access to critical ICTs can exacerbate inequalities and prevent people from accessing information, healthcare, education, social services, employment, and economic opportunities.

Another core issue with urban digital transformation has been the underlying assumption in many smart city and urban digitisation strategies that the adoption of technologies will be beneficial for all inhabitants (See figure 1 for a breakdown of the digitisation, digitalisation, and digital transformation taxonomy). Technology is not an inevitable or guaranteed driver of sustainable development, especially considering the role some technologies are playing in undermining trust, mental health, and rights. For example, social media platforms enabling and proliferating climate denial (Treen et al. 2020; Turrentine 2022), vaccine hesitancy (Pierri et al. 2022), and conspiracy theories (Marwick and Lewis 2017); or employment instability resulting from mass layoffs at Big Tech companies such as Amazon (Weise 2022), Meta (Allyn and Yang 2022) and Twitter (Ortutay and O'Brien 2022) despite narratives encouraging people to pursue jobs in technology because they are more lucrative and stable; and algorithms and emerging technologies discriminating against and infringing the rights of various communities (Benjamin 2019; Eubanks 2018; Gebru et al. 2021; Noble 2018).

Figure 1.
Breakdown of digitisation, digitalisation and digital transformation

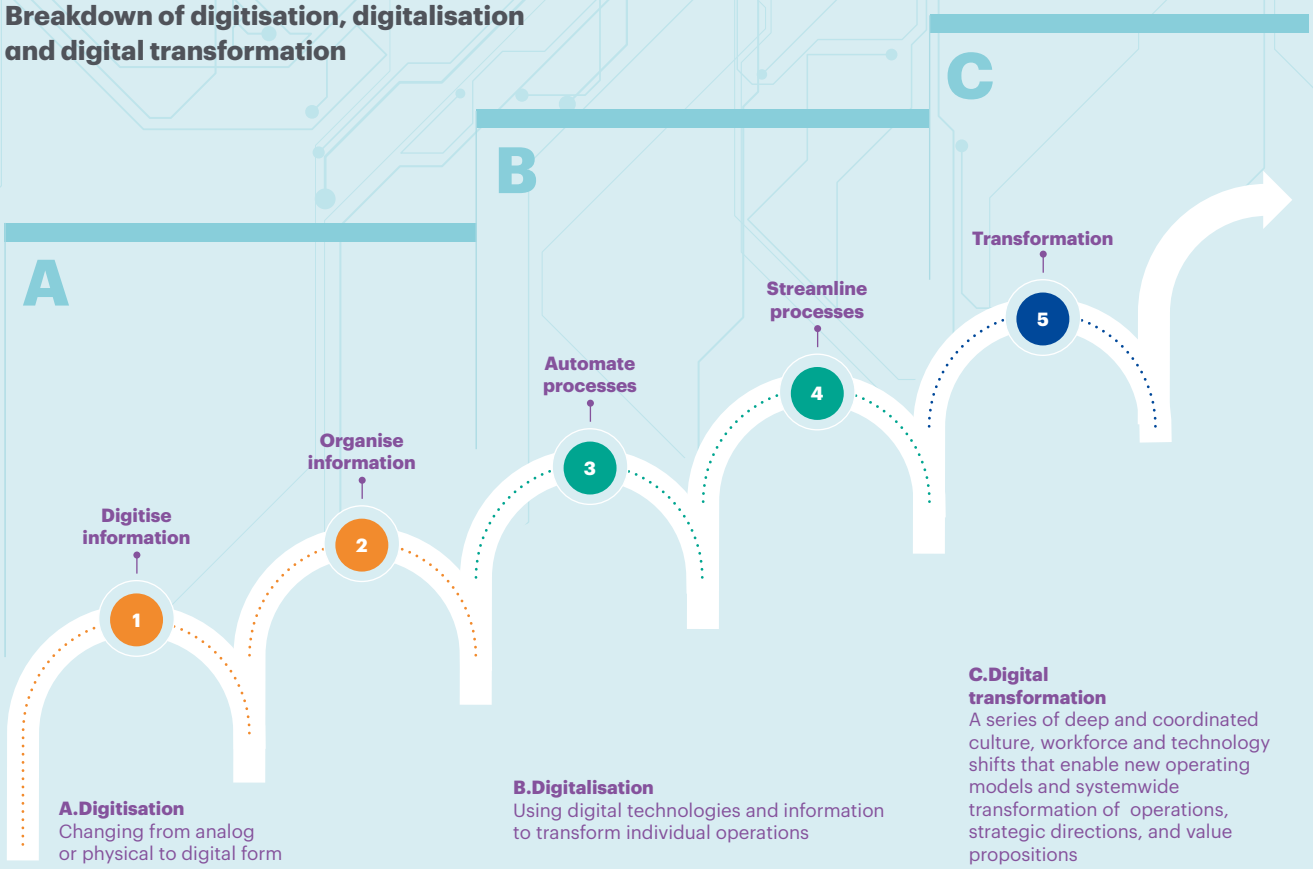


Image source: adapted from Brooks and McCormack 2020.

In this context, urban digital transformation, including the adoption of 'smart city' strategies, presents both opportunities and challenges for policymakers, civil society, and local residents. In the face of limited budgets and increased demands from growing urban populations, many cities are turning to big data and emerging technologies, such as artificial intelligence (AI), extended reality (XR)[1], machine learning, and biometric systems to help improve service delivery, leverage data to inform policymaking, and keep residents connected. Digital transformation can help advance sustainable development by leveraging information and communications technologies (ICTs) to streamline processes or facilitate access to information. However, these benefits have not been accessible to everyone, especially systematically marginalised communities (Arroyo-Menéndez et al. 2022). Not only are various communities unable to access the benefits of digitisation, many also experience specific harms resulting from emerging technologies. Therefore, the issue with urban digital transformation extends beyond the technology itself, implicating governance systems, policy approaches, and theories of change — or the lack thereof.

[1] Extended reality (XR) includes augmented reality (AR), virtual reality (VR), and mixed reality (MR).

In order to address these digital divides, some jurisdictions, such as Costa Rica (La Nación 2010), Finland (Ministry of Transport and Communications 2003), Greece (Hellenic Parliament 2008, p. 23), and Spain (Gobierno de España 2021), have formalised internet access as a legal right. While these national legal protections and frameworks for internet access are important for creating avenues for legal recourse, digital divides and access issues continue to persist at the local level, despite the adoption of human rights-based approaches by some cities. In practice, human rights-based approaches can be difficult to implement at a local level due to jurisdictional, capacity, and budgetary limitations. Cities would therefore benefit from adopting complimentary approaches, in addition to human rights frameworks, to meaningfully advance urban digital access.

Purpose

Cities have a unique opportunity to shape the future of digital governance and help ensure that urban digitalisation is contributing to sustainable development, rather than hindering it. Cities are increasingly finding themselves on the frontlines of digitalisation, serving as a hub where technologies are developed, tested, and scaled. City administrations have a wide scope of responsibilities, including the delivery of public services to city inhabitants that result in direct impacts on the everyday lives of residents. The unique needs and realities of cities necessitate the localisation of digital governance and technologies, since one-size-fits-all models are unlikely to address the needs of different communities. Simultaneously, to address and prevent the exacerbation of inequalities, municipal policymakers will need to prioritise digital access, inclusion and rights in their strategies and planning, and work in collaboration with communities to ensure digitalisation is effectively leveraged as a tool to improve people's health, wellbeing, and quality of life.

The United Nations University Operating Unit on Policy-Driven Electronic Governance (UNU-EGOV)[2] and Digital Future Society (DFS)[3], as part of a shared commitment to promoting a deeper understanding of the intersection of technology and society, have co-developed the following whitepaper as a contribution to the work of the SDG11 Global Council[4], of which DFS is a member. While some cities are beginning to adopt people-centred and human rights-based approaches to digital access, these approaches need to be complimented by a more comprehensive, systematic approach to digital access that prioritises the wellbeing, rights, and agency of people, communities, and the environment to help ensure cities do not widen digital divides.

Methodology

This whitepaper uses mixed methods research, including desk-based literature reviews, policy analysis, foresight, a survey, and interviews. In order to better understand the current landscape on digital access in urban contexts, a desk-based literature review was completed on urban

[2] UNU-EGOV, https://egov.unu.edu/

[3] DFS, https://digitalfuturesociety.com/

[4] SDG11 Global Council, https://sdg11gc.com/#about

digital access and digital divides, as well as smart cities. This review revealed an evolution over the course of two decades on how digital access has been defined and understood, which correlates closely to greater understandings of the multidimensional factors causing and influencing digital divides.

Six cities — Barcelona, Johannesburg, Mexico City, Riga, Singapore, and Toronto — were selected as case studies, with the intention of representing diverse geographic contexts, as well as cities in both the 'Global North' and 'Global South'. A survey was created and distributed to relevant municipal government officials and civil society actors to help develop a baseline understanding of existing digital access, inclusion, and transformation policies, strategies, and projects in each city context, as well as best practices and challenges to inform this paper's recommendations for policymakers and civil society. Key stakeholders were identified through desk-based research and via recommendations from UNU-EGOV's, DFS', and the researchers' respective networks. These stakeholders were invited to complete the survey and participate in a one-to-one interview via Microsoft Teams. Unfortunately, some municipal policymakers and civil society representatives from the cities selected as case studies, notably Johannesburg and Singapore, were unable to participate in the survey or interview. By the end of December 2022, nine individuals from Barcelona, Mexico City, Riga, and Toronto had completed the survey, and five individuals from Barcelona, Toronto, and Mexico City had participated in interviews.

Structure

Based on the insights derived from the research outlined above, the following whitepaper advocates for a hybrid intersectional, human rights-based, systems approach to advancing meaningful digital access. The first part of the paper explores the background of digital transformation in cities, including the drivers of urban digitisation, the impacts of the COVID-19 pandemic, and critiques of smart city strategies. Resistance against smart city approaches present windows of opportunity to reimagine how urban digital transformation is being approached and address current shortcomings for realising digital access.
The second part of the paper then demonstrates how, in parallel to deeper understandings of digital divides, there has been an evolution in the way digital access is conceptualised and understood from internet access to digital agency. Insights from survey respondents and interviewees revealed that while there is broad support for human rights frameworks and approaches, city policymakers and administrators experience limitations in implementing these into practice. The third section of the paper introduces a proposal to address the challenges and limitations discussed in the first two sections of the paper, arguing that while approaching digital access as a human right is important, cities need to adopt more integrated, multidimensional approaches that enable them to realise universal and meaningful digital access. It also presents the merits and limitations of human rights-based, intersectional, and systems approaches to digital access and provides examples of how various cities are promoting digital access, rights, and agency in practice. This section is then followed by a list of recommended actions for city officials, policymakers, and community leaders for implementing the recommended approach to realise digital access and SDG 11 (making cities inclusive, safe, resilient, and sustainable). Overall, the paper aims to guide local governments and civil society in how they can approach their work towards realising SDG 11 in tandem with facilitating more equitable and just urban digital transformations.

Digital Future Society

P1 Urban digital transformation: deepening digital divides

Rapid digitalisation of the economy and society

Technology is already impacting, most, if not all, cities — in varying degrees and ways. Digitalisation is actively being pursued as a priority policy agenda by cities around the world and cities are often key drivers of digital innovation and transformation. Many of the research centres and universities where technologies are designed, developed, and tested, are based in and around urban areas. Relatively higher population density makes cities attractive markets for tech companies and start-ups due to improved cost efficiencies and larger consumer bases, which can justify large capital investments in tech development. Cities are also able to generate large data sets more easily due to the high number of data points stemming from residents and the diversity of activities, demographics, and sectors represented in them, which many emerging technologies, such as AI and machine learning, rely on to function.

Industry 4.0 has introduced both new jobs and ways of working. Cities are now home to digital influencers and artists, digital innovation specialists, social media managers, podcast hosts, and cybersecurity professionals (Hallett and Hutt 2016). Automation and remote work are already impacting urban labour force markets, including service-sector jobs, which tend to be concentrated in cities. Organisations, including municipal governments, have needed to enhance their IT capabilities by hiring and creating dedicated technology teams to meet the demands of rapid digitalisation in the workplace, economy, and society. Cities are also adopting local currencies, supported by blockchain and other emerging technologies (Myung-hee and Ki-hwan 2021; Konieczna, 2021; Carmona 2022).

Technology and digital innovation are often presented as 'the solution' to the challenges cities are facing, to meet their residents' needs in the face of converging and complex crises, and the increased demands being placed on city infrastructure and services. Venture capitalists, Big Tech corporations and tech enthusiasts hail self-driving cars (Futurism 2017), blockchain (NLC 2018), AI-powered robots (AI for Good 2022), and augmented and virtual reality (Bloomberg Cities Network 2022) as game changers and panaceas for cities. However, forward-looking, futuristic narratives on these emerging technologies can mask and draw attention away from the ways technology is currently impacting people's lives in cities.

