Open City Network

Digital Public Infrastructure Discovery Day

Session Report: February 2020

With "smart" cities, Canadian governments are tasked with modernizing government, protecting democratic institutions, and maximizing social and economic benefits for Canadians. At stake is public control over the technology that will soon underpin our municipalities. The OCN's first Discovery Day, on Digital Public Infrastructure (DPI), held on Nov. 27, 2019, hosted by the City of London, demonstrated that:

DPI can protect democratic institutions and modernize cities at scale: An Open City Platform can deliver the major digital public works required to responsibly realize ambitious smart city visions.

Empathy and budgets needed: Resource and capacity gaps exist across the local public sector. Empathy is needed for the challenges of doing technology work in government. Success requires proper investment in the digital and cultural transformation of our cities.

Vision and language matter: An ambitious vision is needed to focus and motivate the broad coalition required. Sectors use key terms differently, so a common language must be developed between public, private and NGO.

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The **Open City Network** (OCN) is a not for profit organization working to protect democratic institutions and modernize cities at scale. It is mobilizing to build an Open City Platform (OCP): a blend of standards and digital public infrastructure which will ensure a responsible, democratic technology future for our cities.

Canada's municipalities have extensive experience, regulations and policy for building the physical parts of our cities. But municipal operations increasingly need new digital infrastructure, where the rules are far less clear, and where we have less understanding of the implications, or what we might be giving away.

Over time, our cities face a risk that one vendor may control smart city infrastructure. This would reduce public control over our systems and data, erode public governance, and constrain our ability to implement public policy choices. The Toronto Quayside project has also shown that we cannot rely on multinationals to build this world fully in the public interest.

The solution is the one adopted by the world's leading democratic e-government jurisdictions: a technology layer, built to be publicly governed, maintained, and responsive to Canadian society: an Open City Platform (OCP).

The **Open City Platform** is a blend of:

- standards: on data governance, generation and exchange, and;
- digital public infrastructure: public, open exchange protocols and technology architecture.

The OCP will:

- Eliminate the democratic risk posed to cities from the front lines of technology;
- Deliver the major digital public works at the heart of smart cities: networked and scalable systems that emphasize the interoperability of government and strong public governance;
- Generate standards to be used as a procurement requirement, or a roadmap for responsible smart city technology development;
- Drive the modernization of cities at scale and new government digital services;
- Foster technology collaboration, sharing and transfer between public, private, and civic organizations;
- Enable creation of new products and services by the emerging urban technology sector;
- Support civic-minded technologists and designers.

How we'll get there

We're taking three steps to achieve the Open City Platform:

1. Discovery and coalition building: Current phase.
2. Standards development: On data governance, generation and exchange, through our partnership with the CIO Strategy Council.
3. Digital infrastructure build: Stand up early digital public infrastructure that will underpin the Open City Platform.

About our first discovery day

The Open City Network is building a technology future for our cities that will protect democratic institutions, modernize cities at scale, and maximize social and economic benefits for Canadians. In late 2019, we held our first discovery day to this effect, on digital public infrastructure, hosted by the City of London. In attendance, in person and remotely, were:

Cities + Associations	Private Sector	NGO	Prov/Fed Gov't + Agencies	Individuals
11	7	7	7	4

The OCN launched in the Spring of 2019. Our early months focused on

- advocacy and coalition building;
- filling our three public sector board seats;
- deeper discovery as to our mission and value add in the Canadian space;
- securing early strategic partnerships.

That momentum led to this first event, where we ran user discovery on how best to create a democratic technology future at scale for Canada's municipalities. We asked participants to challenge our mission and view of the world, dream big about potential benefits of a national system of digital public infrastructure, and explore the many challenges and barriers ahead.

Stephen Diamond, the Chair of Waterfront Toronto, recently said that the Quayside project has started conversations that are forcing Canadian governments to "come to grips" with the future of technology in cities. It is in this spirit that the OCN is mobilizing. As we do, we must remain realistic about the scope of this challenge, how all orders of government are still learning, and how it's hard for many users (cities) to participate in discovery, given resource constraints and pressing daily obligations. As we build a working coalition across public, private and NGO, empathy is needed for the challenges of technology work in government.

