Smart Cities, Smart Governments

ICTC Policy Roundtable on Smart Government in Canada

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ICTC CTIC

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Preface

The Information and Communications Technology Council (ICTC) is a not-for-profit, national centre of expertise for strengthening Canada's digital advantage in a global economy. Through trusted research, practical policy advice, and creative capacity-building programs, ICTC fosters globally competitive Canadian industries enabled by innovative and diverse digital talent. In partnership with an expansive network of industry leaders, academic partners, and policy makers from across Canada, ICTC has empowered a robust and inclusive digital economy for over 25 years.

About the Smart Cities Project:

ICTC is leading a multi-year national research initiative on smart cities. Under this project, ICTC investigates the development of smart cities across Canada and internationally, with the ultimate goal of understanding the labour, technology and societal needs and opportunities of Canada's future communities. To guide and shape this research, ICTC has chosen the following areas of focus: Smart Infrastructure, Smart Mobility, Smart Energy & Environment, Smart Health & Wellbeing, Smart Government, and Smart Regulation. During the course of this study, ICTC is hosting policy roundtables on each of these pillars. The first roundtable was on Smart Infrastructure and took place in November 2019. These roundtables engage a variety of stakeholders across Canada to uncover specific policy needs and put forward recommendations that can support a smart future for our cities.

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KEY WORDS

ACCESSIBILITY
DATA
DIGITAL ADOPTION
DIGITAL GOVERNMENT
DIGITAL TRANSFORMATION
E-GOVERNANCE
INCLUSION
PRIVACY
PRIVACY BY DESIGN
SMART CITIES
SMART GOVERNMENT
TECHNOLOGY

Introduction to the Roundtable

ICTC's Smart Government Policy Roundtable was held on March 11th, 2021. It was the fourth in a series of events focused on creating a vibrant and inclusive smart economy for Canada. The roundtable opened with a keynote speech about privacy-conscious innovation by Dr. Ann Cavoukian, former Information and Privacy Commissioner for the Province of Ontario and inventor of Privacy by Design.

In the event's second hour, an invited group of 30+ experts from industry, government, academic institutions, and civil sector organizations were led in discussion by ICTC facilitators. Participants formed smaller groups of three to five people and worked through three 20-minute exercises focused on smart government. In terms of methodology, these exercises practised a form of participatory sensemaking: participants created qualitative data, analyzed and interpreted this data through discussion, and developed new frameworks of understanding based on their interactions in the exercises.[1]

Beginning with the first exercise, the roundtable participants highlighted key trends in smart government, and identified what future progress should look like. The final two exercises helped distill participant responses into common themes and diagnose what work is needed, and by whom, to achieve common goals. Throughout this process, participants discussed themes like inclusion and accessibility, privacy, collaboration, and digital adoption. This policy brief distills these discussions and highlights the priority areas identified by roundtable attendees.

A Zoom-In on Privacy with Dr. Ann Cavoukian

Dr. Cavoukian touched on a range of privacy topics relevant to smart government, including COVID-19 contact tracing, de-identification risks, biometric encryption, and recent developments in the world of privacy.

Dr. Cavoukian began by discussing a common myth: that privacy is simply a means to enable secrecy. Rather, Dr. Cavoukian suggested that privacy is about personal control and freedom of choice—the ability for users to have what she describes as "informational self-determination." Dr. Cavoukian explained privacy as "a necessary condition for societal prosperity," noting that privacy allows for rights and civil liberties, which are necessary for innovation and creativity, and in turn a prosperous society. Surveillance, she added, is the "antithesis of privacy," as it limits personal privacy and harms rights and civil liberties. Dr. Cavoukian went on to explain that proponents of Privacy by Design must be proactive and "banish zero-sum models," which conceptualize achieving privacy at the expense of security. Instead, Privacy by Design attests that privacy and security can be complementary.

Privacy by Design is the idea that privacy considerations should be implemented at the outset of policy or service design rather than as a regulatory or legal response to breaches or violations. By doing so, privacy becomes *preventative* rather than *reactionary.* Waiting for privacy violations to occur before responding, Dr. Cavoukian noted, can lead to lawsuits, damages to one's brand, and loss of consumer trust. Despite widespread adoption of Privacy by Design, Dr. Cavoukian expressed concern that in many places, "the majority of privacy breaches remain unchallenged, unregulated, [and] unknown." Still, she described herself as an eternal optimist, praising Europe's General Data Protection Regulation (GDPR) as an example of regulation that follows Privacy by Design principles. She is also hopeful for Canada's privacy future, noting a 2018 federal government review of the Personal Information Protection and Electronic Documents Act (PIPEDA) through a Privacy by Design lens.

Defining Smart Government

The roundtable portion of the event began with a "visual check-in," where participants were invited to explain what smart government means to them. Some participants defined smart government as the **use of technology by government generally**, while others specified the use of technology for **data-driven decision-making** or **government service delivery.** Many participants indicated a need to prioritize things like **data ethics**, **citizen well-being**, and **human-centred design**.

During the remaining exercises, several other definitions for smart government surfaced, including *Gartner*'s five levels of digital maturity[2] and the ***International Telecommunication Union*'s work on "smart governance."**[3] **Participants applauded both definitions for including key progress indicators and attempting to measure smart government "success."**