The reality is that digital technologies have both positive and negative impacts on people in cities. The adoption and proliferation of technologies has made it possible for people to purchase goods and services without physical currency, use digital government services, and communicate with colleagues, family, and friends virtually. People are more readily able to access social services online via dedicated websites, mobile apps, virtual assistants, and social media platforms. Visually-impaired people can cross roads more safely, efficiently, and independently using assistive mobile technologies (Huang et al. 2022). Zero-emission buses, rapid transit, public transit apps, automated fare collection, ride and bike sharing services, and hybrid vehicles have transformed the urban mobility landscape, presenting opportunities to reduce emissions, improve transit planning and sustainability, and facilitate greater accessibility. The introduction of public Wi-Fi hubs and access points in metropolises are helping people connect online. New homes are being outfitted with smart thermostats, lighting systems, EV charging stations and appliances that connect to the internet. All while police forces are using facial recognition technologies, such as ClearView AI, to surveil people, especially Black, Indigenous, and racialised persons (Dauvergne 2022; Eneman et al. 2022).

Impact of the COVID-19 pandemic

The COVID-19 pandemic has simultaneously accelerated the digitisation of cities and revealed the limitations of technology-centred approaches to complex societal challenges. Some communities were able to use technology as a stop-gap measure to facilitate access to information and resources, while others, especially those with experiences of marginalisation, experienced greater disparities in access. In the absence of universal, equitable digital access and effective measures to prevent and address the specific harms that digital technologies can present, the rapid and reactionary adoption of digital technologies during the pandemic has resulted in a decline in public trust and exacerbation of inequalities.

Public health measures, such as social distancing and stay at home orders, forced many people to pivot to virtual learning, work, and healthcare, in an attempt to mitigate risks to public health systems amidst increased demand and pressure from the pandemic. In the absence of clear and coordinated responses to community needs from governments and non-profit organisations, many communities around the world developed 'community action networks' or 'community care groups' using platforms such as WhatsApp, Facebook and Zoom (Odendaal 2021; Seow et al. 2021). These initiatives were usually place-based, mobilising people within a local community, city, or metropolis to crowdsource resources, support and credible information using ICTs. While some people were able to benefit from teleconferencing technologies and 'smart' devices, not everyone has been able to access digital tools, infrastructure, and opportunities.

The proliferation of information online has contributed to an infodemic[5] across issue areas, making it difficult for people to understand what is true and make informed, evidence-based decisions accordingly. This is especially concerning for cities that are directly impacted by climate and public health crises, bearing the costs of climate denial and vaccine hesitancy through increased healthcare costs, infrastructure damage, displacement, revenue loss from cycles of lockdowns, and rising death tolls (OECD 2020; C40 Cities 2022). The adoption of technologies without due regard for their harmful impacts, especially on marginalised and excluded communities, is contributing to deepening urban digital divides.

Healthy cities depend on public and community trust. Information silos on social media have contributed to polarisation, radicalisation, and distrust online and offline (Arora et al. 2022; Azzimonti and Fernandes 2022; Kushwaha et al. 2022). Pop-up governance[6] is further hindering trust, leading to the adoption of ad-hoc and reactive policies, programmes, and technologies during crises. For example, during the pandemic many cities adopted COVID-19 contact tracing apps, most of which were proven to be ineffective (Martonik 2021). These apps likely created a false sense of security for people who downloaded and used them, leading them to believe they were effectively tracking their encounters with confirmed cases of COVID-19. Deploying technologies that are not fit for purpose contributes to eroding trust.

While the COVID-19 pandemic, in its own right, has exacerbated the challenges cities face, digitisation has perhaps been more nefarious in its impacts. Technology, often presented as a solution to the many challenges cities are facing, can escape criticism from policymakers and residents alike, who may not be aware of or directly affected by its negative impacts. Techno-solutionism[7] can distract from the real challenges people in cities face, leading to the adoption of technologies that do not have a meaningful or consistent impact on the issues at hand. Digitalisation amplifies existing inequities in cities, further widening the gap between those who have reliable, affordable, and safe access to public services, goods, and spaces, and those who do not. So-called 'smart' innovations are also critiqued for being "ecologically and socially unsustainable" (Ferreira 2022), thereby undermining sustainable development efforts. Without addressing underlying and pre-existing inequities and structural issues, emerging technologies can result in greater risks and harms for city residents and visitors.

[5] The term "infodemic" was first coined by David Rothkopf in a 2003 Washington Post article on the SARS outbreak, as a portmanteau of information and epidemic. The term refers to an overabundance of information (both true and false), which can make it difficult to have an accurate understanding of an issue.

[6] Defined as "hasty, real-time, and temporary changes to the use and regulation of public space" (Flynn and Thorpe 2021).

[7] Techno-solutionism is the idea that a simple technology or technological intervention can fix complex societal and systemic problems. By oversimplifying, misunderstanding, or ignoring the various factors that contribute to the problem, techno-solutionism can reduce people's social and political agency, and undermine people's ability to understand their role in systems (Moll 2021).

The ‘smart city’ and the disconnected community

For the last two decades, the push for digitalisation and digital innovation in city contexts has contributed to the development and promotion of the ‘smart city’ by both the private and public sectors. Over 178 local governments around the world have developed policies and strategies to promote smart city agendas (Funicello-Paul 2017). The Institute for Management Development defines the smart city as an “urban setting that applies technology to enhance the benefits and diminish the shortcomings of urbanisation for its citizens”, including 118 cities in its index (IMD and SUTD 2021). While there is no universal, agreed upon definition of a smart city, it generally refers to the adoption and promotion of electronic and technology-based services, digital infrastructure, and big data to enhance the efficiency and cost-effectiveness of service delivery and policy development.

The ways in which smart cities are conceptualised and realised can undermine the foundational principles and ideals of cities. Smart city agendas have resulted in hundreds of projects leading to the digitisation of city services and public spaces. This approach to urbanisation centres technology, prioritising digitisation as the end goal. By positioning technology as smart, it also implies that non-digital approaches are not (smart). The non-technical is deprioritised in municipal budgets and strategic plans in favour of technological utopias that have proven to be anything but. For example, China’s technology-powered social credit system has resulted in a dystopic reality for people throughout the country, but especially in cities, where the government, in partnership with private actors, is using mass and targeted surveillance to curtail people’s freedoms and exert control on people’s lives (Greenfield 2018; Mozur 2018). Private actors often see the smart city as an opportunity to advance their own commercial interests by collecting (and selling) data, testing emerging technologies on people in cities, and privatising city services and infrastructure (Söderström et al. 2020). A lack of understanding among city administrations and policymakers of how technologies work and the impacts they have, paired with the absence of effective technology regulations and policies, is contributing to a dynamic that sees cities ill-equipped to safeguard against corporations pushing the unhindered adoption of digital technologies without a critique of the role they play in achieving (or undermining) access to public services, space, and information. Therefore, a lack of digital literacy, tech regulations, and digital governance enables the privatisation of the city via technology.

Communities may lack the time and critical digital literacy to keep up with the rapid pace of technologies being adopted and promoted by cities or private companies. Many communities are not engaged in the process of deciding if, when, and how these technologies will be used. In this regard, the smart city can contribute to a greater disconnection among people and between city residents and policymakers, even as more people are able to connect to the internet.

Pushing back against the smart city

Despite the prominence of the smart city in urban planning and innovation circles, it has not been universally welcomed around the world. For example, in May 2020, Sidewalk Labs was forced to cancel its project for the proposed development of Quayside waterfront property in Toronto, Canada (Jacobs 2022) after residents and coalitions of civil society and community organisations pushed back citing concerns about privacy and surveillance.

There are also concerns that corporations are using the smart city approach to advance their interests by encouraging the adoption of ICTs, Big Data, IoT and virtual or digital tools as a means to address complex urban challenges (Smith et al. 2022). This can lead to the private capture of public infrastructure and services, especially in the absence of transparent and ethical municipal tech procurement policies and processes.

The costs and risks associated with smart city strategies are largely borne by city residents, especially the most marginalised among them. Municipal residents often end up paying or subsidising costly digitisation and transformation projects, while private sector partners profit from them. The "first wave" of smart city initiatives were shaped by corporations, positioning themselves as the main solution to urban problems in the aftermath of the 2008 global financial crisis (Voorwinden 2021). People end up paying not only the financial cost of these initiatives, but political, environmental, health, and social costs as well. In the absence of meaningful and effective digital governance and literacy, smart city-inspired public-private partnerships can overtake public sector responsibilities without public accountability and oversight, weakening democratic institutions. Where meeting the needs and interests of certain communities is considered to be unprofitable, corporate capture of city planning and digital transformations risks greater exclusion and marginalisation, as well as undermining democracy (reSITE n.d.). The manufacturing and deployment of these technologies can also negatively impact the environment through resource extraction, e-waste, and high energy consumption (Huang et al. 2021; Obringer et al. 2021). Disadvantaged, excluded, and marginalised communities, whose needs and realities may not be considered in the design and deployment of smart city technologies, are less likely to benefit from them (Seung-Yoon et al. 2021; Jeon 2022).

The issues extend beyond the function, efficiency, and reach of digital technologies since the ways in which smart cities are conceptualised and designed can introduce or reinforce problematic and inequitable power systems to cities, including patriarchal and colonial dynamics. Smart city strategies tend to encourage and advocate for the collection of large amounts of data, contributing to the commodified datafication of city residents' lives, with particular harms for systematically marginalised groups. For example, the use of smart city infrastructure and services by authorities to surveil asylum seekers and migrants endangers them and contradicts the idea that cities are welcoming to immigrants (Mahmoudi 2020). In this regard, the smart city undermines the very idea of the city, whether it is explicitly a sanctuary city or not. Furthermore, the lack of oversight and ownership of the data by community members can hinder people's ability to exercise agency over what is done with their data, who has access to it, and for what purposes. In particular, this extractive datafication threatens the data sovereignty and agency of Indigenous and African people in ways that parallel natural resource extraction and exploitation (Nhemachena et al. 2020). In cultures and communities that see data as relational, the commodification and exploitation of their data may be understood and experienced as a direct harm to the person or community the data relates to. Some scholars argue that the smart city may, in addition to perpetuating existing colonial and capitalist dynamics, constitute a colonial infrastructure in its own right by pushing for development agendas that may not be in the interests of or be designed by local communities (Eichenmüller 2022).

Some cities are already pushing back against traditional smart city approaches to digital transformation. Instead of the 'Smart City', Toronto is shifting its focus to the idea of the Connected Community, with the goal of ensuring "people are included and easily connected — not divided — in this digital city" (City of Toronto 2017). While the Sidewalk Toronto example is one of the starkest examples, pushback against the traditional Smart City approach to urban digitisation is no longer uncommon. In 2018, Amsterdam, Barcelona, and New York City launched the Cities Coalition for Digital Rights to promote and defend digital rights in urban environments "to ensure fair, inclusive, accessible and affordable non-discriminatory digital environments" (Cities Coalition for Digital Rights). In 2020, the United Nations Human Settlements Programme (UN Habitat) launched its People-centred Smart Cities programme to "ensure sustainability, inclusivity, prosperity and human rights in cities" (UN-Habitat n.d.).

Urban digital challenges and barriers to access

Many existing urban digital transformation strategies, technologies, and policies are enabling and perpetuating various digital challenges at the local level. Cities are impacted by these digital challenges in specific ways and are targeted and made vulnerable because of the various infrastructure and services they are responsible for and host. In turn, these challenges create and manifest themselves as barriers to access (see figure 2). While digital access is often mistakenly equated solely with internet or digital device access, looking at the various ways in which digital technologies or policies hinder or enable access can contribute to a more robust understanding of the concept. In turn, a deeper understanding of urban digital access can help inform approaches to advancing access and addressing digital divides in cities.

Figure 2. Urban digital transformation challenges and access

CHALLENGE

CYBERSECURITY

Description
Residents, visitors, and infrastructure experience increased vulnerabilities and risks as cities digitise critical services and infrastructure. Increased securitisation and criminalisation of residents' activities and persons through surveillance, restricted movement and mobility, and e-policing. Traditional security apparatus, including municipal police and national military may not be equipped to proactively address cyberthreats in cities, which are simultaneously local and global in nature.

Example(s)
Ransomware attacks on government services, theft of residents' data, and compromised devices via insecure public Wi-Fi networks (Marks 2021).

Impedes access to...

- Services, goods, and infrastructure
- Technology
- Digital wellbeing

CHALLENGE

DATA COLLECTION

Description
Data collection becomes ubiquitous. Residents' data is collected without their knowledge or consent. There are also real concerns about whether meaningful consent is possible when people are dependent on these technologies to access services, goods, spaces, and opportunities.

Example(s)
In order to use public transit systems, residents may be required to use automated fare collection systems which store and track data on people's movements. In contexts where physical currency is no longer supported as a valid fare payment, the only way people can use public transit is by using the card system (Pera 2021).

Impedes access to...

- Data
- Information
- Digital agency
- Data storage and responsible management processes
- Justice

DATA PROTECTION

Description
Weak data protection systems, if they exist at all, expose residents to harm and risks, with disproportionate impact on systematically marginalised communities, such as gender and sexually diverse persons, persecuted ethnic and religious groups, and racialised communities. Responsibility and accountability for data protection may be unclear, especially when private actors and/or public-private partnerships are involved.

Example(s)
The UK Government, post-Brexit, is revising its data protection legislation (Data Reform Bill, 2022) in a manner that could result in the rollback of some of the protections afforded by the European legislation GDPR (Woodhouse et al. 2022). As named data controllers, local governments will be directly impacted by these changes.