This report summarizes key discussions, themes, comments, questions and recommendations made by participants. Where the OCN adds insight or reaction to participant feedback, you will see OCN Comment.

The meeting was held under Chatham House rules so no statements will be attributed to any attendee. Feedback about this report or inquiries about the OCN's work can be directed to Andy Best, Executive Director, abest@theopencity.org.

Results: Discovery Day

Digital public infrastructure

Summary: The OCN proposed that a national system of standards and digital public infrastructure (now the Open City Platform) is required to protect democratic institutions and modernize cities at scale. Participants broadly supported the vision, but expressed the need to understand the concepts more deeply, to ensure we're all using the same terms in the same way, and to be mindful of closing the distance between macro-level approaches, such as a national system of DPI, and the day to day work within a city. They also sought more clarity on the steps through which this project could be realized.

Comments:

- Our group struggled with the "infrastructure" term or analogy. It leads people to think of "hard assets", which is part of it (like networks and devices and hosting and broadband). But I thought what you are more focused on was the foundational systems architecture, policies and practical standards that can underpin smart cities development across Canada.
- What are practical needs across cities in terms of interoperability and shared challenges? We need to ground DPI in practical use cases that will bind cities together.
- We need to create a common vernacular so the public sector and tech sector can talk about and solve the same problem. We are all working to come to a common understanding of the situation at hand.
- We have public policy to enable use by external parties for physical infrastructure, like licensing drivers to use roads, but we don't have much policy for data use by the private sector and other actors.
- The value of physical infrastructure is location based, whereas the value of digital infrastructure is context based, and can change based on where it's used. Also, the border between public and private digital infrastructure is permeable. More clarity is needed about how we will determine the boundary between the two.
- Does a DPI approach include areas like procurement?

OCN Comment: Participant feedback helped the OCN evolve to a top level framing of an Open City Platform, which includes DPI and standards. We also have further clarified our three-phase approach towards an OCP, (discovery, standards, tech build), outlined earlier in this report.

We've also prepared this brief for cities as to why they might participate and how this would help their daily work. In terms of the shared need and desire for this, our view is that this is not a question of whether or not cities eventually want a shared digital backbone. It's about what kind they want: one that is publicly governed, or one which is more privately controlled. As major private vendors seek to be the one to deliver a comprehensive, plug and play smart city, there will be format and vendor consolidation over the coming years in the smart city space. But no single company should control smart city architecture, which is why we believe an Open City Platform is key to ensuring public governance and influence over the digital infrastructure that will soon underpin all municipal services and operations.

Architecture Concept for Discussion

Summary: In the Toronto Quayside project, Sidewalk Labs pledged to build a neighbourhood "from the internet up," yet Canada's understanding of how to do that responsibly is not yet where it needs to be. What's vital to understand is that public policy choices in many areas, including (but not limited to) data governance and exchange, economic development and innovation, privacy, and digital rights, will be put into action through technology architecture. Technology is not neutral. It contains within it decisions, value judgments, biases, and business models, all of which impact how the technology works and what outcomes it will enable or constrain. The architecture layer for the smart city will be no different. It will enable or constrain democratic public policy choices based on who builds and governs it.