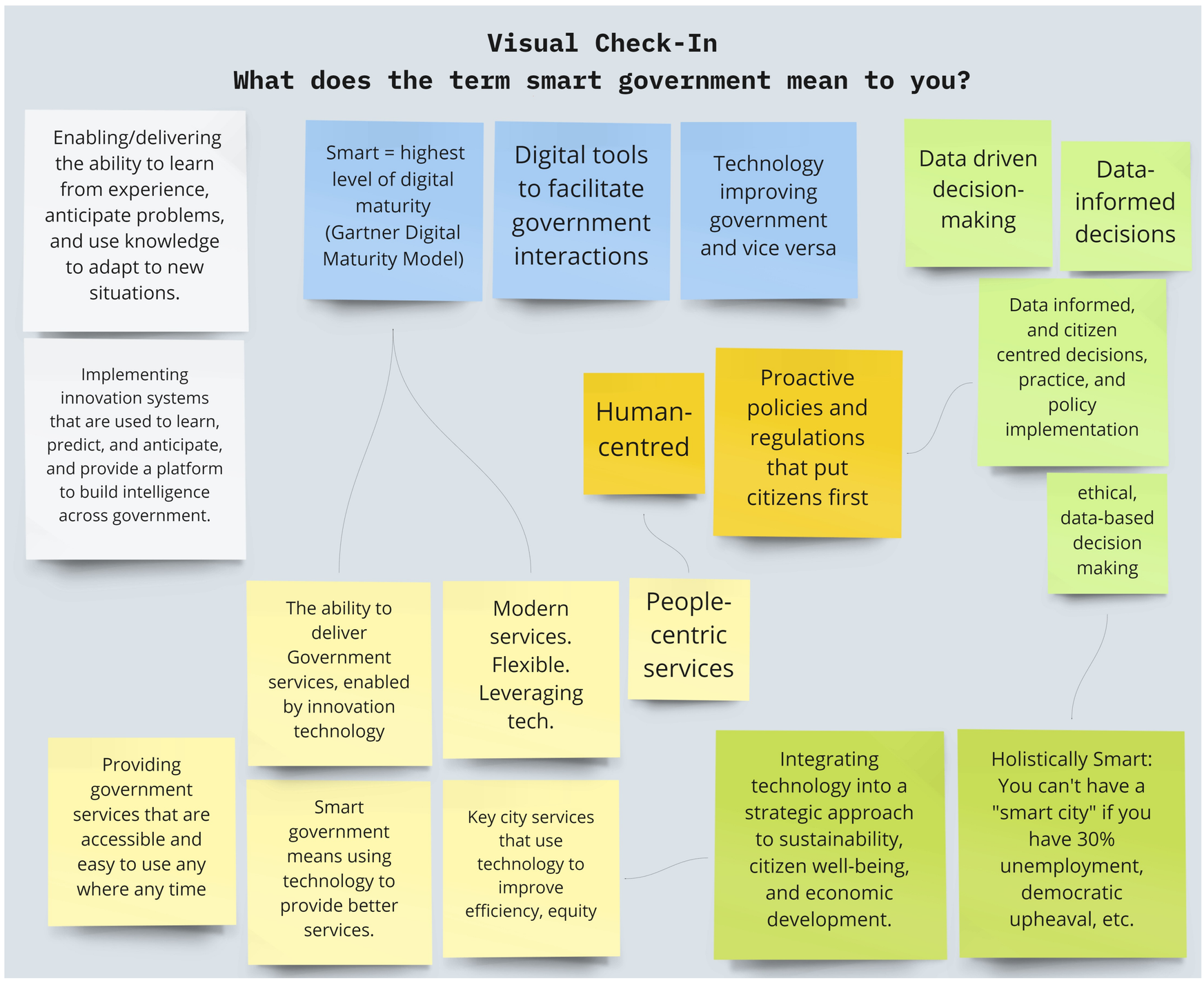

Figure 1. Visual Check-In: Participants were invited to "check-in" to the roundtable event by explaining what the term "smart government" means to them.

Exercise One: Future Trends in Smart Government

Participants were split up into Zoom™ breakout rooms consisting of approximately three to five people. They were asked to provide at least six answers to two questions: What do you *expect* to see in smart government in Canada over the next five years; and what do you *hope* to see in smart government in Canada over the next five years?

Participants spoke to a wide range of smart government topics in their responses to exercise one. For example, in response to the "expectations" question, participants brought up **inter-jurisdictional and inter-sectoral collaboration, privacy and trust, open and inclusive government,** and **technology adoption and/or readiness.** These topics are discussed in more detail below. Other topics invoked less frequently by participants included digitized government services, data and data-based decision-making, access to technology, and public budget-making.

Participants generally had positive expectations for inter-jurisdictional and inter-sectoral collaboration. Some predicted greater (and more efficient) collaboration between different branches and/or levels of government on smart government projects, while others anticipated greater use of public procurement and public-private partnerships (PPPs), for instance to achieve a more efficient government structure. Only a handful of participants had negative expectations in this area—for instance, continued segmentation of services between different jurisdictions or cost cutting and inter-departmental competition for available funding.

Expectations for privacy and trust in smart government were more divided, highlighting the often-controversial nature of privacy in smart government discussions. Participants noted the likelihood of continued debates over privacy-invasive tools like facial recognition and the possibility for legal disputes about privacy rights. Across the board, participants saw privacy and trust as fundamental pillars for smart government work.

Participants indicated that they expect government to become more open and inclusive through smart government work. More open data opportunities will enable non-government stakeholders to become more involved in governance processes while

also providing more opportunities for public oversight. Public engagement platforms like Engage Ottawa[4] can make it easier for citizens to weigh in on government plans and priorities and provide feedback on current projects. However, access to technology is a prerequisite for an inclusive smart government, including both access to affordable high-speed internet and affordable technology devices.

Finally, in pursuit of smarter government, participants expect government not only to adopt more sophisticated technology but also to engage in more upskilling and other technology readiness activities.[5] In terms of internal technology adoption, participants highlighted that today, governments are often restricted to using “one-size-fits-all solutions” that are not tailored to individual government or departmental needs. Generic software and hardware solutions may also prevent governments from making the best use of their data. Looking forward, participants expect to see tailored public sector solutions that are “fit-for-purpose” and enable more flexible use of internal data for planning and decision-making. From a public-facing perspective, participants expect governments to deliver more services digitally and make more services interoperable between jurisdictions and departments, for instance, through the development of digital identity services.

There was significant overlap between what participants “hope” and “expect” to see in smart government and, as a result, many similar themes emerged when participants were asked what they hope to see in smart government in the next five years, notably:

1. More advanced technology adoption, digital transformation, and technological infrastructure
2. A strong focus on privacy and related topics like data ethics
3. More collaboration and better solutions for challenges associated with collaboration, such as the need for interoperability, open data, and technology standards
4. Full digital inclusion, including user-centred design and access to technology

Beyond this, participants highlighted that irrespective of which goals we set for smart government, there will always be a need to measure success. As such, participants hoped for greater use of indicators in smart government projects, including more comprehensive social indicators (e.g., related to health, housing, equality, education, and quality of life). The second exercise further elaborated on the participants’ hopes for smart cities.

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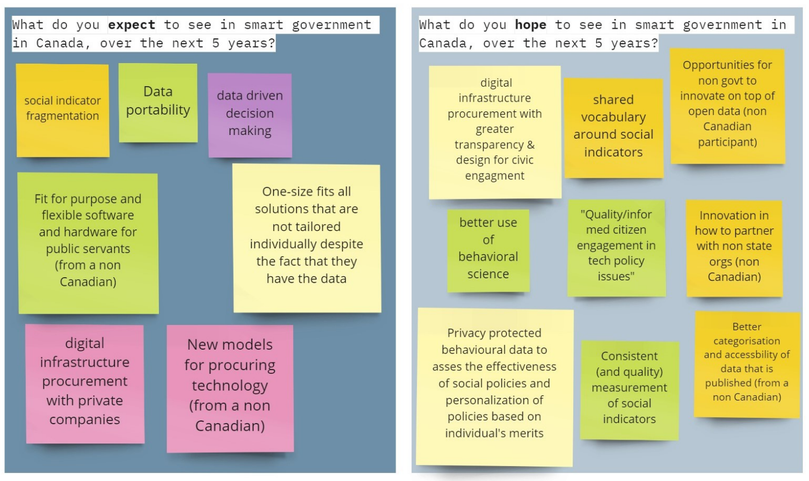

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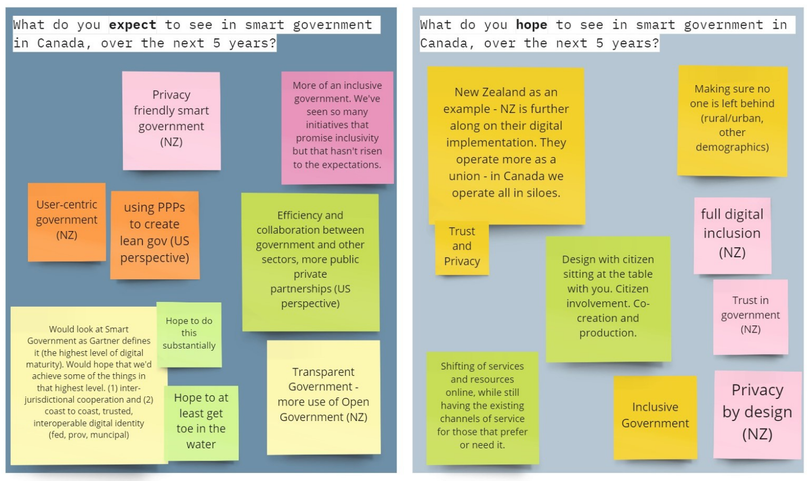