Impedes access to...

- Services, goods, and infrastructure
- Governance forums
- Justice
- Information

CHALLENGE

DIGITAL APARTHEID, COLONIALISM, AND IMPERIALISM

Description
Racist and discriminatory algorithms and exclusionary tech design can reinforce existing divisions or perpetuate new ones in a virtual environment.

Example(s)
In Johannesburg, the privatisation of public safety and security by technology companies has resulted in a digital apartheid whereby affluent white residents pay for surveillance services and Black residents are surveilled and criminalised (Hao and Swart 2022). Tech companies, such as Zoom, Meta, and Twitter, have been accused of reinforcing Israeli apartheid policies online, contributing to the erasure and censorship of content on the forced displacement of Palestinians from Sheikh Jarrah, a neighbourhood in Jerusalem (Al Jazeera 2021).

Impedes access to...

- Co-design and development of technologies
- Justice
- Space
- Information
- Knowledge
- Digital wellbeing
- Culture
- Community

DIGITAL GOVERNANCE

Description
Existing policies and protections frameworks, which primarily focus on privacy without addressing power dynamics and agency, are unable to keep up with the rapid and unregulated development and deployment of emerging technologies. Digital governance systems fail to meaningfully represent, include, and engage diverse people in decision and policymaking. There can also be a lack of clarity on who governs the data in cities and how.

Example(s)
Constrained forms of e-participation implemented by the local government in Bogotá, Colombia from 2016-2019 restricted democratic engagement by "limiting participation to superficial decisions, failing to link participation to specific actions, and creating rigorous participation protocols that excluded a majority of the population and avoided dissent" (Robertson 2022).

Impedes access to...

- Co-design and development of technologies
- Space
- Governance forums
- Accountability mechanisms
- Justice
- Agency

CHALLENGE

DISPLACEMENT

Description
Digitisation can lead to the gentrification of communities and displace people who can no longer afford the higher cost of living.

Example(s)
The digitisation of community engagement in the cities of Melbourne and Maribyrnong is argued to be a form of e-gentrification, contributing to wider processes of gentrification which favour wealthy communities in urban development, planning, and policy processes (Middha and McShane 2022).

Impedes access to...

- Space
- Infrastructure
- Community
- Justice

INFODEMIC

Description
Abundance of information and information disbursement that may or may not be accurate and reliable, including disinformation, misinformation, and malinformation. Infodemics impede policymakers' and residents' ability to make informed decisions and to have a shared frame of reference for the truth.

Endangers the health and security of people living in cities (e.g., climate denial, anti-vaxxers, racial stereotypes or xenophobia, political violence, etc.).

Example(s)
The COVID-19 infodemic has resulted in vaccine hesitancy and anti-vax movements, jeopardising public health and safety (Lin et al. 2022).

Impedes access to...

- Services, goods, and infrastructure
- Information
- Data
- Health
- Digital wellbeing
- Knowledge

CHALLENGE

TECHNOLOGY DEPENDENCE

Description
Residents become increasingly dependent on affordable, stable, reliable, and quality network connection, and digital devices to be able to access public services, spaces, and goods.

Example(s)
Poorer health and education outcomes in communities that lack quality access to the internet (Early and Hernandez 2021; Bonacini and Murat 2022).

Impedes access to...

- Access to services, goods, and infrastructure
- Digital infrastructure
- Information
- Health

JOB PRECARITY AND ECONOMIC EXCLUSION

Description
Narratives about the future of work that promote tech jobs as stable and well paid can mask the precariousness of jobs in the tech sector, especially when relevant regulations, protections, and support systems are not in place. Furthermore, people who lack the necessary digital skills are excluded from digitalised economies.

Example(s)
Technology companies, such as Amazon, Meta, and Twitter have laid off thousands of workers, not only leading to job loss but in some cases loss of residency status or eligibility for visas (Shah 2022). This poses a challenge for urban placemaking, since people may be beholden to a company for their visa, dictating whether they can remain in a city they may have relocated to and built a life in.

Impedes access to...

- Opportunities
- Space
- Digital agency

CHALLENGE

PRIVACY

Description
Unfettered access to people's personal information and space by government and private actors becomes normalised. Privacy and access are dichotomised, making it seem that one needs to choose between the two.

Example(s)
In Gladsaxe, Denmark, local authorities tested an algorithmic decision-making model that used a point-based system to "trace children who were vulnerable due to social circumstances" (Alfter 2019). Information and evaluations of the children were prepared and stored without parents' knowledge and consent, and in breach of existing privacy protection legislation. Plans to scale the model nationally were cancelled after public criticism of the model and experiment.

Impedes access to...

- Information
- Data
- Justice
- Digital agency

SURVEILLANCE

Description
Governments, police forces, and private corporations track residents' activities, personal associations, and movements using digital technologies, such as facial recognition, biometrics, GPS-enabled devices and apps, and social media without their knowledge or informed consent. People are unable to meaningfully refuse or opt out of surveillance. Systematically marginalised communities' movements and freedoms are restricted as a result of this surveillance.

Example(s)
Facial recognition technologies are being used to reinforce racist policing in cities such as New York City (Amnesty International 2021; Amnesty International Canada 2022).

Impedes access to...

- Services, goods, and infrastructure
- Justice
- Information
- Digital agency

Digital Future Society

P2
Evolving our understanding of digital access

Defining digital access

Digital access is often mistakenly understood to be equivalent to or synonymous with internet access but is in fact more complex and multi-dimensional. While internet and device access are important, it is not sufficient for promoting meaningful and universal digital access. Seeing technology as a means to an end can lead policymakers, technologists, and civil society to lose sight of the people and communities designing, developing, deploying, and decommissioning technologies; the conditions enabling access; and a critical perspective on their use or purpose. Failing to account for a more comprehensive understanding of and approach to access can lead municipal policymakers to develop policies and programmes that inhibit sustainable development and lead to widening inequality among city residents.

The urban digital divide is further perpetuated when we lack a nuanced understanding of digital access issues because in many cases we end up 'solving' the wrong problem, thinking that getting connected devices into the hands of all city residents will solve digital access issues. There is no clear, agreed upon definition of digital access in existing literature or among authoritative bodies, such as the International Telecommunications Union (ITU). This was further reaffirmed by the diversity of responses received from local policymakers, government officials, and civil society to the research's survey on digital access.

EXAMPLES OF THE WAYS IN WHICH RESPONDENTS DEFINE DIGITAL ACCESS INCLUDE

Bani Brusadin

Curator at transmediale and Lecturer at Universitat de Barcelona (Barcelona University), Elisava

"Digital access is the possibility to operate network technologies, free access to relevant information and digital procedures, and the cultural skills and literacy required to understand the functioning of data-based systems and their impact on all spheres of contemporary society (bureaucracy, economy, democracy, education, climate and planetary resources)."

Bianca Wylie

Partner at Digital Public, Co-Founder of Tech Reset Canada

*"Digital access entails access to both a digital service *and* a non-digital alternative; both of these are critical to equity in digital access. It requires understanding who uses digital information for what purpose and with clear pathways to access accountability should it be needed."*

Saadia Muzaffar

Co-Founder and Organiser of Tech Reset Canada

"Digital access is the unhindered and accessible ability for all residents (not just citizens) to fully participate in digital society. This includes access to tools and technologies, such as the Internet and computers that allow for full participation and the availability of non-digital options for equitable access to information and services, so digital does not become an inequality gate."

Michel Mersereau

Management Consultant for the City of Toronto, Sessional Lecturer at the University of Toronto

"From an equity perspective, digital access is a state where a citizen's access and ability to constructively utilise digital technologies is not unjustly impaired (e.g., by poverty, race, language or age)."

Hamish Goodwin

Management Consultant for the City of Toronto

"Digital access is comprised of three concepts: digital divide, digital equity, and digital literacy. Digital divide is the disparity within the population regarding access to digital technologies, including the internet, due either to a lack of equipment and services or a lack of knowledge and understanding of these technologies, and affordability. Digital equity is equal access and opportunity to digital tools, resources, and services to increase digital knowledge, awareness, and skills. This includes the equitable application of the digital data, tools, programmes, and services needed for full participation in our society, democracy, and economy. Digital literacy is the ability to understand and use digital communication technologies, including digital data, in everyday life to achieve personal goals and to expand one's knowledge and abilities."

Marc Pérez-Batlle

Innovation Manager of Ajuntament de Barcelona (Barcelona City Council)

"Digital access is good connectivity, good digital devices, and good digital training or skills."

The ways in which digital access is understood seems to be influenced by the context in which it is being used. In urban planning, digital access typically refers to connectivity and the availability and distribution of digital technologies and infrastructure among residents. Traditionally, urban digitalisation strategies have placed a greater emphasis on the digital aspect of 'digital access' by centring digital technology.

In the context of Smart City strategies, many municipalities initially sought to advance 'digital access' by increasing residents' access to the internet and tech infrastructure and devices. In corporate or privatised contexts, digital access is conceived as an economic necessity — improved connectivity enables people to participate in markets, work remotely, and engage in e-commerce as consumers. In this conceptualisation, technology is a means to maximising profits for corporate interests.

Solely relying on digital technologies to facilitate access to services and goods can overlook communities who are systematically marginalised and not considered or meaningfully engaged when designing, developing, and deploying digital tools and strategies. Over time, it has become clear that to meaningfully advance digital access, cities need to address the underlying systems, structures, and power dynamics that create, perpetuate, and amplify inequities and injustices.

To have a clearer understanding of how to improve digital access, it is important to understand what causes and contributes to digital divides. This means our understanding of digital access must continue to evolve as our understanding of what contributes to digital divides expands. If we were to measure digital access based on internet connectivity, we may be led to believe that there is no digital divide in some cities, such as Hong Kong or Singapore. However, even in contexts where internet connectivity is almost universal among residents, digital divides continue to persist. There is no single digital divide; availability, affordability, quality, relevance, security, equipment, and infrastructure all contribute to digital disparities (Muller and Vasconcelos Aguiar 2022). This understanding of digital divides has prompted scholars and policymakers alike to look at other determinants of digital access. In the early 2000s, the primary focus on physical and material access to technology shifted to include digital skills and usage, with the idea that simply wanting and possessing a digital device or being connected to the internet was not enough for a person to use and benefit from it (Van Dijk 2012). These skills may include typing, basic troubleshooting of devices, cyber safety and security, and coding. The concept of digital literacy[8] serves as an umbrella for both the skills and tools needed to understand, use, and benefit from digital technologies and constitutes another layer of digital access.

However, the introduction of digital skills training has also been insufficient in addressing persisting urban digital divides, especially when the underlying social determinants of access are not considered and addressed. In the early to mid-2010s there was increased recognition of both the social determinants of digital access and digital access as a social determinant of health (Wijers 2010; Lockwood et al. 2015; Qadikolaei et al. 2022). Policymakers should be wary of focusing on any one social determinant in their response to digital divides, since factors such as age, class, gender, race, and disability each impact digital access independently (Yates et al. 2015; Park 2021). Neglecting to account for all of these factors using a more systematic approach can result in further marginalising communities who have intersectional experiences of oppression and exclusion in both digital and non-digital spaces.

There is no one quick fix for improving digital access for urban dwellers. A lesson we are repeatedly having to learn during crises. Hybrid workforces are reorienting cities' digital agendas, focused on efficiency and optimisation prior to the COVID-19 pandemic, toward digital equity and quality of life in order to retain and attract talent and workers (Clark and Gamiño 2021). It also became evident during the COVID-19 pandemic that we cannot rely on digital technology alone as a means to facilitate access to education, which has led to the adoption of hybrid models that make use of radio, art, and nature-based learning (UNESCO 2020). Individuals' and communities' experiences of marginalisation in cities were often replicated or further amplified in digital spaces, as evidenced by persisting digital divides for women, as well as unhoused, elderly, and disabled persons.

[8] UNESCO defines digital literacy as "the ability to access, manage, understand, integrate, communicate, evaluate, and create information safely and appropriately through digital technologies for employment, decent jobs, and entrepreneurship. It includes skills such as computer literacy, ICT literacy, information literacy and media literacy which aim to empower people, and in particular youth, to adopt a critical mindset when engaging with information and digital technologies, and to build their resilience in the face of disinformation, hate speech and violent extremism." (UNESCO, 2023).

If these digital interventions predictably exclude certain communities, the very ways in which they are designed then comes into question. One of the potential answers lies in the fact that marginalised communities are often underrepresented and can be excluded entirely from decision-making and governance systems related to urban digital transformation. Urban planners and policymakers should take care to not replicate existing systems of harm and perpetuate inequitable power dynamics by dictating the types of technologies and the ways they are used on or by marginalised communities. Instead, a critical aspect of achieving digital access is recognising and supporting the inherent agency of stakeholders in shaping and governing digital transformations. Digital agency recognises the capability and rights of people to choose and influence how they engage and interact in the socio-digital contexts they live and experience (Rehof and Larrauri 2021), beyond being passive actors in systems and processes. By recognising the agency of urban dwellers, policymakers can better conceive of them as partners in co-creating and implementing digital transformation strategies and plans that meaningfully realise and advance sustainable development equitably for all people.