The three layers you see on the diagram below all exist already. The fourth, the digital layer, is what's emerging. The outstanding question in early 2020 is who will build it, and whether it will be under public or private control
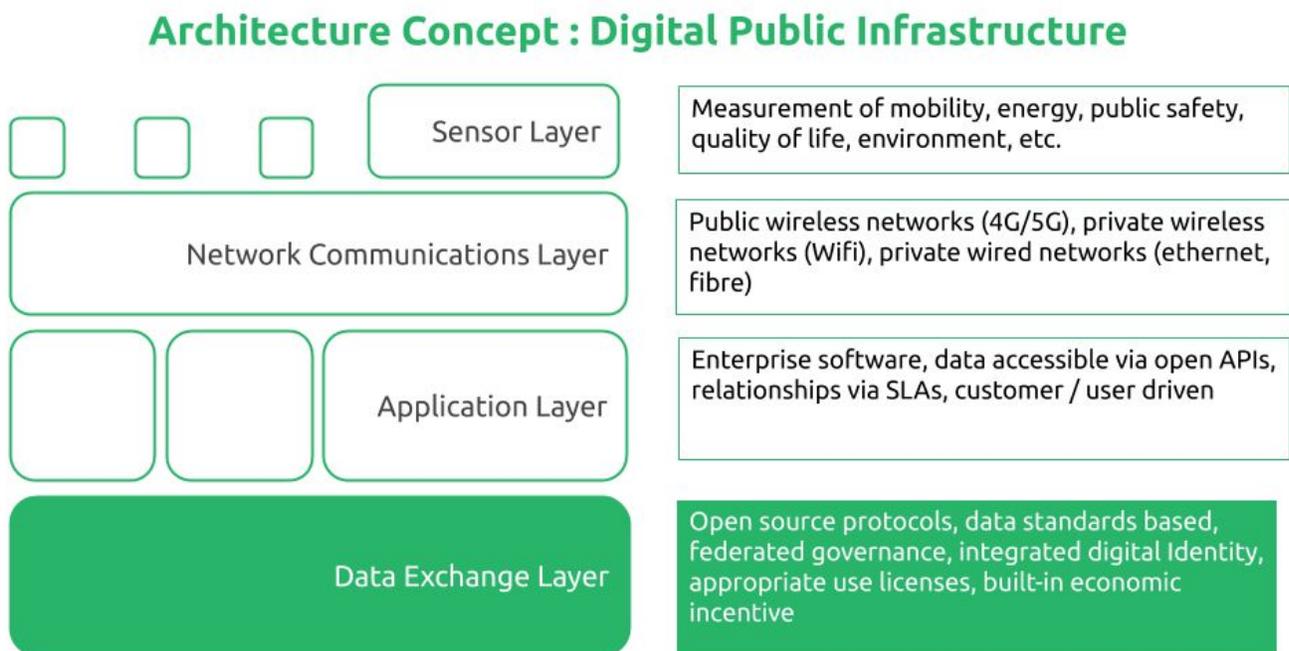
Participants generally liked the breakdown of the layers of an end-state smart city, but struggled with translating it into practical pieces of work, where their role in creating it was clear. A key challenge in creating a public exchange layer for cities is collaboration across the many relevant orders of government, as well as the resource gap in many cities. In short, the concepts and clarity around layers resonated, but more detail was sought on how this will be operationalized.

Comments:
- This would reclaim the public nature of infrastructure for cities in the digital realm.
- Each layer needs to be more deeply unpacked.

- I like that this begins with the problem, not with prescribing technology.
- One participant suggested a different approach:
"Maybe it's my government brain, but I was thinking about it in a slightly different, more hierarchical way:
    - The national systems principles and architecture layer (the macro, conceptual issues, e.g. open vs closed, federated v. siloed)
    - The laws, policies and regs layer (the specific, detailed rules that apply the broad conception set by federal, provincial and/or local governments)
    - The operational layer, with (common) standards, (shared) applications, (pooled) resources or organizations (i.e. the mechanisms that support practitioners across cities to apply the policies / rules to actual use cases)

    Building off those points, the challenge I see in this space is that most people don't operate at those three layers."

OCN Comment: The OCN plans to build this public digital layer. While the Canadian federal and provincial governments have both carrot and stick to compel the modernization of their institutions, this is not the case for the local level. Cities are not built or resourced to work together to build shared digital infrastructure that will allow them to responsibly realize ambitious smart city visions. Success in "smart" cities therefore requires sustained investments in the digital and cultural transformation of municipal bureaucracies, support for cities from the front lines of technology, and an appropriate vehicle through which to realize an alternate vision.