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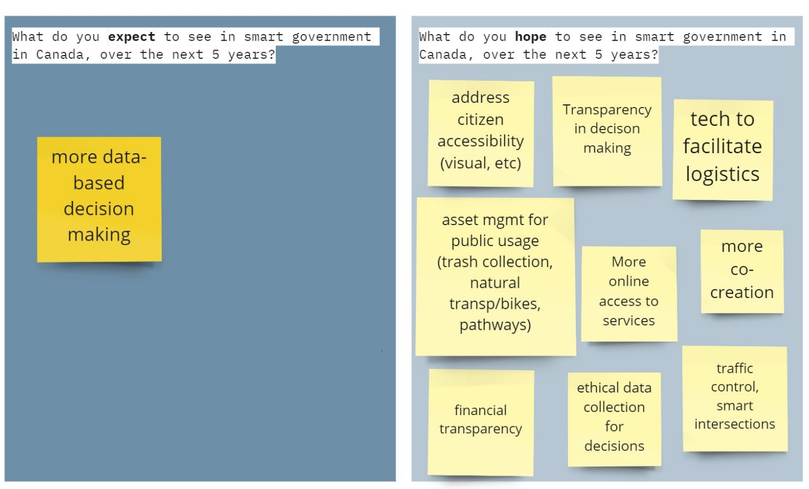

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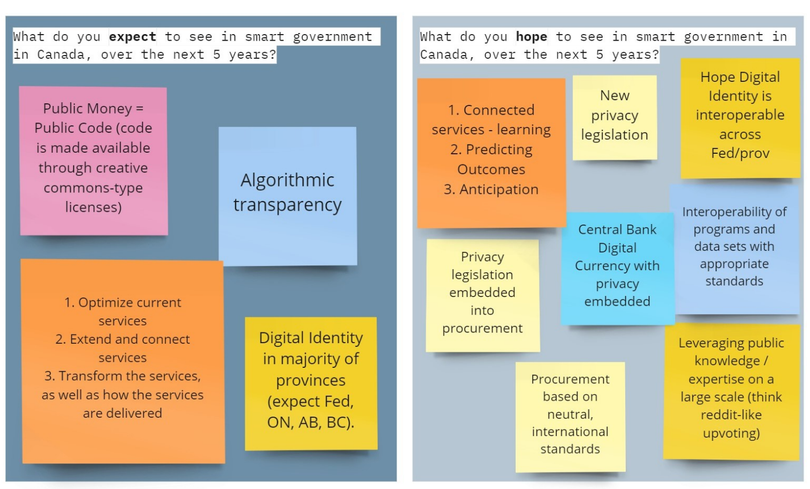

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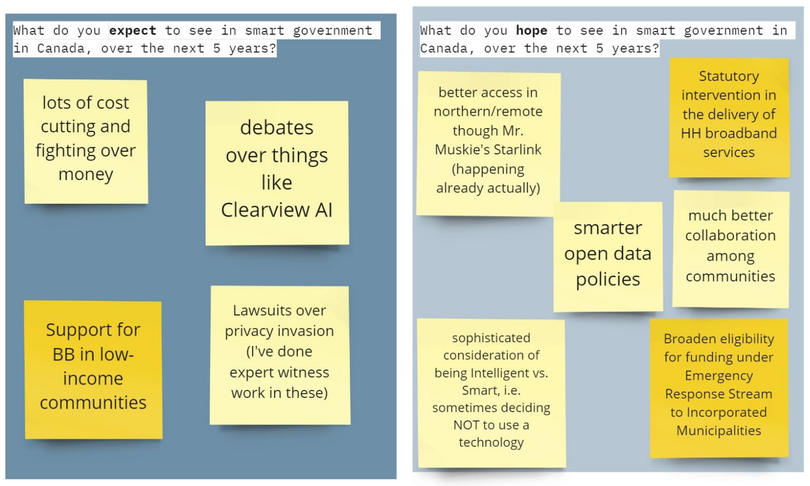

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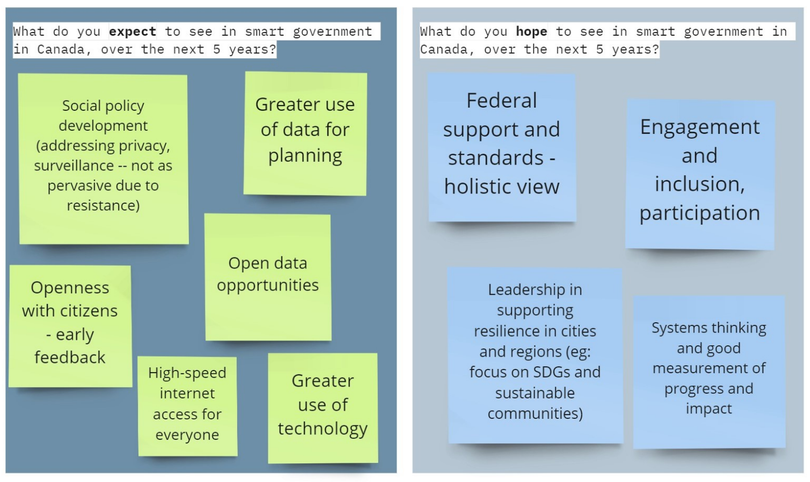

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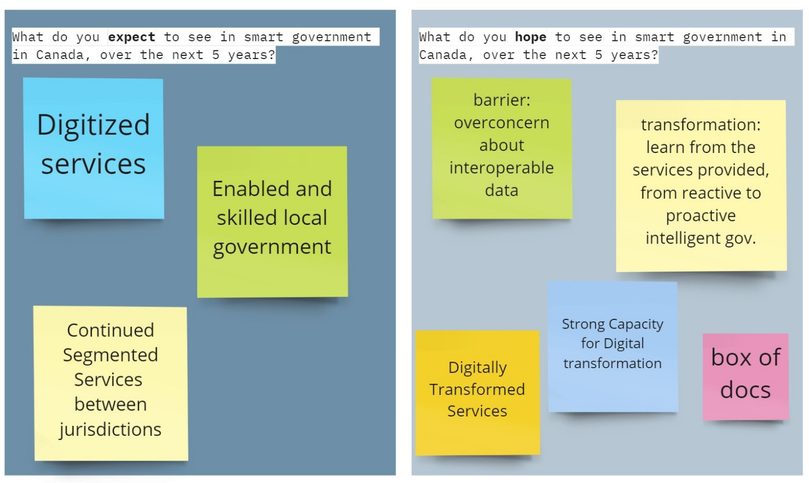


Figure 2. Exercise One: As a team, participants were asked to identify what they expect and hope to see in smart government over the next five years.