Accessing services and goods via technology should not jeopardise or impede equitable access in non-digital formats and contexts. The reality is that as much as the accelerated adoption and proliferation of technologies are impacting the day-to-day lives of people living in cities, digital-first or digital-only approaches are not the only or best way of living and should not be treated as such. For cities to meaningfully advance sustainable development, they will need to improve the design, delivery, and accessibility of both digital and non-digital goods and services, information systems, and governance mechanisms. In this regard, it is important for policymakers to avoid seeing technology adoption as an end in and of itself. Instead, they should pay more attention to how technology can facilitate or hinder access to public goods and services. By focusing on technology as an enabling tool instead of 'the' solution to urban sustainable development, local governments can better discern its usefulness and the need for certain digital technologies in collaboration with residents, instead of promoting blanket adoption of all 'innovative' and 'emerging' technologies.

Policymakers ought to be guided by five key questions when conceptualising digital access programmes and strategies:

1. What is being accessed? And by whom?
2. What is preventing residents and visitors from accessing public services, goods, and spaces?
3. Is digital technology best suited to facilitate access for residents?
4. What skills and literacies do residents need to meaningfully access, use, and benefit from these digital technologies and processes? How can the government help facilitate the acquisition and development of these skills and literacies?
5. How are decisions about urban technology design, development, deployment, and decommissioning made? Who makes these designs? How will these processes be more inclusive and just?

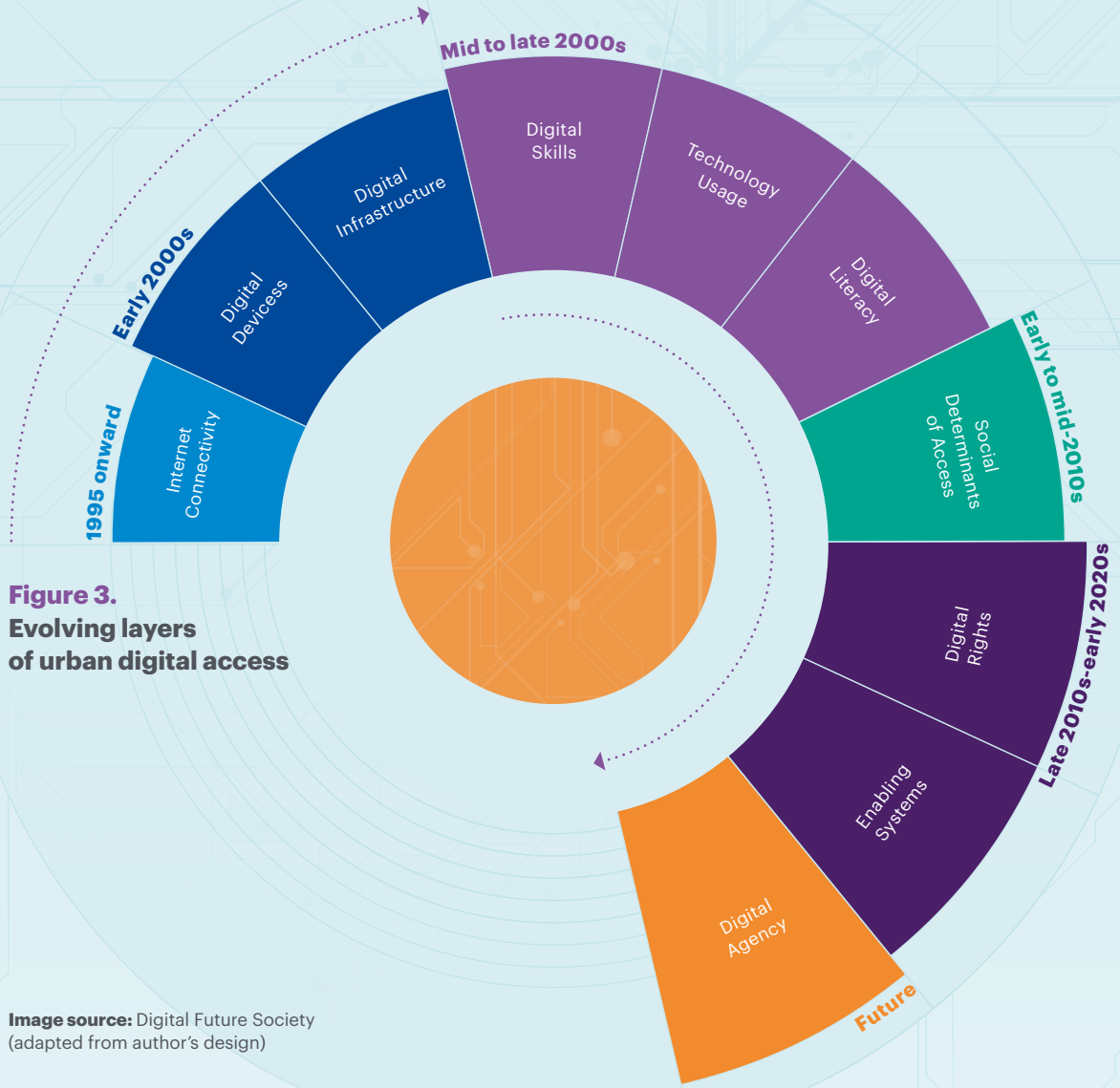


Figure 3.
Evolving layers of urban digital access

Image source: Digital Future Society (adapted from author's design)

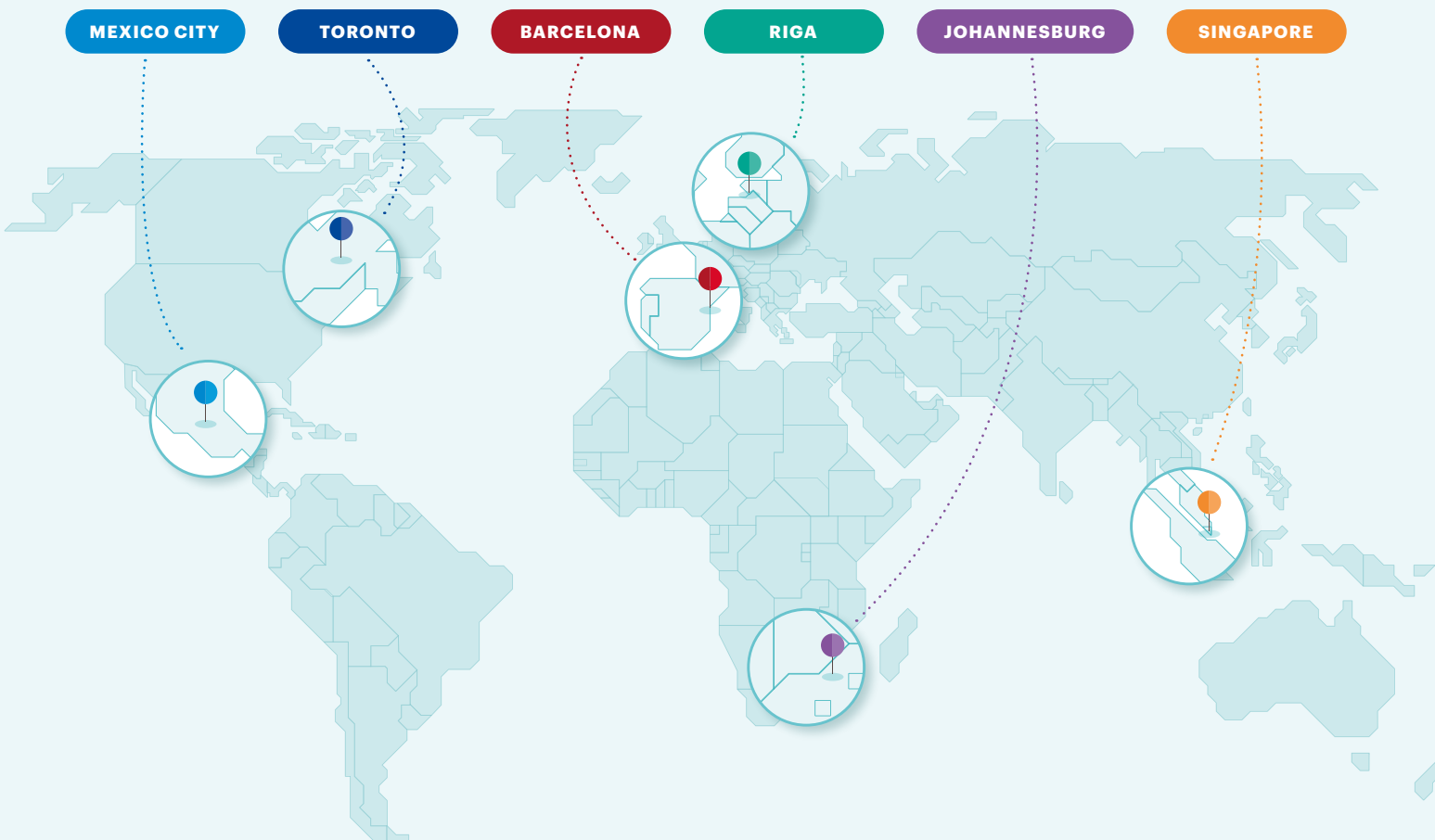
Overall, understandings of digital access that do not extend beyond digital devices and networks to include social, legal, cultural, and political considerations risk leaving marginalised communities behind in the sustainable development agenda. By drawing on lessons from our evolving understanding of what contributes to and constitutes digital divides, local policymakers can pursue more comprehensive strategies to advance digital access. Digital access, therefore, should be understood as a continuum that includes public infrastructure, digital devices and tools, data, skills, usage, literacy, social and economic determinants, enabling conditions, opportunities to engage in the design, development, and governance of digital technologies, and avenues for protection from technology-facilitated harms and rights violations (Please see figure 3: Evolving layers of urban digital access).

The state of urban digital access

Information regarding digital transformation, access, and inclusion policies are generally inaccessible. Therefore, to better understand the state of digital access in urban contexts, the research for the whitepaper included a survey and interviews with government officials and civil society actors regarding digital access in six cities around the world: Barcelona, Johannesburg, Mexico City, Riga, Singapore, and Toronto. Invitees from Johannesburg and Singapore were unable to respond to the survey or participate in an interview - therefore they are absent from the challenges and priorities section below. However, both cities are included in Figure 4 and Johannesburg is included as a case study in Part 3 based on desk research.

Key digital access challenges and priorities

This section covers the key challenges and priorities identified by survey respondents and interviewees. While each city has specific challenges that are unique to its context, there are common themes that emerge, including the need to build and develop the digital skills and capacities of municipal administrations and policymakers, design programmes and technologies that are universally accessible, improve coordination among all stakeholders and ensure access to adequate funding to effectively implement policies that promote sustainable and equitable development.



BARCELONA

Digital Access Challenges

- limited types of beneficial digital engagements and activities among digitally excluded and marginalised groups
- digital inclusion and access policies are costly and municipal governments have limited budgets
- capacities at different levels of municipal administration to adapt for digital transformation
- municipal social service databases are not digital divide-oriented.

Digital Access Priorities

- targeting digital policies to meet the needs of marginalised populations' and to ensure universal quality access
- education free of corporate platforms and private interests
- website and service usability

RIGA

Digital Access Challenges

- creating a competitive city with an innovative economy
- creating a modern and open city to improve the quality of life
- improving work, co-operation, efficiency, and co-ordination of municipal institutions and capital companies by increasing the competencies of employees
- unifying communication

Digital Access Priorities

- creating new digital services for citizens
- facilitating access to information and data
- strengthening urban cooperation ecosystems
- supporting innovative business initiatives

MEXICO CITY

Digital Access Challenges

- unifying and mainstreaming the digital agenda across the entire government
- the use of surveillance technologies by the government

Digital Access Priorities

- ensuring public technological equipment and services are accessible to the majority of the city's nine million inhabitants

TORONTO

Digital Access Challenges

- bridging the digital divide, primarily through ensuring all residents have affordable access to in-home high-speed internet, internet-enabled devices, and the digital-literacy skills needed to operate these devices safely
- engaging residents on a topic they are generally unfamiliar with, or that is difficult to understand
- overcoming a powerful telecommunications sector lobby
- lack of understanding of urban digital access problems
- leveraging existing assets to support the city's capacity to become (digital) infrastructure stewards
- installing and configuring free Wi-Fi because of COVID-19 restrictions around what is considered non-essential work

Digital Access Priorities

- staff training — particularly in procurement and legal — regarding digital rights protections and the City's duty to uphold and enforce them in every single one of their policy decisions, particularly in procurement
- digital inclusion and human rights
- accessible and human-centred digital infrastructure
- connectivity and digital equity
- reinvestment in municipally owned, high-capacity network infrastructure with the ability to operate as a regulated carrier

Figure 4.
Comparing digital strategies, policies, and infrastructure among select cities

	Barcelona	Johannesburg	Mexico city	Riga	Singapore	Toronto
Digital transformation strategy	✓	?	National	National	✓	✓
'Smart City' strategy	✗	?	?	✗	✓	✗
Digital access policy	✗	✗	?	✗	✗	✗
Digital rights Policy	✓	✗	✗	✗	✗	✗
Dedicated digital agency	Decentralised	Outsourced to Metro Trading Company (City of Johannesburg 2022b)	✓	✓	✓	✓
Open data	✓	National	✓	National	✓	✓

The diversity within and between cities make comparisons of the state of digital access between them challenging. There is no universal or global set of indicators or metrics to measure digital access, inclusion, and rights in cities. As understandings of the complexity and multiplicity of urban digital divides expand, so do the factors that need to be considered when assessing the state of digital access in a given context. The table below demonstrates the gaps that persist in statistics on digital access within and between cities, as well as the need for qualitative assessments to better understand and address digital access issues in cities.