Benefits for cities

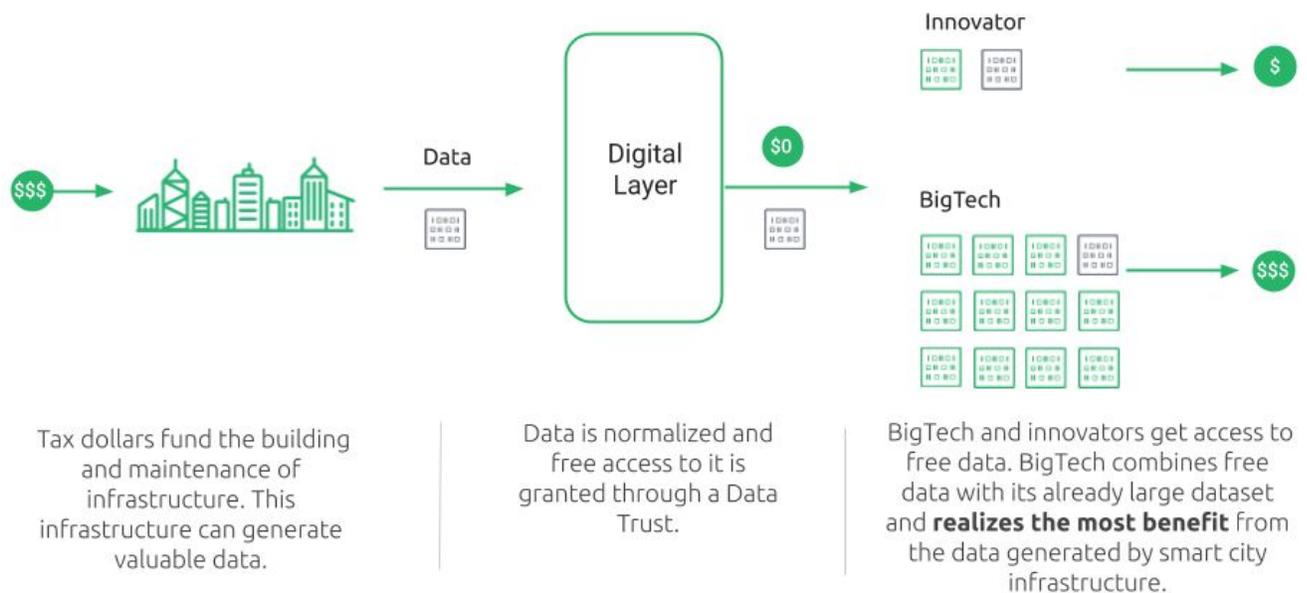Comments: Participants felt a digital public infrastructure/Open City Platform approach would:

- Enable greater interoperability between different service providers and help them provide a more seamless service experience across organizational / jurisdictional boundaries. The 'tell us once' idea but across jointly-delivered or integrated programs and services;
- Create capability for single sign on / identification / authentication;
- Support technological sovereignty, and help move away from enterprise/legacy and locking in to vendors, which stifles innovation. Currently there is lots of duplicative development: code and software would be more readily shared, reducing waste;
- Enable a common language in the RFP process, and potentially articulate to cities a playbook and set of principles to be used in RFPs;
- Create a more level playing field for digital services across Canadian municipalities;
- Create technology standards that are practically applicable to day to day municipal work;
- Enable more data-driven decision making;
- Drive economic growth and prosperity, and the generation of wealth for cities.

The value of public data

Summary: OCN suggested that traditional models of open data (the more open, the better) cannot automatically be transposed onto a world where structured, machine-readable data is streaming in

from infrastructure around a city, as this would lead to an unintentional transfer of wealth from the public to private sector. Participants recognized the opportunity to create or enable new financial/economic/social value, and said that this information asymmetry concept resonated clearly, but flagged Canada's underdeveloped regulatory and policy frameworks in this regard.