Exercise Two: Finding Common Themes

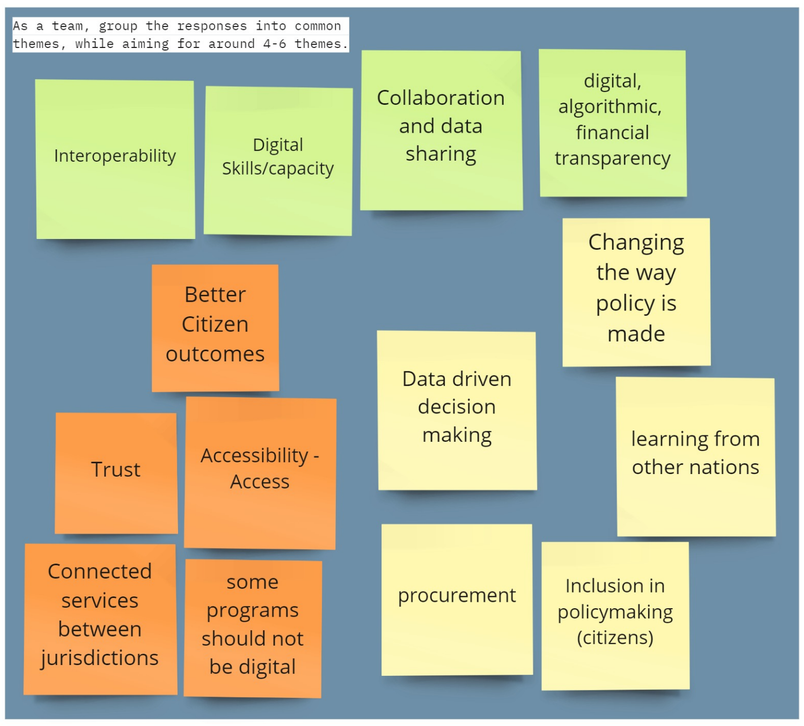
Participants were split up into Zoom™ breakout rooms consisting of three to five people. They were asked to read through the roundtable's answers to one of the questions from the previous exercise (What do you *hope* to see in smart government in Canada over the next five years?) and identify four to six common themes.

The purpose of this exercise was to encourage participants to interpret, validate, and contextualize the data that they and their peers had created. In part, this was a form of participant validation, meaning the data was returned to participants "to check for accuracy and resonance with their experiences."[6] During this process, participants had to:

- Read and interpret one another's responses
- Collaborate with other participants to identity common themes
- Discuss as a team which themes were most important

Each breakout room ended up with more than six themes, perhaps because participants were unable to come to agreement about which themes were most prevalent, or perhaps because it was difficult to account for the full extent of smart government activity in just six themes. Some groups chose themes that represent debates within smart government, such as "privacy over economics" or "intelligent vs. smart," while others broke themes down into broad, single-word categories, including "Trust," "Ethics," and "Privacy." Still other groups provided themes that went into substantial detail: *"Collaboration and alignment around data standards, ontologies, measurement (of social indicators, etc.) between governments + between government and non-government."*

BREAKOUT ROOM 1



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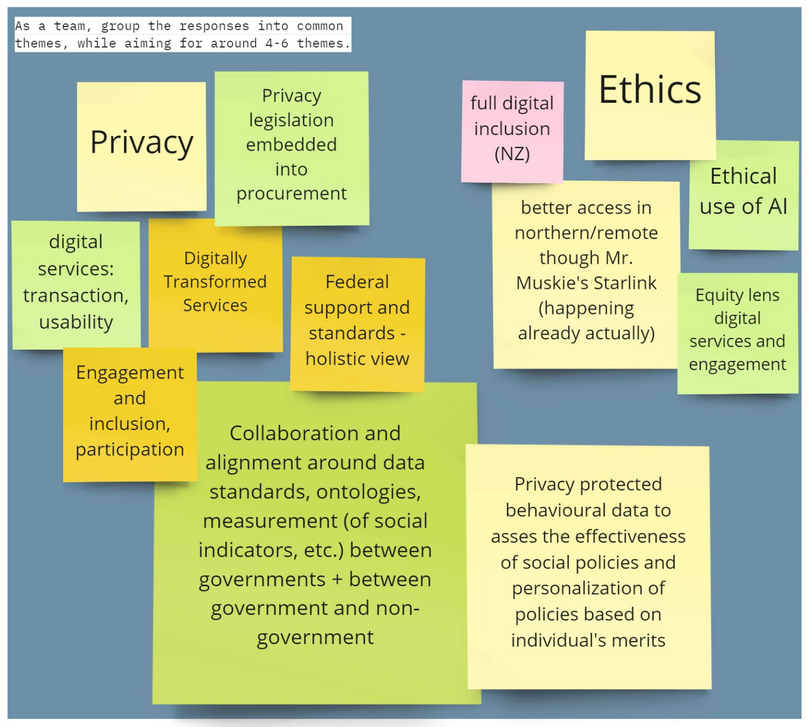

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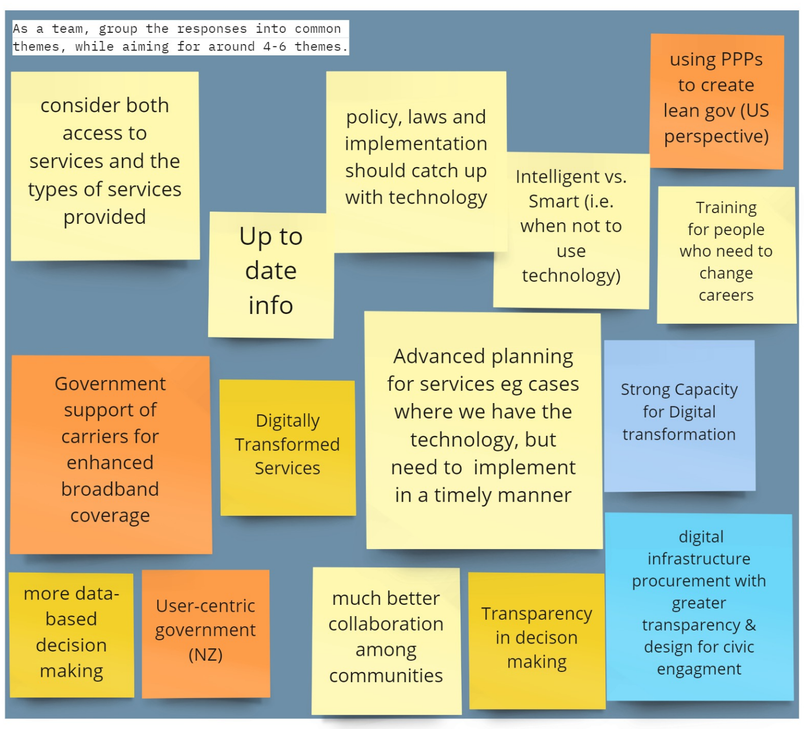

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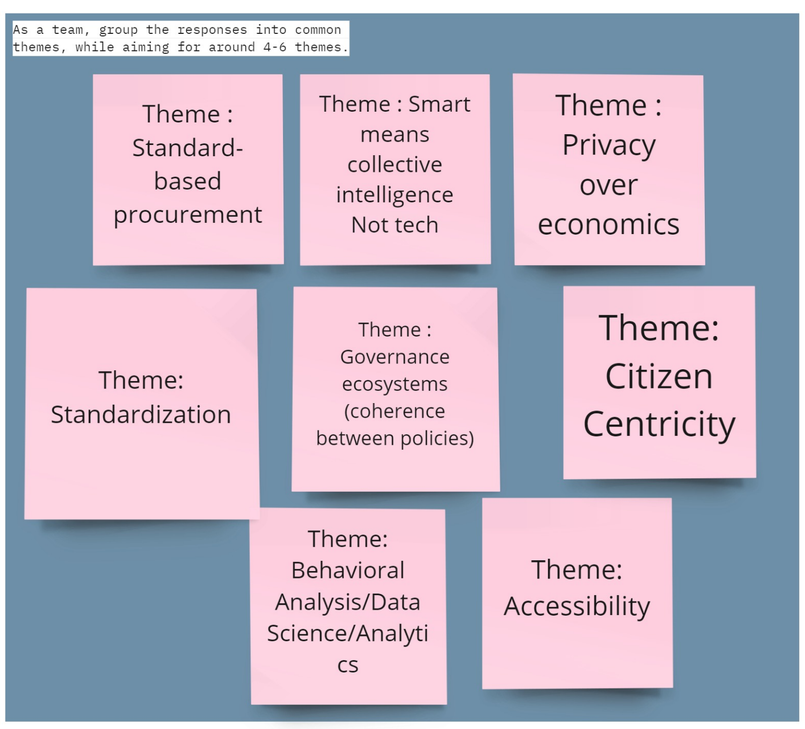