Figure 5.
Digital access statistics and data[9]

	Barcelona	Johannesburg	Mexico City	Riga	Singapore	Toronto
Digital transformation and/or technology budget	**EUR 75** million/year (Ajuntament de Barcelona 2015, p. 7)	**ZAR 962.4 million[10]** (City of Johannesburg 2022a)			**SGD 2.7 billion/year[11]** (Singapore Government Technology Agency 2021)	
% of internet usage			**81.6%** (INEGI 2022)		**87%** (Government of Singapore 2019b)	
Individuals with internet access					**87%** (Government of Singapore 2019a)	
Households with internet access			**75.6%** (Coria and Garcia-Garcia 2022, p. 6)			**98%** (Andrey et al. 2021, p. 4)

[9] **Please note:** the statistics included in this table are representative of data that could be easily accessed online. It may be limited as a result of the inaccessibility of the data or variations in how cities describe similar statistics.

[10] 1 South African rand (ZAR) = 0,05 EUR

[11] 1 Singapore dollar (SGD) = 0,70 EUR

	Barcelona	Johannesburg	Mexico City	Riga	Singapore	Toronto
Households without internet access	**8.1%** (Donaldson Carbón 2022)					**2%** (Andrey et al. 2021, p. 4)
Average number of digital devices (high-income households)	**6** (Donaldson Carbón 2022)					
Average number of digital devices (low-income households)	**4.7** (Donaldson Carbón 2022)					
% of residents connected to the internet (men)	**94.6%** (BIT Habitat 2020 Executive Summary 2020, p. 4)					
% of residents connected to the internet (women)	**89.4%** (Ibid.)					
% of children learning online	**73.2%**[12] (Ibid., p. 6)					**71%**[13] (Andrey et al. 2021, p. 12)
% of residents using ICTs for public administration procedures	**75%** (BIT Habitat 2020 Executive Summary 2020, p. 6)					**69%** (Andrey et al. 2021, p. 12)
% of employed people with internet access	**97.6%** (BIT Habitat 2020 Executive Summary 2020, p. 4)					**99.2%** (Andrey et al. 2021, p. 13)

[12] Under age 16

[13] Under age 18

	Barcelona	Johannesburg	Mexico City	Riga	Singapore	Toronto
% of unemployed people with internet access	**91.7%** (BIT Habitat 2020 2020 Executive Summary, 2020, p. 4)					**96%** (Andrey et al. 2021, p. 13)
% of retired people with internet access	**80.1%** (BIT Habitat 2020 2020 Executive Summary, 2020, p. 4)					
% of residents with internet access (high-income area)	**97.5%** (Ibid.)					
% of residents with internet access (low-income area)	**91.8%** (Ibid.)					
% of people over 60 with internet access						**95%** (Andrey et al. 2021, p. 4)

Furthermore, among those either surveyed, interviewed or both for this whitepaper, definitions of digital access differed, even within the same city context. There seems to be no universally agreed upon definition of digital access, and most urban policies and strategies do not provide an explicit definition of digital access and inclusion. This is to be expected given the diversity within and between cities. For policies, strategies, and programmes to effectively advance SDG11 in a given city, they will need to be informed by the specific realities of the contexts they are operating in and the lived experiences of urban residents.

Existing approaches to digital access in cities are falling short of realising sustainable development and tangible net benefits for everyone living, working, and playing in cities. While we have seen an evolution in the ways in which digital access is understood, thanks to deeper understandings of the causes and contributing factors of digital divides, city administrations need to do a better job of integrating these considerations and insights into policy and programme design and implementation. The state of digital access will not improve unless city officials, administrators, policymakers, and civil society actors are equipped with robust frameworks, approaches and tools to recognise people's inherent right to digital access, address structural issues and inequitable power dynamics, and navigate the complexities of digital transformation.

P3
Proposing an integrated, multi-dimensional approach

The growing recognition of the important and dynamic role digital access plays in individual and collective wellbeing and sustainable development has prompted governments at the national and local levels to adopt human rights-based approaches to digitisation. In some contexts, this human rights-based approach has resulted in the passing of legislation or constitutional guarantees on the right to internet access. In others, human rights have been included in guiding principles and policies for urban digital transformation. While it is important to formally recognise digital access as a human right, a human rights-based approach, in and of itself, is insufficient in advancing meaningful digital access for city inhabitants. Instead, based on the research findings, this paper proposes that cities adopt an integrated, multi-dimensional approach to advancing universal, non-exclusionary digital access that includes human rights, intersectional, and systems thinking.

Human rights

In the years preceding and throughout the pandemic, there has been growing recognition of digital access as a human right. Organisations, such as Access Now[14] have advocated for digital access as a human right arguing that government internet policies must to be rights-based and user-centred (Ben-Hassine n.d.). A human rights-based approach recognises the important role digital access plays in facilitating or impeding access to space, knowledge, culture, and community while seeing digital access as more than having the latest mobile device or the

[14] Access Now, https://www.accessnow.org/about-us/

fastest internet connection. However, in addition to the right to access technologies, the right to refuse technologies is also vital in cities, especially for marginalised communities whose use of and participation in digital systems can expose them to greater harms (Gangadharan 2019).

Currently, most international human rights legal instruments, such as the International Bill of Rights[15] and the Universal Declaration of Human Rights[16] (UDHR), do not include digital rights or references to rights in a digital context. This lack of formal international recognition of digital rights presents a legal protection gap and has contributed to a culture of impunity as it relates to technology-facilitated rights violations and mass atrocities. For example, the Refugee Convention[17] and existing asylum claims processes do not recognise digital rights-violations as a condition for seeking asylum. It is currently up to individual jurisdictions to define and formally recognise digital rights within their respective legal frameworks. This is especially concerning in contexts where existing laws do not accord with the UDHR or other widely recognised human rights frameworks.

In light of the important role digital access plays in supporting individual and collective agency, it is important to recognise it as a fundamental right. In the absence of meaningful digital access, people can be hindered from realising other rights and freedoms, including freedom of speech and assembly and their right to life and livelihoods. While some jurisdictions have started to recognise internet access as a guaranteed right, digital access, as defined in this paper, has not been afforded the same guarantees. At the international level, there are efforts underway to draft digital rights declarations, including the IO Foundation's Universal Declaration of Digital Rights[18], the European Commission's Declaration on Digital Rights and Principles[19], Equality Now and Women Leading in Artificial Intelligence's proposal for a Universal Declaration on Digital Rights (UDDR)[20], Global Shapers Moscow and the Global Law Forum's proposed Convention (and Declaration) on Global Digital Human Rights 4.0[21], Article 19's Universal Declaration of Digital Rights (ARTICLE 19 2017), and Access Now and Amnesty International's Toronto Declaration (Access Now and Amnesty International 2018). However, most of these efforts are led by groups in the Global North, raising concerns about the legitimacy of declarations and frameworks that exclude the most marginalised and disproportionately impacted communities in the Global South from the co-design process. Existing declarations within the UN system, such as the Declaration on the Use of Scientific and Technological Progress in the Interests of Peace and for the Benefit of Mankind (UN General

[15] International Bill of Human Rights, https://www.ohchr.org/en/what-are-human-rights/international-bill-human-rights

[16] Universal Declaration of Human Rights, https://www.un.org/en/about-us/universal-declaration-of-human-rights

[17] Refugee Convention, https://www.unhcr.org/1951-refugee-convention.html

[18] IO Foundation's Universal Declaration of Digital Rights, https://www.theiofoundation.org/uddr/

[19] European Commission's Declaration on Digital Rights and Principles, https://digital-strategy.ec.europa.eu/en/library/declaration-european-digital-rights-and-principles

[20] Universal Declaration on Digital Rights, https://www.equalitynow.org/news_and_insights/universal-declaration-on-digital-rights/

[21] Declaration of Global Digital Human Rights, http://maxlaw.tilda.ws/declaration_of_global_digital_human_rights

Assembly 1979) and the UNESCO Recommendation on the Ethics of Artificial Intelligence[22] are respectively seen to be outdated or insufficient in guaranteeing and realising meaningful digital access. Furthermore, most of these proposed instruments are not tailored to the city-level, which is arguably most directly and clearly implicated in and impacted by digital transformation.

Even where local policymakers agree and understand the underlying premise of adopting a human rights approach to their work, they face issues in implementing the approach in practice. For example, according to Hamish Goodwin (Management Consultant for the City of Toronto), one of the founding principles of Toronto's Digital Infrastructure Strategic Framework, **Equity and Inclusion**, envisions that "digital Infrastructure will be used to create and sustain equity, inclusion, accessibility, and human rights in its operations and outcomes. Digital Infrastructure will be flexible, adaptable, and human-centred, responding to the needs of all Torontonians, including Indigenous, Black, equity-deserving groups, and those with accessibility needs. This will be implemented through the Strategic Priority of Digital Inclusion and Human Rights, Accessible Digital Infrastructure, Connectivity and Digital Equity." Human rights are mentioned both as an aim of digital infrastructure and as a means or approach for responding to the needs of inhabitants. There is a lack of specific and practical guidance on how to implement a human rights approach at the local level.

Michel Mersereau (Management Consultant for the City of Toronto) also raises concerns that treating digital access as a de jure[23] right can enable states to claim digital access has been achieved by relying on unreliable and misleading metrics provided by private actors (i.e., availability of connection = connectivity target achieved), especially where regulatory models rely on private equity and investment in core infrastructure. As it stands, the pathways to accessing and realising human rights, more broadly speaking, at the municipal level are unclear, especially since most rights frameworks are administered and overseen at the national level. Bianca Wylie (Partner at Digital Public and Co-Founder of Tech Reset Canada) argues that while human rights are important, using the term 'human rights' can be "abstracted away from legal pathways and the access to justice supports required to uphold them." Mersereau argues that robust statutory and regulatory frameworks that concretise 'access' for the individual as an end are needed to achieve meaningful digital access at the local level. This indicates that a human rights approach, while helpful as a guiding framework, is insufficient when addressing urban digital divides.

[22] Recommendation on the Ethics of Artificial Intelligence, https://unesdoc.unesco.org/ark:/48223/pf0000381137

[23] De jure refers to rights that are recognised by law.

Cities Coalition for Digital Rights: Principles and Declaration

In 2018, Amsterdam, Barcelona, and New York City launched the Cities Coalition for Digital Rights to propose a shared roadmap and common laws, tools, actions, and resources to help protect the digital rights of city residents and visitors (Ajuntament de Barcelona 2015, p. 48). The Coalition currently has 56 member cities from around the world. The Coalition is guided by 5 principles:

1. Universal and equal access to the internet and digital literacy
2. Privacy, data protection, and security
3. Transparency, accountability, and non-discrimination of data, content, and algorithms
4. Participatory democracy, diversity, and inclusion
5. Open and ethical digital service standards
(Cities Coalition for Digital Rights n.d.b).

In November 2022, the Coalition launched a guide for **Mainstreaming Human Rights in the Digital Transformation of Cities**[24] in partnership with UN-Habitat during the Smart City Expo World Congress Barcelona 2022 (Cities Coalition for Digital Rights 2022b). The guide outlines core values and areas that compose digital rights; proposes mechanisms that city governments can use to embed digital human rights in city administration; and includes policies, guidelines, and methods to demonstrate how cities can operationalise human rights in digital contexts. According to Paula Boet Serrano, Project Manager at Barcelona City Council and the Cities Coalition for Digital Rights, the guide outlines what the different areas within a city council can do to practically implement a human-rights approach to digital transformation. Access features prominently in the guide and is referenced in relation to connectivity, ICTs, infrastructure, digital services and systems, skills, literacy and training, information, data, knowledge, governance, marginalised communities, judicial and non-judicial remedies, disabilities, algorithmic transparency, and community networks. This is reflective of the way the guide conceptualises access as "multidimensional [...] including the physical, spatial, cultural, demographic, and socioeconomic conditions of accessibility" (Cities Coalition for Digital Rights and UN-Habitat 2022, p. 37). Digital access in cities is about more than the availability of Internet, connected devices, or digital technologies; it encompasses a range of factors and conditions that are needed in order to ensure urban inhabitants are able to benefit from digital transformations.

[24] Please see the guide here https://unhabitat.org/mainstreaming-human-rights-in-the-digital-transformation-of-cities-a-guide-for-local-governements

While guaranteeing digital access as a right is important, it is insufficient for realising universal and meaningful digital access in practice. Non-citizens, including migrants, forcibly displaced and stateless persons may not be able to access legal protections that are largely afforded to citizens. For communities that are systematically excluded from governance, policymaking, and public space, declarations are often empty words. Even in cases where human rights are integrated into local policies, many city planners and policymakers are not equipped with sufficient knowledge and training to apply a human rights approach to their work. Vague references to rights in policy can create an illusion of protection in the absence of concrete actions, dedicated spending in city budgets, monitoring and accountability mechanisms, and training for staff and partner organisations. Cities must therefore integrate human rights with other approaches that recognise and illuminate the complexity of urban digital access issues and provide practical tools for analysis and transformation policymaking.