What will happen to the value of public data?

| Tax dollars fund the building and maintenance of infrastructure. This infrastructure can generate valuable data. | Data is normalized and free access to it is granted through a Data Trust. | BigTech and innovators get access to free data. BigTech combines free data with its already large dataset and **realizes the most benefit** from the data generated by smart city infrastructure. |

Comments:

- I'm skeptical about this. Have cities made money from this data? It sounds like you're saying "cities have valuable data and we should monetize it."

OCN Comment: This is definitely delicate, and is compounded by a lack of experience, regulation and policy in this space. Calgary does make some municipal data available for sale, which does not include personally identifiable information. This recognizes that some public data costs more money to generate and maintain. Calgary's process, however, is manual, and there is no mechanism to responsibly scale that for when public infrastructure is generating real time, structured data.

Our argument is not that public data must be monetized; rather, it is that we must be mindful of the value of this data to certain actors if we apply current open data assumptions to an end-state smart city scenario. In this case, large corporations with significant data assets will extract value from public data, but the public will not receive any of that value. Those dollars would therefore not be re-invested in public institutions and services. The OCN is arguing that we must protect that value until our public sector figures out, or decides against, a regulated, responsible manner to unlock it in the public interest. There are early examples from other jurisdictions on how to do it right, and how to do it wrong.

Regulations and governance

Summary: The OCN is concerned about the significant regulatory and public policy gaps that currently exist regarding smart cities. Solving these issues in the abstract will be difficult; an Open City Platform can provide a focused project to solve these issues across many policy areas like data ownership and management, infrastructure planning, economic development and innovation, cybersecurity, democratic engagement and oversight, intellectual property, justice and civil rights, and privacy.

Comments:
- Do we have an appropriate regulator for this infrastructure? What type of regulator does it need?
- One model for how this can be further operationalized is to explore a multi-stakeholder government agency: "like Metrolinx, but for digital technology."
- Governance models must be agile, repeatable, scalable, sustainable.

OCN Comment: We agree that regulatory and governance modernization is required, potentially including the creation of new government or arms-length institutions. Part of why we exist as a not for profit is to focus the public sector's attention on this problem and help to drive the agenda towards a stronger regulatory and governance framework for digital smart city architecture. What form that takes is too early to say. The public sector has only just begun to tackle the challenges around an end-state digital layer for cities in the context of the 12-acre Quayside project.

Regulating the digital layer crosses many policy and legislative areas. Writing on that project, John Lorinc said that the City of Toronto, Province of Ontario and Federal Government "need to create a regulatory framework that allows Sidewalk to build out its vision but also addresses public concerns about privacy and surveillance. The anticipated reforms cover everything from amending the provincial building code so it allows tall timber buildings to updating legislation governing data privacy and planning approval processes for new smart city technologies."

Regardless of Quayside outcomes, that project has shown that these issues are now on the doorstep of Canada's cities, who, in pursuing more comprehensive "smart" city projects, are on the wire without a regulatory net. While Quayside has attracted attention, the fact is that the issues raised in that project exist in large and small ways in municipalities across the country. But no entity has the mandate, coalition and budget to build a digital layer for cities across the country. The OCN hopes that an Open City Platform can provide a practical vehicle through which to focus this work, and to solve many Quayside issues at scale for the rest of Canada.

National benefits for Canada

Summary: Participants identified that successful jurisdictions have adopted this approach (building and regulating digital infrastructure) at the federal level.

Comments: A digital public infrastructure approach can:
- Make Canada a leader in responsible, democratic smart city development;

- Ensure economic benefits of this modernization will accrue more broadly to Canadian society, across the public and private sectors;
- Blend ethics, privacy, innovation and infrastructure policy in the national interest;
- Focus our attention on how data is collected, managed and shared as a society;
- Help Canada become the regulatory arbiter of data regimes, making other jurisdictions (USA, EU) with different standards and products interoperable;
- Leverage Canada's brand of trust to enable this leadership.