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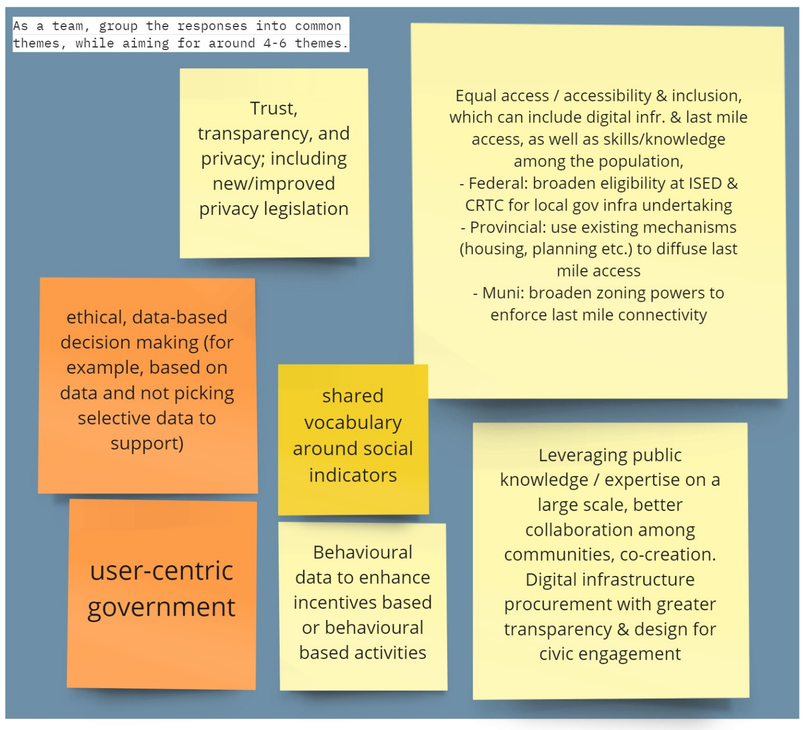

Figure 3. Exercise Two: Participants were asked to read over the responses to question one and identify four to six common themes.

Exercise Three: A Roadmap for Progress

Participants were again split up into Zoom™ breakout rooms consisting of three to five people. This time, the facilitators provided participants with four "priority areas" (i.e., topics that arose most often in the first two exercises). Roundtable participants were asked to work together to determine what would be needed to achieve progress or success in each of these areas. The details of these discussions are described in the following sections.

To determine the aforementioned "priority areas," ICTC hosts selected themes that arose most frequently in breakout rooms during exercise two. These themes were: Inclusion and Accessibility; Privacy; Collaboration; and Digital Adoption and Transformation. In order to maintain the participant-led nature of the roundtable, participants were also encouraged to reframe these themes or introduce new ones. Two groups elected to do so, with one focusing on "Trust" rather than "Privacy," and one reframing "Inclusion and Accessibility" to include "Digital Adoption."

Inclusion and Accessibility

Many roundtable participants suggested that inclusion and accessibility go hand in hand: An inclusive smart government requires technology to be accessible to all, and inclusive governance means providing diverse groups access to the policy and decision-making process. As one participant put it, inclusion and accessibility mean "no stakeholder group—urban or rural, province or territory—left behind."

How might we include diverse perspectives in decisions about smart government? **Participants noted that, as a starting point, we should continue to strive for diverse representation in government and industry**.[7] A number of initiatives[8] are already in place at the federal level to improve public service diversity, including comprehensive data collection to track progress to date.[9] Similar programs also exist in various forms at the provincial, territorial,[10] and municipal levels.[11] Nonetheless, additional work is needed to improve public service diversity across all levels of government, particularly in higher income and leadership positions. Likewise, studies show that more work is needed to improve representation on city councils, which have a direct impact on smart city work.[12] Apart from this, participants reiterated that building an inclusive

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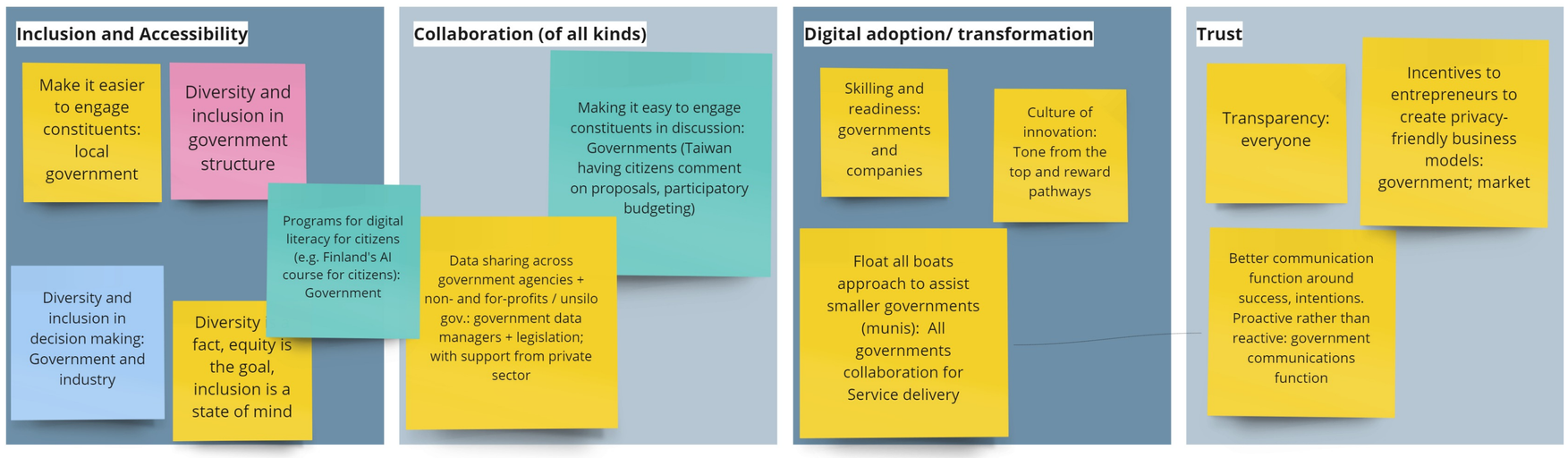