Intersectionality

Cities are home to diverse groups of people with different needs, experiences, and backgrounds. Urban policies and strategies that do not consider and understand inhabitants' intersectional experiences and power structures can contribute to deepening inequalities. Existing data on aspects of digital access in cities demonstrate that there are disparities between people based on their gender, sexuality, race, ethnicity, disability, citizenship status, education, socioeconomic status, and geography. Current digital transformation policies and strategies either fail to address these realities or address them in limited ways. In most cases, these inequalities are treated as separate or mutually exclusive issues, without regard for the ways in which people's experiences are shaped by the multiple identities they hold.

Intersectionality recognises the layers and complexity of the inequality experienced by individuals and groups with multiple identities. The term emerged in 1989 when Kimberlé Crenshaw, an African American civil rights activist and feminist legal scholar, published Demarginalizing the Intersection of Race and Sex: A Black Feminist Critique of Antidiscrimination Doctrine, Feminist Theory and Antiracist Politics in the University of Chicago Legal Forum (Crenshaw 1989). Intersectionality is an analytical framework used to understand multidimensional experiences of discrimination, inequality, injustice, and oppression based on how systems privilege or marginalise people's political and social identities, including their gender, ethnicity, religion, class, sexual orientation, nationality, citizenship status, disability, and age.

Applying an intersectional analytical framework to digital access offers a way for policymakers and civil society alike to develop a more nuanced understanding of power systems and how people are impacted by their intersecting experiences of harm, discrimination, oppression, and marginalisation. This understanding is critical to ensuring that policies, strategies, and programmes are addressing the specific problems people are facing and not further perpetuating inequities by overlooking the most marginalised and excluded people.

Intersectionality can also help overcome techno-solutionism. A study on disability access argues that existing accessibility maps that use big data follow a "depoliticised compliance model, which takes accessibility standards for granted as objective and neutral measures" (Hamraie 2018). Merely collecting data on standards, legal compliance, and rates of connectivity or digital device ownership are insufficient in advancing meaningful digital access. Such an approach

takes for granted that existing standards, laws, and technologies are inclusive and meet the needs of the diverse communities they are meant to serve. It can also distract attention from systems and structures that prevent individuals and communities from exercising their agency. Intersectionality helps us understand and position technology through the lens of power and privilege — the design, development, and deployment of technology itself is not apolitical.

Systems thinking

"The technological humanist approach is not addressing some relevant techno-political issues" (Bani Brusadin, curator at transmediale and Lecturer at Universitat de Barcelona and Elisava). On their own, human rights and technology-based approaches are insufficient in addressing digital access challenges in cities. Emerging technologies are impacting urban inhabitant's lives from their livelihoods and education to healthcare and leisure. These technologies are likewise shaped and informed by the systems and structures they are created by and within. In order to ensure city administrations are able realise meaningful digital access, they would benefit from adopting a systems thinking approach to decision- and policymaking.

A systems thinking approach looks at the relationships and interconnections between various actors in or constituent parts of systems (Chen 1975; OECD 2017). This type of approach recognises the impact and agency of each part of the system. By applying this approach to digital access, one can critically and intentionally engage with the underlying systems and structures that hinder and/or enable access. Using this approach also enables us to adopt a more holistic conception of digital access beyond the availability of digital infrastructure, networks, or devices.

Digital transformation strategies that lack an understanding of systems are apt to perpetuate greater vulnerabilities, risks, and inequities for especially marginalised individuals and communities. Attempts to address complex, structural problems through overly simplistic interventions and misidentification of the core problems at hand can lead to the adoption of technologies and policies that fail to address the needs of individuals, communities, organisations, and society. Digital transformation, as a source of societal progress and change, is a myth. Technologies that are built by and on top of existing, inequitable political, social, legal, financial, and knowledge systems replicate, amplify, exacerbate, and can even automate existing harms. The general tendency for tech companies and venture capitalists to position technology as a panacea for the challenges cities face is both unrealistic and misleading.

In practice, a systems approach would prompt local policymakers to better understand the roles and capacities of and meaningfully engage with different stakeholders to facilitate and advance digital access. This also requires policymakers to assess their own role, capacities, and resources as they relate to digital transformation and access.

On their own, each of the approaches outlined above are likely to be insufficient to address growing digital divides in cities. Instead, policy- and decisionmakers should integrate an approach that combines human rights, intersectionality, and systems into their efforts to promote digital access. When developing monitoring and evaluation systems to assess the effectiveness of digital access, governments and civil society should prioritise metrics and indicators that look at the quality

and type of access, rather than binary measures that attempt to determine whether people have access or not. Since the enabling factors for digital access are as diverse as the people and communities living in cities around the world (Frey 2021), policymakers should localise initiatives to meet the specific needs and realities of the communities they are accountable to.

In practice: promoting digital access, rights, and agency in cities

Realising universal digital access as a means of achieving SDG11 remains a challenge for cities around the world. There are currently no cities that have successfully eliminated digital divides and inequalities entirely. While there is no perfect model or roadmap to follow, there are best practices and lessons that can be learned from and adopted for each unique urban context. The following section includes examples of initiatives, policies, and strategies for promoting digital access, inclusion, rights, and agency from Barcelona, Johannesburg, Mexico City, Riga, and Toronto.

Multidimensional, targeted responses to digital divides

BARCELONA

Connectem: Barcelona's policy pilot for digital inclusion

Of the cities assessed as part of this study, Barcelona is the most advanced in its conceptualisation and implementation of a people-centred, human rights approach to urban digital transformation. The city deploys a variety of programmes and policies for digital access and inclusion, such as ICT Agents[25] and the Cibernàrium[26] for tech training; Decidim[27], a digital participation platform; DECODE[28], an open-source, privacy-aware, rights-respecting data platform; Sentilo[29], a network of sensors transmitting real-time data; a public network of Fab Labs[30]; STEAM BCN[31], workshops and trainings to address gender inequality in STEAM fields; REC[32], a digital social currency used as

[25] ICT Agents, https://bithabitat.barcelona/projectes/agents-tic-2/

[26] Cibèrnarium, https://cibernarium.barcelonactiva.cat/qui-som-

[27] Decidim, https://decidim.org/

[28] DECODE, https://decodeproject.eu/

[29] Sentilo, https://ajuntament.barcelona.cat/digital/en/digital-transformation/urban-technology/sentilo

[30] Fab Labs. https://ajuntament.barcelona.cat/digital/en/digital-empowerment/digital-education-and-training/fab-labs

[31] STEAM BCN, https://ajuntament.barcelona.cat/digital/en/digital-empowerment/digital-education-and-training/steam-bcn

[32] Rec, https://ajuntament.barcelona.cat/digital/en/digital-empowerment/digital-inclusion/rec-barcelonas-social-currency

a complementary form of payment; and Connectem[33], a digital inclusion pilot project (Ajuntament de Barcelona, 2015; Donaldson Carbón 2022).

Connectem Barcelona is a policy programme that aims to reduce the digital divides in Barcelona by promoting access to a quality internet connection and digital devices adapted to residents' specific uses, needs, and realities, as well as the acquisition and development of the skills and knowledge necessary for the use of technologies. The programme also aims to generate evidence about the need for skills acquisition programmes and measure digital divides across neighbourhoods, gender, age, education, income, and other relevant socio-economic factors (Cities Coalition for Digital Rights 2022a). The programme was piloted in Trinitat Nova, a low-income neighbourhood in Barcelona. As part of the programme, the city deployed four ICT agents to the neighbourhood.

Based on preliminary findings, Marc Pérez-Batlle, Innovation Manager of *Ajuntament de Barcelona* (Barcelona City Council), was able to share that up to 450 people benefitted from the project with Barcelona City Council funding 300 laptops and 150 Wi-Fi devices, mobile operators donating 250 SIM cards with unlimited data, and manufacturers and other organisations donating another 100 laptops. Further information on the results and conclusions of the pilot is expected to be released upon a review of the programme.

One of **Connectem's** key challenges was identifying potential beneficiaries for the programme. According to Paula Boet Serrano, Project Manager at Barcelona City Council and the Cities Coalition for Digital Rights, the families selected for the pilot were identified through social services, which required them to be registered with this service. Requiring programme participants to be registered in this way leaves the most excluded and marginalised populations at risk of being unable to access the very programmes meant to address their digital access needs. The city does not collect race-based data, instead using migration status as a stand-in for race and ethnicity, assuming that migrants are from racialised backgrounds. This presents limitations as not all migrants to Barcelona are racialised persons and not all racialised persons are migrants. The absence of this data limits policymakers' ability to understand how issues of racism impact and influence inhabitants' digital access. While collecting this type of data can be costly, especially when it involves time-intensive, qualitative studies, cities should prioritise it as an investment toward ensuring digital access projects, programmes and strategies are rooted in evidence and sufficiently address the needs of marginalised communities. By incorporating an intersectional and systems approaches to its existing human-rights based approach and framework, policymakers and city administrators may be better able to promote universal, meaningful digital access for all inhabitants.

[33] Connectem, https://ajuntament.barcelona.cat/digital/ca/apoderament-digital/inclusio-digital/connectem-barcelona

Leveraging existing public spaces and services

JOHANNESBURG

Johannesburg library's innovative digital services

The City of Johannesburg has been able to leverage existing infrastructure and spaces to facilitate access to resources and services for residents. Johannesburg's public library system introduced e-learning services to residents, including free Wi-Fi, online courses (e.g., coding), credible information sources (online academic sites, newspapers, and articles), and children's programming (City of Johannesburg 2018). One of the strengths of its approach has been the city's ability to develop programmes that address gaps in specific communities. For example, the city collaborated with NGOs to provide residents with digital skills training, including basic computer skills via e-learning classrooms for senior citizens, children, and youth. When stay at home orders prevented libraries from hosting children in person, libraries produced online digital story times using videos in English and Indigenous languages (City of Johannesburg 2021). Johannesburg's Directorate of Libraries was granted the 2020 Public Library Innovation Award by the Electronic Information for Libraries (EIFL)[34] for its COVID-19 digital video series on Facebook.

Johannesburg's use of the library system as a means of supporting accessible digital transformation and service delivery serves as an example for other cities around the world. Public libraries demonstrate the possibility of having both digital and non-digital options for accessing information, services, and resources. Instead of investing millions of dollars in unproven and gimmicky technologies, city administrations would be better off investing in libraries and other existing community infrastructure and spaces. By applying a systems approach, Johannesburg can also leverage lessons learned and insights gained from its experience with libraries and apply these to other areas of the system to more effectively advance digital access and sustainable development across the board.

Integrating digital rights into institutional mandates and frameworks

MEXICO CITY

Mexico City Digital Agency for Public Innovation

In January 2019, Mexico City's **Digital Agency for Public Innovation (ADIP)** was created through the *Ley de Operación e Innovación Digital para la Ciudad de México* (Digital administration and innovation law for Mexico City) (Pardo, 2018) by the Sub-Directorate of Legal Information, the Director General of Information and Communication Technologies, and the National Commission of Human Rights with the aim of promoting a government free of corruption and in the service of people through openness and digital governance

[34] EIFL, https://www.eifl.net/eifl-in-action/responding-covid-19-innovation-award

(Agencia Digital de Innovación Pública, n.d.). The law makes reference to Article 6 of the Mexican Constitution, which recognises the right to request, investigate, disseminate, seek, and receive information (Pardo 2018, p. 5), as well as the right to access, rectify, cancel, and oppose the processing of one's personal data (Ibid. p. 7). As a body at the legislative level, ADIP has been granted powers to advance the digital agenda and use "technology as a tool to empower citizens and increase accountability" (based on a survey response). The agency's main areas of focus are data analysis, open government, connectivity, and digital government. Projects range from making government data public and traceable to creating a single digital window for business registration, to reduce corruption and increase efficiency.

According to Brenda Escobar, ADIP's Policy Director for Connectivity and Telecommunications Infrastructure, the Agency's five guiding principles help guarantee access to rights perspective is integrated into its work and programmes. These principles include eliminating barriers to access, serving people residing in Mexico City, accountability, austerity, and autonomy (Foro Juridico 2022). Escobar oversees the development and implementation of connectivity policies and projects aimed at the efficient use of telecommunications infrastructure, with a focus on enabling access to other digital rights through connectivity initiatives like the **Free Wi-Fi** project[35].

In 2021, Mexico City was recognised as the most connected city on Earth by the Guinness World Records (Egelhoff 2021). The ADIP oversees the development and implementation of Mexico City's biggest network of free Wi-Fi network access points, using active and passive infrastructure to provide over 29,000 access points via public schools, health centres, public transport stations, buses, parks, housing units, peripheral neighbourhoods, and public roads (Agencia Digital de Innovación Pública 2023). The agency aims to facilitate better access to digital services by improving connectivity and universal internet access for residents, regardless of their age, gender, location, or status as an Indigenous person. It plans to expand the network to 33,392 access points by the end of 2022, especially to low-income neighbourhoods. Prior to the creation of the ADIP, there were only 90 Wi-Fi access points in the city, distributed throughout the historic city centre, largely in high-income neighbourhoods.