OCN comment: We believe that the modernization of our city institutions at scale is one of the greatest untapped pools of economic development potential currently available to Canadians. An Open City Platform can do what's best for the macro-level modernization of cities while nurturing Canada's technology ecosystem.

Public engagement

Summary: Participants agreed that extensive public engagement will be required, though were divided on how, and how much. Current technology, when applied in public spaces, affects the rights of citizens in new, complex ways. Our public institutions have not yet provided adequate policy and regulatory certainty to do this work responsibly.

Comments:
- Users have choice as to whether or not to use private services. They mostly have no choice as to whether or not to use municipal government services, elevating the need to engage with residents on technologies that will be applied to the public realm.
- Given the stakes, we need a new manner of infusing regular people into the development of public technology. How does the public participate and help design this model?

OCN comment: We agree that public engagement models must evolve to address the complexity of applying current technology to the municipal public sphere. Waterfront Toronto recently announced that it had identified over 120 specific technologies in the revised Sidewalk Labs plan, all of which require evaluation, and many of which will require public consultation prior to being deployed in the public realm. The breadth of this challenge is significant, and public institutions must properly fund the engagement component of this work.

Use cases

Summary: Participants identified dozens of use cases for digital public infrastructure across the full range of municipal services and jurisdiction. They agreed that this cannot take place outside the broader digital government and transformation context, including procurement reform, ensuring the right digital skill sets exist at the strategic level in government and re-evaluating how cities are funded.

For the moment we are remaining use case agnostic, as we move through our phases of discovery towards the Open City Platform. As we approach technical standards and a technology build, we will focus on 1-2 use cases.

Next Steps

The OCN will release draft principles and early technology considerations for the Open City Platform at the end of February. Our next discovery day, to further develop those details, will take place in May. If you or your organization is interested in being involved, please reach out using the contact information at the end of this report. This work will feed into standards development for data governance, generation and exchange through our partnership with the CIO Strategy Council.

Why get involved?

Current technology means cities now face national public policy challenges in areas like data, innovation, digital infrastructure, privacy, digital rights and inclusion, economic development and more. The Quayside project has shown that these issues are on our cities' doorstep. But most can't reasonably tackle these alone, nor are they resourced to build the digital infrastructure needed to responsibly realize ambitious smart city visions.

In these first phases of our work, the OCN is an engine for discovery, coalition building and standards development at the intersection of cities, democracy and technology. Membership in the Open City Network does not commit anyone to anything; cities can join in as observers, full participants, or anywhere in between. The OCN makes space for leaders and learners, because we do not have all the answers: only a working coalition across the public, private and NGO sectors can tackle this national challenge.

For the later work of building the Open City Platform, technology for the public realm should be built with and for users, on strong public policy and governance foundations. With cities as the ultimate users of the OCP, here is a partial list of what a city might do:

- Join user experience research and discovery;
- Help solve public policy issues related to deploying current technology in the public realm;
- Ensure new technology standards are empathetic to municipalities, and can be practically applied in municipal operations;
- Learn from Canadian technology leaders about what's happening on the front lines of tech;
- Influence the agenda of the Open City Network and the technology future of Canada's cities;
- Serve as eventual development and deployment partners for the OCP.

OCN membership

Jenna Sudds,
Councillor,
City of Ottawa

Michael Thompson,
Deputy Mayor,
City of Toronto

Recent Open City Network Media

CBC Spark: No company should have a monopoly on building smart cities, tech entrepreneur says
CBC Kitchener: Open City Network on the democratic risk posed to cities by technology
TVO: Want a smart city without a corporate master?

Funding and governance

We are a member-supported not-for-profit organization. The OCN received one-time start up support in 2019 from Compute Ontario, not-for-profit funded by Ontario's Ministry of Economic Development, Job Creation and Trade.

Our Board of Directors includes public, private and not-for-profit organizations:

Kurtis McBride, CEO

Joani Gerber, CEO

Charles Finley, Chair

Mike Branch, VP of Data and Analytics

Jenna Sudds, City Councillor

Alex Miller, CEO

Hongwei Liu, CEO

Partnerships

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