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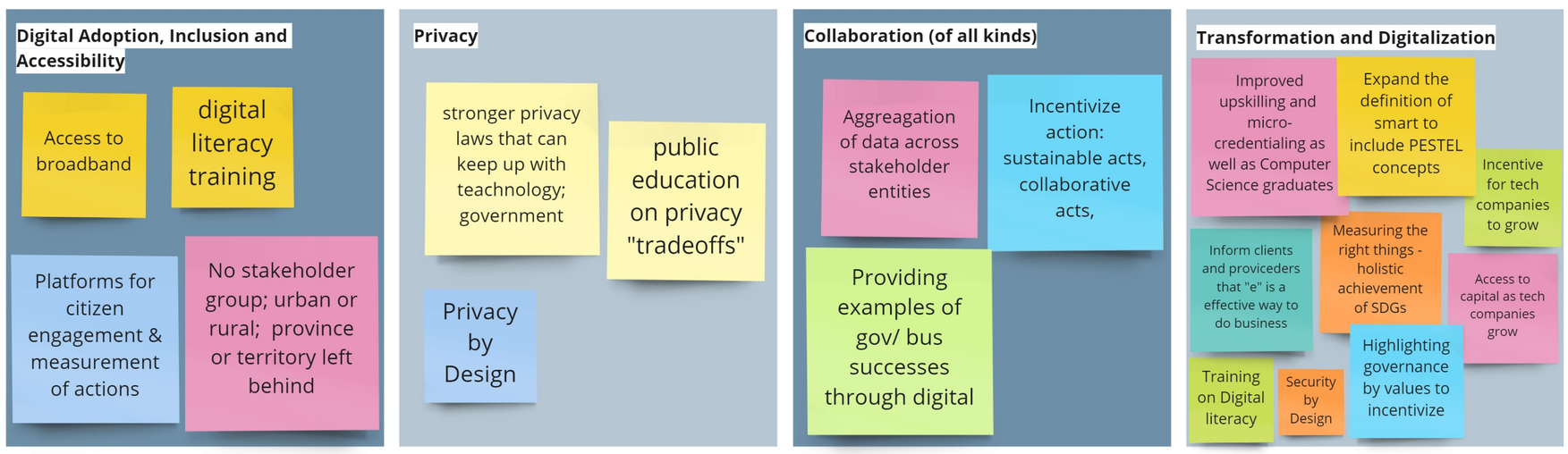

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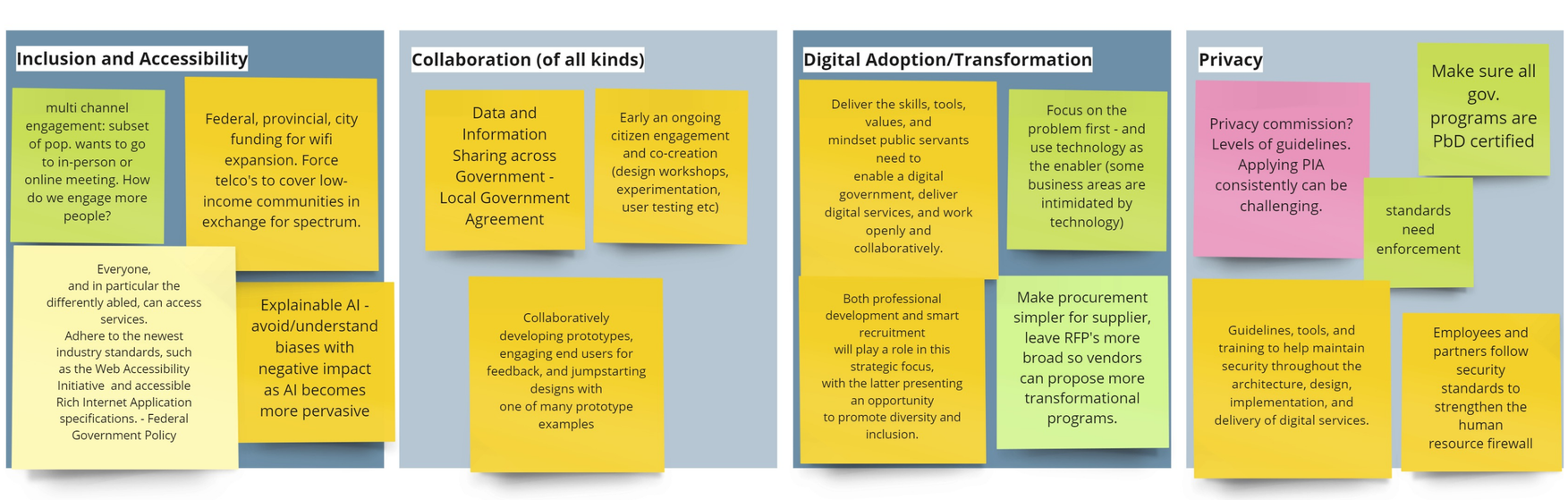

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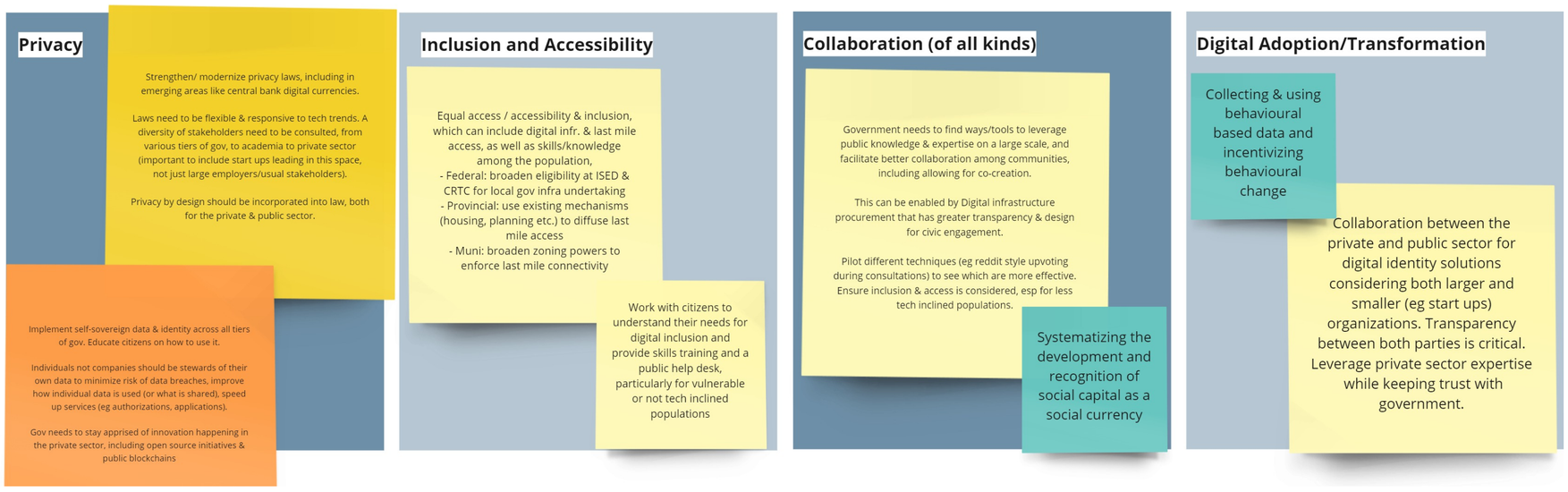

Figure 4. Exercise Three: As a group, participants were asked to identify what work is needed to achieve success in each of the identified priority areas.

government means **including citizens in the policy and decision-making process.** As discussed in Exercise 1, governments can use technology to make it easier for citizens to identify their priorities, weigh in on plans, and provide feedback, for instance by developing an online forum or public engagement platform.

A second component of inclusion and accessibility is accessible technology. Participants highlighted three ways to make technology more accessible to the public: design, digital literacy, and tech infrastructure.