While the ADIP's creation and mandate presents opportunities to integrate human rights into policymaking and programme design, there are additional digital access gaps that need to be addressed for Mexico City to realise SDG11. For example, the ADIP used existing security posts to rollout Wi-Fi infrastructure across the city. While this has provided opportunities to expand access points across the city and facilitate over 2 million network connections per week, it also raises concerns around trust, privacy, and surveillance. Civil society organisations, such as Access Now, have raised concerns about the national government's deployment of surveillance technology, the creation of biometric identity databases, and legislation that threatens freedom of expression

[35] Free Wi-Fi project, https://mexicocity.cdmx.gob.mx/e/free-wifi/

online (Alarcón and Pisanu 2021). Moreover, local policymakers and institutions, such as the ADIP, should look beyond internet connectivity and access points to meaningfully address digital access and rights issues. A study on digital divides in Mexico argues that a holistic set of factors intervene in people's use of technology and should be addressed. These include internet and mobile access, social class, economic capital, emotions and perceptions, and public policy (Quezada-Morales 2022). Furthermore, the general lack of data on digital access among diverse demographics of city inhabitants makes it difficult to understand how existing policies are impacting people in different ways. Applying an intersectional, human-rights based, systems approach would prompt policymakers to account for the experiences and needs of marginalised communities and address the various layers of digital access, instead of pursuing policies that are blind to gender, sexuality, age, race, ethnicity, socioeconomic and citizenship status, and disabilities.

Systematising and centralising digital transformation in the city

RIGA

Riga's new Digital Agency

On April 1, 2022, Riga established a new **Digital Agency** to ensure the systematic digital transformation of the municipality (Smart Cities Connect 2022; Wray 2022). The Agency uses a flattened organisational structure to promote interdisciplinarity and co-creation, deploying a people-centred approach to ensure public servants are "adapt[ing] to citizen's needs and not the other way around" (García-Blásquez Lahud 2022). Riga's Digital Agency draws lessons from best practices in other European cities, including Helsinki and Barcelona (Iolov 2022). The Agency is part of the city's work on updating its policies, practices, and strategies to build digital capacities throughout the city and centralise digital transformation processes.

Inga Barisa, Adviser of Riga City Council Digital Agency on EU digital innovations, is responsible for fostering the EU partnerships for projects contributing towards improvement of general municipal services and implementing new e-services for citizens. Barisa shared that the city is improving its municipal policy planning framework by defining policy results, tasks, and key performance indicators, including development of a new medium-term digital transformation strategy for 2022-2024. According to Barisa, the strategy, which is funded by the municipality and the EU, aligns with the development priorities of Riga's 2022-2027 Development Programme[36] and its Sustainable Development Strategy 2030[37].

[36] Riga's 2022-2027 Development Programme,: https://www.rdpad.lv/wp-content/uploads/2022/07/220715_Informativais_materials_ENG.pdf

[37] Sustainable Development Strategy 2030, https://www.rdpad.lv/wp-content/uploads/2014/11/ENG_STRATEGIJA.pdf

One of the challenges associated with Riga's new Digital Agency and digital transformation strategy is that information about them is not readily accessible online, which can hinder accountability, transparency, and resident engagement in co-developing strategies, programmes, and policies. It is unclear how the needs and experiences of city inhabitants across different demographics are being considered in the design of the agency and related strategies. The city would benefit from making data on the different aspects of digital access publicly available and accessible. By applying an intersectional, human rights-based, systems approach, city officials and policymakers could better ensure that the design of digital institutions, policies, and strategies meaningfully integrate and are accountable to diverse communities, helping to prevent the widening of inequalities that have resulted from rapid urban digitisation.

Digital access as a public service

TORONTO

The city of Toronto's proposal for a Municipal Broadband Network

Toronto has multiple digital access and equity initiatives, including an IT Asset Management Policy that enables the donation of internet-enabled devices to residents (City of Toronto 2019); ConnectTO, a programme to increase digital connectivity in Toronto using free public Wi-Fi access points in community centres and community housing locations (City of Toronto 2021a); Digital Inclusion Week 2022, a programme to improve digital literacy in collaboration with the Toronto Public Library (Toronto Public Library 2022); a pilot project for free home Wi-Fi that was developed during the COVID-19 pandemic (City of Toronto, 2020); and a proposal for a city-owned municipal broadband network.

The City of Toronto is in the process of creating a **Municipal Broadband Network** that will function as a 'middle mile' network infrastructure on an open access basis. According to Michel Mersereau, Management Consultant for the City of Toronto, city staff are currently developing a business case to support divesting the City's lease and managed services network procurement model and move to a wholly owned and managed model. To support this initiative, Toronto is developing a household broadband survey and materials to lead a Digital Equity Community of Practice within the Cities Coalition for Digital Rights. The survey will collect data related to the affordability of digital services for low-income households and the ability of these households to obtain and access them. The project is targeted to Indigenous, Black, racialised, recently immigrated (2011-2019), disabled, and elder persons, as well as children (0-18 years of age) and people over the age of 70 who are living alone.

One of the key digital access and equity challenges facing the city is private capture of digital infrastructure and services. The broadband project faces intense lobbying of elected officials and senior staff by telecommunications incumbents. This is reflective of broader national dynamics resulting from telecommunications monopolies, with three companies, Rogers, Bell, and TELUS dominating the sector. The city can draw lessons from the experience with Sidewalk Labs TO, which saw coalitions of civil society

and community actors pushing back against Alphabet's attempts to profit off Toronto residents' data and commodify their experiences and lives in Toronto's Quayside neighbourhood. By strengthening community members' capacities and opportunities to engage in co-designing, developing, implementing, reviewing, and decommissioning digital technologies, policies, and strategies, the city can build more resilience against privatisation of its services and functions, especially as it relates to digital infrastructure, technology procurement, and policymaking.

Building people's digital capacities and agency

TORONTO

Designing a digital equity policy for Toronto

Digital access, equity, rights, and inclusion are not issues that can be confined to one department or team within a city administration. City staff and policymakers need to build e-governance capacities and digital literacy across all departments, teams, and divisions. In some contexts, digital access projects have helped facilitate greater dialogue within and between organisations on the opportunities and challenges technologies present for cities. For example, Bianca Wylie, Partner at Digital Public and Co-Founder of Tech Reset Canada, shared that "the City of Toronto's internet access project [ConnectTO] has improved cross-divisional conversations within city staff departments". These conversations have helped inspire the development of city-wide strategies and policies to ensure that city staff are equipped with the skills, capacities, and knowledge to effectively uphold their responsibilities and be accountable to city inhabitants.

In April 2022, Toronto's City Council adopted the Digital Infrastructure Strategic Framework (DISF), which provides guidance on proposed or deployed digital infrastructure and emerging issues such as digital equity and inclusion (City of Toronto 2022a). According to Hamish Goodwin (Management Consultant for the City of Toronto), the DISF enhanced transparency and insight into decision-making, enabling greater trust and confidence in government services. Several projects have been informed by the DISF, including Transportation Innovation Zone challenges for Micro Utility Devices and Parking sensors (Transportation Services) (City of Toronto 2022c); Registration and Booking Transformation (Parks, Forestry and Recreation) (City of Toronto 2022b); and the proposed redevelopment of the Downsview Airport Lands (City Planning) (City of Toronto 2021b). Goodwin shared that the city is developing an accompanying Digital Equity Policy, to enable staff and administration to better tackle digital divides by integrating concrete measures and practices into projects. To develop the policy the team is conducting a scan of rights-based access initiatives around the world, as well as barriers to implementing rights-based access frameworks faced by governments.

What is especially noteworthy about the development of Toronto's **Digital Equity Policy** is the ways in which policymakers are distinguishing between the key target demographics of the policy as being equity-deserving, prosperity-seeking or self-determining, and freedom-seeking. The term equity-deserving is used to refer to communities that face

significant collective challenges because of institutional and societal barriers to equal access, opportunities, and resources due to disadvantage and discrimination. Goodwin shared that while Indigenous people face inequities in Toronto, categorising them as equity-deserving is insufficient to account for their unique legal status and experiences. For example, Indigenous people have unique status and rights under Section 35 of the Canadian Constitution (Government of Canada 1867) and have experienced historical and ongoing colonisation and genocide. Instead of seeking equity, Indigenous communities are seeking prosperity, characterised by self-determination and economic, social, and ecological wellbeing. Black people and people of African descent, distinct from other equity-seeking groups, have a unique experience of centuries of enslavement in what is currently called Canada, the legacy of which continues to impact their economic and social wellbeing. To address these historical and ongoing injustices, Black communities are considered freedom-seeking. How these considerations shape the resulting policy, beyond the process, can help build trust and credibility with communities that are most affected by digital divides and rights violations.

While it is important that the city is intentionally identifying and defining the key demographics of the Digital Equity Policy, in the absence of an intersectional approach, categorisations that are distinct and rigid can make it difficult for policymakers and city administrators to tailor policies, strategies, and programmes to meet the needs of people and communities who do not neatly fit into one category. For example, the needs and experiences of Black Indigenous persons may differ from someone who identifies as either Indigenous or Black. Likewise, Black women experience multiple layers of oppression resulting from the various way systems discriminate against women and Black people. Furthermore, tangible investments and efforts will need to be made to meaningfully engage marginalised communities in governance and decision-making, ensuring that policies and strategies are not created **for** them but **with** and **by** them instead.

Digital Future Society

P4 Checklist
of suggested actions for cities

Urban digital access is hindered by a lack of digital skills and understanding of digital access among local policymakers, administrators, and civil society, as well as the limitations of existing approaches to address digital divides. To overcome these challenges cities will need to adopt actions that transform digital policymaking, community engagement, local governance, and accountability mechanisms to address the gaps discussed in this paper. Drawing on the insights gained from both primary and secondary research on cities' experiences with digital access, this whitepaper recommends the adoption of an integrated human rights-based, intersectional, and systems approach that prioritises addressing structural inequities and divides that persist in and are amplified by current urban digital transformation strategies. Many interviewees and survey respondents expressed that while they support the idea of a human rights-based approach to policymaking, they face difficulties in implementing the approach into practice. The paper, therefore, presents a list of actions to help city administrators, municipal policymakers, and civil society realise meaningful digital access as a means of achieving SDG 11 and promote the wellbeing, rights, and agency of people in cities. The diversity among cities makes it difficult to provide a definitive, prescriptive list of actions. Implementation of these recommendations will need to be tailored to local contexts, with consideration given to community interests and needs, political and governance systems, leadership, demographics, geography, budget constraints, and power dynamics.

In the absence of effective policies and governance to address digital divides and systemic inequities, civil society and community groups are often taking on the responsibility to support marginalised communities in realising digital access, with limited resources and capacities to do so. As elected officials and public servants, city policymakers and administrators ought to be accountable to the public and the many diverse communities that are residing, working, and moving through their cities. As such, the bulk of the recommended actions listed below are targeted towards city administrators and municipal policymakers. This in no way is meant to undermine the important role civil society plays in advancing meaningful digital access

and sustainable development. Instead, it recognises the critical role and responsibility of government officials in supporting and creating an enabling environment that meaningfully engages communities and civil society in digital governance, policymaking, programming, oversight and accountability, and design. Civil society, especially those structured and professionalised within the non-profit industrial complex,[38] are not beyond reproach; many have also enabled digital divides and injustice to persist. This paper, therefore, also presents a set of recommended actions for civil society, to address their role in promoting digital access.

City administrators and municipal policymakers

Community engagement

- Ensure digital transformation, access, inclusion, and rights policies and strategies are easily accessible to the public.
- Engage, co-create, and co-design programmes, policies, and initiatives relating to digital transformation and access with diverse communities.
- Promote and centre digital agency, engaging individuals and communities in the design, development, deployment, and decommissioning of technologies.

Finance/Funding

- Allocate and dedicate funding to digital access, inclusion, and rights programming and policies.
- Support and invest in public libraries, including infrastructure and people.
- Implement gender budgeting, ensuring a gender perspective is integrated into budget planning.
- Improve transparency of digital transformation and digitalisation budgets and spending, highlighting sources and recipients of funding.

Legal

- Adopt and integrate digital rights into city charters, constitutions, and frameworks, where applicable.
- Strengthen digital privacy, wellbeing, and security legislation and regulations to protect urban residents from digital threats and harmful technologies.

Monitoring, evaluation, accountability, and learning

- Officially adopt and apply an intersectional, rights-based, systems approach to policymaking, with sufficient training and resources to support staff in implementing recommendations and guidelines.
- Adopt and promote a multidimensional definition and understanding of digital access that goes beyond access to the internet, digital technologies, or infrastructure.

[38] The non-profit industrial complex (NPIC) refers to "a set of symbiotic relationships that link political and financial technologies of state and owning class control with surveillance over public political ideology, including and especially emergent progressive and leftist social movements" (Rodriguez 2017).

- Design monitoring and evaluation systems that assess the quality and types of access among diverse demographics of urban dwellers, instead of pursuing a binary approach to digital access.
- Conduct regular qualitative assessments of digital access, inclusion, and rights in city.