Inclusive design, accessible design, and human-centred design are all examples of design frameworks that help serve diverse populations**.** Dr. Jutta Treviranus from the Inclusive Design Research Centre in Toronto identifies several dimensions of inclusive design, including designing for human uniqueness and variability, and using inclusive processes and tools, such as co-designing with diverse groups.[13] Similarly, Microsoft pinpoints three inclusive design principles: recognizing exclusion, solving for one while extending to many, and learning from diversity.[14] Frameworks like these can help designers adopt an inclusive mindset during the design process. For example, one participant noted that in the context of smart government services, designing for diverse populations means ensuring multi-channel engagement: if a subset of the population would prefer in-person versus online meetings, or paper versus online forms, this should be accounted for during the design process. In addition to frameworks, participants discussed how adhering to industry standards can help ensure that certain accessibility requirements are met. For instance, participants referenced industry standards like the World Wide Web Consortium's Web Accessibility Initiative[15] and federal policy related to the *Accessible Canada Act*.[16]

Beyond inclusive design, **tech accessibility can be improved through citizen-focused digital literacy programs**: these kinds of programs were referenced by three of the four breakout groups. Digital literacy skills are important because they can help citizens navigate smart government services and engage in smart government consultations more effectively. While one group of participants suggested a "public help desk" for smart government services, another referenced the University of Helinski's Elements of artificial intelligence (AI) course, which seeks to educate 1% of EU citizens on the basics of AI.[17] Finally, participants cautioned that the design of digital literacy programs should be inclusive, in that stakeholders should work with citizens to understand their specific needs, particularly of those who are vulnerable and/or not familiar with digital technology.

Following on the discussion in Exercise 1, participants in all groups identified **equal access to technology devices and infrastructure** as vital for an inclusive smart government**.** Several possible ways to enhance access were suggested, including continued and increased funding for broadband infrastructure at the federal, provincial, and municipal levels; requirements for telecommunications companies to cover low-income communities in exchange for spectrum access; and the creative use of jurisdictional authorities to extend “last mile” connectivity (e.g., authority over the CRTC [Canadian Radio-television and Telecommunications Commission] at the federal level, regional planning at the provincial level, and zoning by-laws at the municipal level).

Privacy

Following Dr. Cavoukian’s presentation, privacy was top-of-mind for many roundtable participants. Some discussion centred on **legal and enforcement needs for privacy regulation**, building on Dr. Cavoukian’s call for Privacy by Design to complement legal and regulatory compliance. One breakout group emphasized the importance of stronger privacy laws that are capable of keeping pace with developments in both technology and government. Similarly, another group recommended the need for laws that are flexible and responsive to trends in technology. Parallel to these suggestions is the federal government’s recent decision to review the Privacy Act.[18] According to the government, the review is taking place because, “after 35 years of technological advances and social change, Canadians’ expectations of how federal institutions use, share, and store their personal information have changed.”[19]

When discussing the modernization of existing privacy laws, participants made specific mention of emerging areas of focus such as central bank digital currencies. The Bank of Canada is currently researching digital currencies, noting that “exploring the idea of a central bank digital currency makes sense.”[20] One breakout group suggested that Privacy by Design could be incorporated into law, similar to how the European Union implemented the General Data Protection Regulation. Finally, participants noted that while standards are a critical first step toward privacy, they typically require enforcement to be taken seriously.

Participants suggested that **privacy standards and decisions must be part of government and government services** themselves. For example, one breakout group recommended ensuring that all government programs be “Privacy by Design-certified.” Another suggested “Guidelines, tools, and training to help maintain security throughout the architecture, design, implementation, and delivery of digital services.” An example of

this includes the guidelines provided in Canada's *Digital Playbook*, which contains a checklist and implementation guidelines for addressing security and privacy risks.[21] Roundtable participants also discussed the importance of government in staying apprised of private sector innovation, noting, for example, developments in open-source initiatives and public blockchains.

Another realm of privacy discussion was related to public buy-in: **education, public understanding, and the dispersion of privacy information**. It was in this spirit that one group chose to focus on a priority area of "Trust" rather than "Privacy." Some participants raised the need for public education related to the "trade-offs" of privacy, hinting at Dr. Cavoukian's suggestion that privacy must "banish zero-sum models" and demonstrate that privacy and security can be mutually desirable goals. Along similar lines, one group cited the concept of a "human resource firewall," suggesting that as employees and businesses become better at following security standards, the privacy processes of entire organizations will improve. Another group noted that "individuals, not companies should be stewards of their own data," suggesting that this would minimize data breaches, improve the use of individual data, and hasten services.

In essence, such suggestions recall the central tenet of citizen-centred design: the more that everyday user interests are considered in the development of services, the more likely those services will be well-suited to those users. Researchers suggest that user-centred processes can be used to enhance Privacy by Design,[22] and that user-centred privacy controls can play a critical role in the adoption of digital services such as COVID-19 tracing apps.[23] When considering consultations to develop better privacy practices, participants highlighted the importance of consulting a diverse group of stakeholders, including multiple levels of government, academia, and under-represented private sector groups.

Collaboration

Another theme that arose through the first two exercises was that of collaboration. Smart Government requires many stakeholders and many networks of communication. This entails co-operation among various levels of government, the development of international relationships and standards, public private partnerships with smart service providers, consultations with citizens, and feedback from experts. Cohesive, productive approaches to a functioning smart government ecosystem requires collaboration among all stakeholders. Roundtable participants were quick to identify key aspects of smart government collaboration.

One area of focus centred on **community inclusion and citizen engagement**. Participants noted that citizen collaboration should be both early in the design process and ongoing. In terms of ongoing collaboration, participants discussed obtaining community review and feedback. “Participatory budgeting” in Taiwan was described as an example of this sort of feedback: a “citizen auditing system for Taiwan’s central government budget,”[1] in which citizens could add commentary on each item of the government’s budget through an online portal. While feedback was a core theme in discussion of citizen engagement, so too was co-creation. Cited collaboration methods included commentary on proposals, design workshops, “reddit-style upvoting during consultations,” and user testing, with one group noting that “government needs to find ways/tools to leverage public knowledge and expertise on a large scale.” The OECD notes that deliberative public decision-making processes have become increasingly common (and significantly so in the last 10 years), while it lists Canada as one of the OECD countries that has held the most representative deliberative processes.[2] Participants suggested that digital infrastructure procurement that is transparent and designed for civic engagement is one effective way to leverage public knowledge. This suggestion follows arguments that procurement for digital infrastructure must be updated to no longer operate in the same way as procurement for traditional infrastructure.[3]

Another focus was **data sharing**. While the logic behind data sharing is clear[27], participants said that in practice, data sharing is more complex, requiring various inter-organizational relationships and infrastructure across government agencies, private industry, and non-profits.

Canada faces some data sharing challenges, including that various provincial and territorial jurisdictions are responsible for certain types of data collection, rather than all data being collected by a centralized government. At minimum, this calls for greater attention to good data sharing practices. Still, Canada was ranked fifth globally in the OECD’s OURdata (Open, Useful and Re-usable data) Index for 2020.[28] To enact effective data sharing, one group suggested that both data managers within government and data sharing legislation should be critical components.

Finally, a number of roundtable participants brought up **practices for effective collaboration.** An important aspect of these was ensuring that collaboration is central to smart city design, rather than being a box to check. First, participants highlighted that incentivizing collaboration is important. This can be done by providing examples of

successful digital transitions, ensuring that smart government actions are sustainable and that collaboration is seen as productive to the development of smart government actions. One group thought of collaboration in the context of developing prototypes, both building them collaboratively and engaging end users to receive feedback. Another suggestion entailed the piloting of different collaboration techniques – essentially testing methods of collaboration to improve how future collaboration is done.

Digital Adoption and Transformation

In response to the first exercise, participants named technology developments that they expect to see in smart government in the upcoming years: fit-for-purpose technology solutions, better use of internal data for planning and decision-making, and more digital service delivery. In the third exercise, participants highlighted what is needed to obtain these goals. All of the participant groups focused their response to this question on **skill and organizational culture needs within the public service**. Participants discussed the importance of skills readiness initiatives (like professional development, upskilling, and micro-credentialing), but also indicated a need to engage in smarter recruitment (for instance, by hiring more diverse and technically skilled graduates). A good example of the former type of initiative in Canada is Open North's Learning Management System, which provides free "smart city" courses to municipal and community staff.[29]

Beyond technical skills, participants encouraged creating a "culture of innovation" within the public sector and designing the right reward pathways to incentivize innovative work. Importantly, different levels of government and different government departments will have varying capacity for skills development, strategic hiring, and organizational change. For smart government progress to be inclusive, **different governments will need to collaborate with one another and adopt a "float all boats approach"** to help smaller or less-resourced governments keep up with technological change.

The other common theme was that **governments cannot go it alone**: collaboration is needed between public and private partners, which requires trust and transparency. For public-private collaboration, participants suggested governments need to leverage private sector expertise, for example by making requests for proposal broader so that vendors can propose more transformational products or services. This approach to procurement, sometimes referred to as "challenge-based procurement," is discussed in more detail in the recent ICTC report *Procurement Office or Living Lab? Experimenting with procurement and partnerships for smart cities technologies in Canada*.[30] Finally, participants noted that strategic procurement can incentivize technology company growth.

Conclusion

A vibrant and inclusive smart economy must include “smart” government in all senses of the definition, not only government that makes smart decisions but also government that uses technology to enhance its decision-making and services. Across all levels of government, this digital transformation is contingent on having the right skills and culture to enable innovation. Further, technological developments and digital transformation in government must be guided by collaboration between experts and citizens. This means focusing on community inclusion and citizen engagement that occurs throughout the process of designing smart government; it means positive data sharing relationships and initiating collaborative practices that are effective and representative.

Harnessing the potential of technology to improve government is only one aspect of this work. At the same time, great attention must be paid toward inclusion, accessibility, and privacy. Full digital inclusion entails equitable access to technology, including access to technology devices and infrastructure and digital literacy. A smart government attuned to privacy, meanwhile, must incorporate both the regulation *and* the design of privacy, and must also develop an understanding of the value of privacy among the public. The roundtable spoke clearly: there are high hopes for smart government in Canada, but they will only be realized with concerted and consistent effort.

ICTC’s fourth roundtable in a series of six Smart City Policy Roundtables took place in March 2021. The topic of Smart Government engaged thought leaders from across Canada to produce this brief. The next ICTC roundtable will take place in summer 2021, focusing on the theme of Smart Health.

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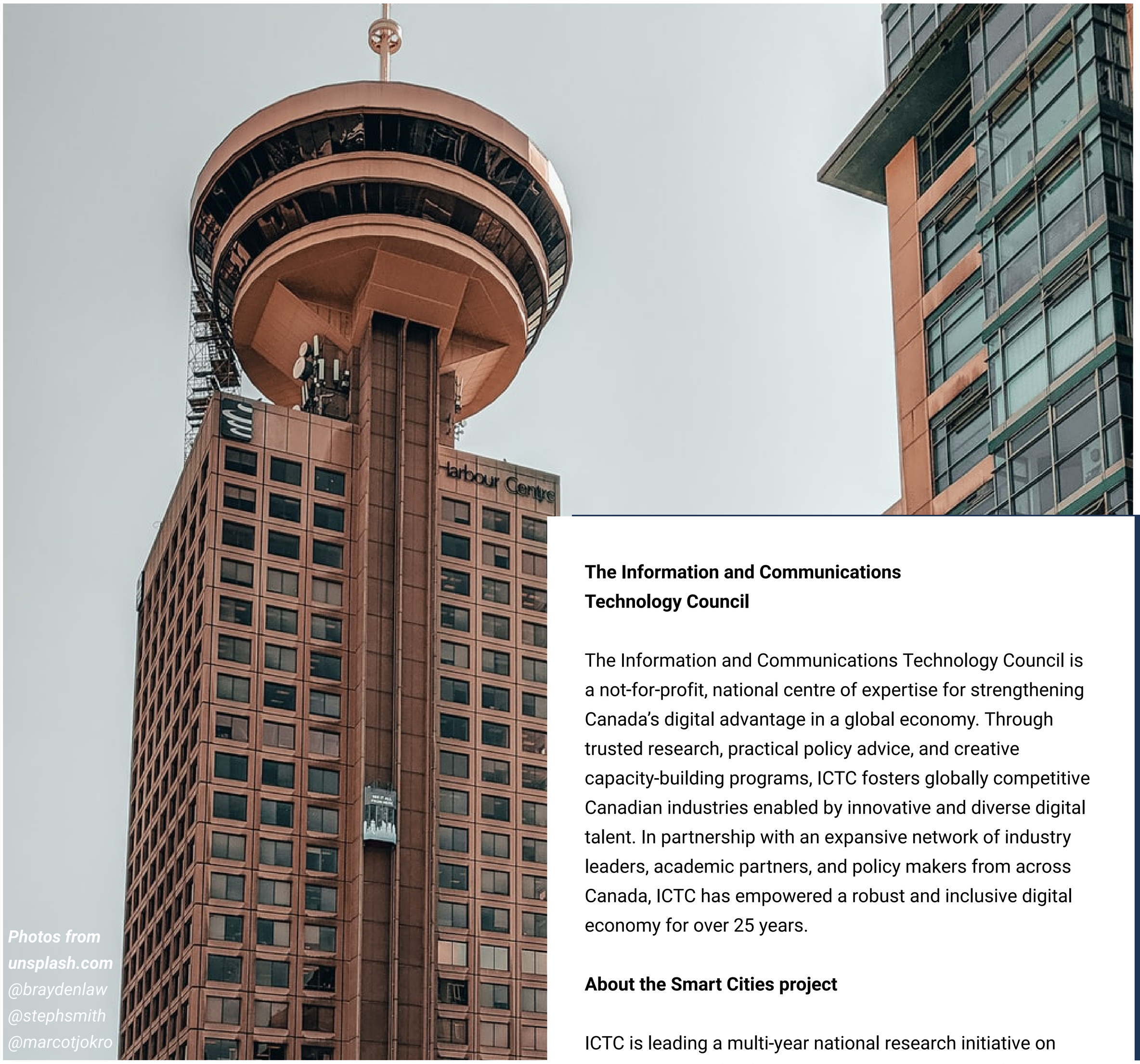

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The Information and Communications Technology Council

The Information and Communications Technology Council is a not-for-profit, national centre of expertise for strengthening Canada's digital advantage in a global economy. Through trusted research, practical policy advice, and creative capacity-building programs, ICTC fosters globally competitive Canadian industries enabled by innovative and diverse digital talent. In partnership with an expansive network of industry leaders, academic partners, and policy makers from across Canada, ICTC has empowered a robust and inclusive digital economy for over 25 years.

About the Smart Cities project

ICTC is leading a multi-year national research initiative on smart cities. Under this project, ICTC investigates the development of smart cities across Canada and internationally, with the ultimate goal of understanding the labour, technology and societal needs and opportunities of Canada's future communities. To guide and shape this research, ICTC has chosen the following areas of focus: Smart Infrastructure, Smart Mobility, Smart Energy & Environment, Smart Health & Wellbeing, Smart Government, and Smart Regulation. During the course of this study, ICTC is hosting policy roundtables on each of these pillars. The first roundtable was on Smart Infrastructure and took place in November 2019. These roundtables engage a variety of stakeholders across Canada to uncover specific policy needs and put forward recommendations that can support a smart future for our cities.