Strategic planning and resources

- Shift existing strategies that focus on 'Smart Cities' centring on technology to strategies that centres community wellbeing, security, and health.
- Leverage existing infrastructure and community supports to promote digital access, including public libraries, community centres, shared outdoor spaces and gardens, and schools.

Civil society

Advocacy

- Advocate for digital and non-digital options for accessing municipal services and resources.
- Adopt a trauma-informed approach to campaigning, in partnership with systematically marginalised community members.
- Do not speak on behalf of communities and their needs — instead nurture an environment and conditions that enable them to meaningfully engage and tell their own stories.

Narratives

- Move away from 'digital empowerment' narratives and approaches and centre digital agency instead.

Partnerships and collective action

- Build networks of solidarity and partnerships with diverse communities and groups with shared values and commitments to rights, equity, and justice.
- Ensure community partners are fairly compensated (at minimum a living wage) for their time, contributions, and experiences.
- Clearly communicate expectations, responsibilities, and needs with partners and stakeholders.

Skills development and capacity building

- Develop critical digital skills and capacities within organisations and community groups.
- Facilitate digital literacy and skills training tailored to community members' needs.

Conclusion and next steps

The emergence and adoption of emerging technologies in cities is currently outpacing the ability for local governments to effectively govern them and mitigate the challenges and harms they present. As a result, people living and working in cities are experiencing digital divides, which have been further exacerbated by the COVID-19 pandemic. While recognition of internet access as a human right, and digital rights more broadly, have increased over the last decade, relying on a human rights approach alone to meaningfully realise digital access, and in turn advance SDG11, has proven to be insufficient. A human rights approach does not go far enough to address systemic inequities and digital divides or provide practical, actional pathways forward for all stakeholders. Budget limitations, jurisdictional challenges, limited digital skills and literacy, the absence of practical and concrete ways to apply human rights and the complexity introduced by the diverse needs and experiences of city inhabitants necessitate that cities adopt new approaches to digital access and transformation. As this whitepaper has shown, digital access, when understood and addressed through an intersectional, rights-based, systems approach, can serve as a means to improving the health, wellbeing, and security of people living, working, and playing in cities around the world.

While there are many studies and surveys on smart cities, there is very little in the way of qualitative data on digital access in cities globally. This whitepaper provides an overview of the key challenges related to urban digital access and presents recommendations to help city policymakers, administrators, and civil society actors advance digital access and address digital divides. Further research is needed to deepen understandings of digital access, especially across cities in the Global South and in diverse geographic and socioeconomic contexts. As a next step it is recommended that a study be conducted on the state of digital access in cities around the world, with the aim of mobilising knowledge on the various ways digital access challenges present themselves and to identify best practices and lessons learned that cities could draw on to improve digital governance, policymaking, programme development, and service delivery.

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Acknowledgements

Lead author and interviewer

Bushra Ebadi is a social innovator, global strategist, and interdisciplinary researcher. She conducts and leads research on digital governance, innovation, transformation, and technologies with the United Nations University Operating Unit on Policy-Driven Electronic Governance (UNU-EGOV), with a focus on mobilising knowledge and developing strategies to advance justice, peace, equity, human rights, and community-centred approaches to digital transformation. She has a joint honours BA in political science and philosophy from McGill University and a Master of Global Affairs (MGA) from the University of Toronto.

Interviewees and survey respondents

(organised by case)

These case studies were based on survey responses from and/or interviews with the following experts:

BARCELONA

- Paula Boet Serrano, Project Manager at Barcelona City Council and the Cities Coalition for Digital Rights
- Bani Brusadin, Curator, transmediale and Teacher/Lecturer, Universitat de Barcelona and Elisava
- Marc Pérez-Batlle, Innovation Manager, Ajuntament de Barcelona, Universitat Politècnica de Catalunya

MEXICO CITY

- Brenda Escobar, Connectivity Director, Digital Agency for Public Innovation
- Yolanda Martinez, former CIO, Gobierno Digital México

RIGA

- Inga Barisa, Adviser on EU digital innovations, Riga City Council Digital Agency

TORONTO

- Hamish Goodwin, Management Consultant, City of Toronto
- Michel Mersereau, Management Consultant, City of Toronto and Sessional Lecturer, University of Toronto
- Saadia Muzaffar, Co-founder and Organizer, Tech Reset Canada
- Bianca Wylie, Partner, Digital Public and Co-founder, Tech Reset Canada

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This whitepaper has been made possible thanks to the advice and support of:

- Tanya Álvarez, Researcher, Digital Future Society Think Tank
- Judy Backhouse – Senior Research Fellow, UNU-EGOV
- Lucille Tetley-Brown – Research Consultant, UNU-EGOV

UNU EGOV

Digital Future Society Think Tank team

Thank you to the following Digital Future Society Think Tank colleague for their input and support in the production of this report:

- **Olivia Blanchard**, Researcher, Digital Future Society Think Tank.

Please cite this report as:

- Digital Future Society. 2023. Beyond digital access as a human right in cities: promoting an intersectional, human rights-based, systems approach to digital access Barcelona, Spain.

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Appendix
Survey

UNU-EGOV Survey on Digital Access and Cities

The acceleration of emerging technologies and increasing efforts by governments to develop digital transformation strategies and policies present both challenges and opportunities for people who live, work, travel, and play in cities. UNU-EGOV (United Nations University Operating Unit on Policy-Driven Electronic Governance) is developing a white paper on digital access as a human right in collaboration with the Digital Future Society (DFS), a programme of Mobile World Capital Foundation, based in Barcelona. As part of our research, we are inviting experts, including civil society and government officials, from 6 urban contexts: Barcelona, Mexico City, Riga, Singapore, Johannesburg, and Toronto, to share insights on the issue of digital access within their respective cities, including governance systems, policies, strategies, and digital divides. The insights and findings from this research, including survey responses, will be integrated into the proposed white paper and may also inform future related research. Estimated time to complete: 5-10 minutes. Survey deadline: 11:59 PM PST on 11 November 2022. Please note the survey deadline has been extended to 11:59 PM PST on 30 November 2022.

For any questions or concerns regarding this survey or research project, please email ebadi@unu.edu.

Data Use, Storage, and Retention *

The information requested in this form will be stored in AirTable and UNU-EGOV's internal systems and will be used to help inform the development of a commissioned white paper on digital access as a human right in urban contexts. The data shared via this form will be accessible to members of UNU-EGOV's staff and will be kept in a database according to UNU-EGOV's data security standards. You may request to access, verify, rectify, or delete your data at any time by completing the following form: https://unu.edu/data-access-requests. Considering the above, do you give your free and informed consent to the use of the information you share through this survey for the purposes outlined above? Please email ebadi@unu.edu if you have any questions, concerns, or feedback on this survey and/or the research it is contributing to.

- Yes, I consent to the use of my information by UNU-EGOV
- No, I do not consent to the use of my information by UNU-EGOV

Name *

Email *

Please share your preferred email.

Preferred Pronouns
What are your preferred pronouns? (e.g., she/her, he/him, they/them)

City *
Which city do you reside in?

Country *
Which country do you reside in?

Sector *
Which sector do you most closely identify with?

Organization(s) *
Which organization(s) are you working or affiliated with?

Note: if you are working and/or affiliated with more than one organization, please list each organization separated by a comma (ex: organization 1, organization 2, organization 3).

Role *
What is your role and/or job title?

Relevant Experience *
How do your role(s) and responsibilities relate to digital access, inclusion, and/or rights? If it does not relate, please feel free to write “not applicable” below.

Most Relevant Case Study *
Which city does your policy, activism, research, and/or community engagement work focus on?

- Barcelona
- Johannesburg
- Mexico City
- Riga
- Singapore
- Toronto
- Other

Municipal Digital Strategies*
Based on your current knowledge, does your city have a digital strategy?

- Yes
- No
- Unsure

Digital Strategy Link
Please share a link to your city's digital strategy below, if applicable and/or available

Defining Digital Access*
How do you and/or your organisation define digital access?

Digital Access Policy *
Based on your current knowledge does your city have a digital access policy?

- Yes
- No
- Unsure

Digital Access Strategy Link
Please share a link to your city's digital access strategy below, if applicable and/or available.

Digital Access Projects*

- Yes
- No
- Unsure

Project(s) Description*
Please describe the project your city is implementing on digital access

Project Demographics*
Which communities and/or demographics were the primary focus of the project(s)?

Project Outcomes*
What were the outcomes of the project (s)? If the project is ongoing, what impact has the project had thus far?

Project Challenges*
What were the key challenges in desgning developing and/or implementing the project(s)?

Other Digital Initiatives or Policies*
Are there other related digital initiatives or policies that the city has implemente dor is implementing?

- Yes
- No
- Unsure

Digital Initiatives and Policies*
Please list and/or describe other related digital initiatives or policies that the city has implemented or is currently implementing?

Human Rights Based Approach*
Are you familiar with human rights based approaches to policymaking, governance, and/or programming?

- Yes
- No
- Unsure

Human Rights and Digital Access*
Do you find human rights based approaches useful as it relates to digital access and inclusion and/or municipal digital strategies? Please explain.

Digital Rights Policy*
Does your city have a digital rights policy and/or framework?

- Yes
- No
- Unsure

Digital Rights Policy Link*
Please feel free to share a link to your city's digital rights policy and/or framework, if available.

Digital Access Priorities*
What do you believe are the most pressing issues the city needs to address as it relates to digital access, inclusion, and/or rights?

Additional Recommended Resource 1
Please feel free to attach resources (e.g., research papers or briefs, articles, policy or strategy documents, etc.) relevant to digital access, inclusion, and/or rights. Note you will have the option to attach up to 4 additional resources.

Additional Recommended Resource Link 1
Please feel free to share a link to resources (e.g., research papers or briefs, articles, policy or strategy documents, etc.) relevant to digital access, inclusion, and/or rights. Note, you will ahve the option to share up to 4 resource links.

Additional Comments
Please feel free to share additional insights, comments, or information on digital access, inclusion, and/or rights in your city context below?

Interview *
Would you be interested in participating in an interview to share additional insights and/or answer follow up questions based on your survey responses?

- Yes
- No
- Maybe

Recommended Experts
Please feel free to share the name and email of any experts you would recommend we connect with as part of our research.

Note: to respect the privacy of recommended experts we ask that you only share public or organizational emails.

Consent Confirmation *

The information requested in this form will be stored in AirTable and UNU-EGOV's internal systems and will be used to help inform the development of a commissioned white paper on digital access as a human right in urban contexts. The data shared via this form will be accessible to members of UNU-EGOV's staff and will be kept in a database according to UNU-EGOV's data security standards. You may request to access, verify, rectify, or delete your data at any time by completing the following form: https://unu.edu/data-access-requests.

☐ By checking the box below, I confirm that I am giving my free and informed consent to the use of the information I share through this survey, for the purposes outlined above.

Send

Interview questions – for government

Note: there were follow up questions tailored to interviewees responses that may not be included below.

1. **Do you consent to being recorded for this interview? The recording, should you consent to it, will be used to verify the notes I will be taking during this call/meeting. Please note we can proceed with the interview without recording if you prefer.**

2. **Please state your full name and the organization you are representing.**

3. **What is your role?**

4. **How does your role relate to digital access and inclusion, if at all?**

5. **How does the city of (x) define digital access?**

6. **What are the key challenges and/or issues your city is experiencing as it relates to digital access and inclusion?**

7. **Does the city have specific projects focused on digital access?**

    a. **If yes, can you please share more about these projects?**

        i. Which communities and/or demographics were these projects aimed at serving?

        ii. What were the outcomes of the project? If it is ongoing, what impact has the project had thus far?

        iii. What were the key challenges in implementing this initiative?

    b. **If not, are there other related digital initiatives or policies that the city has implemented or is implementing?**

8. **Are you familiar with human-rights based approaches to policymaking and implementation? Do you find this type of approach to be useful as it relates to digital access and inclusion and/or municipal digital strategies more broadly speaking?**

9. **Does your city have a digital rights policy and/or framework?**

    a. **If yes, can you please share more information about this policy/framework, including how and why it was developed, and how it is being implemented?**

        i. Who is responsible for implementing this policy?

        ii. How, if at all, does the policy integrate considerations based on gender, disability, age (youth and elderly), citizenship status, race, ethnicity, religion, and language? Are there other considerations not previously discussed?

        iii. In your opinion, what are the key impacts and/or achievements of this policy?

        iv. How is this policy integrated with other city policies?

        v. Has the policy been modified since its inception?

        vi. Are there opportunities for community members to inform the policy and its implementation?

    b. **If no, is this something the city has considered or is in the process of developing?**

10. **How does the city decide which technologies to use and/or procure?**

11. **What are the city's key priorities to promote digital access and address digital exclusion, inequity, and rights violations?**

12. **What safeguards, if any, exist to prevent the exploitation and/or misuse of residents' data? Are there procedures whereby residents can request access to, modification of, or the deletion of their data?**

13. **Overall, what do you believe are the most pressing issues the city needs to address as it relates to digital access?**

14. **Are there additional insights or comments you would like to share with us?**

15. **Would it be possible to share relevant documents (including policies, articles, etc.) related to your city's efforts to promote digital access, inclusion, and/or rights?**


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