DIGITAL TECHNOLOGIES & YOUR CITY

Welcome

TORONTO

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Questions?

Post them here!

Is there anything else you would like to add?

What questions do you have?

What suggestions do you have for improving the consultation process?

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Principles of the Digital Infrastructure Plan – DRAFT IN DEVELOPMENT

Equity & Inclusion

Digital Infrastructure will be used to create and sustain equity and inclusion in its operations and outcomes. Digital Infrastructure will be flexible, adaptable and responsive to the needs of all Torontonians, including equity-seeking groups, Indigenous people, those with accessibility needs and vulnerable populations.

SOME THINGS WE ARE CURRENTLY DOING

- **Equity Lens**: The Equity Lens process will be applied to digital infrastructure projects to identify how they will address the City's Equity goals and benefit equity-seeking groups and Indigenous people, as well as potential negative impacts and how they will be mitigated.
- **Declaration of Compliance with Anti-Harassment/Discrimination Legislation & City Policy**: when the City enters into an agreement with a third party (i.e. through a procurement for Digital Infrastructure), the City ensures, through contractually binding language, that the third party complies with human rights, workplace safety, employment standards and accessibility laws.
- **Accessibility for Ontarians with Disabilities Act (AODA)**: The City of Toronto is committed to leading by example, ensuring that all our web-based services and information are accessible and usable by residents, businesses, visitors and City staff, consistent the City's Digital Accessibility Standard and AODA. Accessibility and usability are the combination of several factors, and not simply about compliance.
- **Digital Literacy and Safety**: the City partners with the Toronto Public Library and other public and private organizations to improve digital literacy across Toronto.
- **Wi-Fi in City Spaces** (in development): free Wi-Fi is available at City Hall and most civic centres. The TO Connect program is aimed at bridging the digital divide by expanding free Wi-Fi in recreation centres and Long-Term Care Homes.
- **Data for Equity Strategy** (in development): this strategy will support the collection of socio-demographic data, such as race, gender, age and disability, to ensure equitable program planning and service delivery for Toronto residents. Digital Infrastructure needs to align with this strategy.

SOME THINGS WE ARE THINKING ABOUT

- A way for the City to ensure automated processes, which result in decisions about people or groups of people, will not harm Indigenous people and equity-seeking groups (e.g. through the use of Algorithmic Impact Assessments).
- Guidance on the appropriate use of data profiles of individuals, to ensure they are used to increase equity.
- Communicating to Torontonians how existing Digital Infrastructure supports equity.

DIGITAL TECHNOLOGIES & YOUR CITY

Principles of the Digital Infrastructure Plan – DRAFT IN DEVELOPMENT

A Well-Run City

Digital Infrastructure will enable high quality, resilient and innovative public services, and support evidence-based decision-making.

SOME THINGS WE ARE CURRENTLY DOING

- Procurement: Vendors have various ways to propose Digital Infrastructure components that respond to the City's needs and priorities:
    - Competitive procurements: when the City identifies a need, it generally conducts an open and competitive bidding process, either with the public or an established list of pre-qualified vendors. A comprehensive bid, response, and evaluation process is followed.
    - Unsolicited and non-competitive procurement: this is a procurement where no competitive process is followed. These procurements are subject to increased oversight and may require a resolution of City Council or a standing committee.
    - Social procurement: this program supports equity-seeking groups, Indigenous communities and social purpose enterprises through Supply Chain Diversity and Workforce development.
- **Development Approvals**: Digital Infrastructure that is integrated into physical infrastructure (e.g. pipes, lighting, landscaping) will have its traditional components evaluated, approved and secured through Building, City Planning and Development review processes, such as applications for Zoning By-Law Amendments, Site Plan review, Plan of Subdivision and Building Permits.
- **City Vision Documents**: A number of Council-adopted plans, policies and guidelines articulate a vision for Toronto that Digital Infrastructure proposals can be evaluated against. Some of these include the Corporate Strategic Plan, Toronto Official Plan, TO Prosperity: Toronto Poverty Reduction Strategy, TransformTO Climate Action Plan, HousingTO Action Plan, the City's Commitments to Indigenous Peoples, and the Vision Zero Road Safety Plan.
- **Legal Contracts**: the City typically secures commitments through many types of legal agreements and contracts, such as Data Sharing Agreements for information and Plans of Subdivision for land-use.
- **Cloud Strategy**: provides direction for a holistic view of the use of cloud computing to improve the efficiency and effectiveness of services.
- **Connected Community / Smart City initiative**: promotes the use of data and technology to connect communities, solve challenges and deliver services efficiently and effectively to residents.

SOME THINGS WE ARE THINKING ABOUT

- How proposals for Digital Infrastructure may be integrated with the existing building, planning and development review processes.
- The creation of digital standards, which set out new processes for creating digital services, and new expected qualities of those services.
- The creation of an evaluation framework for Digital Infrastructure proposals, using these principles as a guide.
- Other ways the City might meet its need by procuring Digital Infrastructure, such as agile and challenge-based procurements.
- Making the maintenance of Digital Infrastructure sustainable and flexible.

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DIGITAL TECHNOLOGIES & YOUR CITY

Principles of the Digital Infrastructure Plan –
DRAFT IN DEVELOPMENT

Social, Economic & Environmental Benefits

Digital Infrastructure will contribute to positive social, economic and environmental benefits by supporting the success of Toronto's residents, businesses, academic institutions and community organizations.

SOME THINGS WE ARE CURRENTLY DOING

- **Open Data**: the City routinely releases non-personally identifiable data that can be used by anyone for any purpose through an Open Data license. Organizations collaborating with the City are also encouraged to provide data that can be shared through the Open Data Portal.
- **Academic Partnerships**: the City regularly partners with universities and colleges to study outcomes, such as the University of Toronto's Travel Modelling Group.
- **Digital Main Street**: an initiative that helps small businesses adopt digital tools, such as e-commerce platforms and social media, started by the City of Toronto and the Toronto Association of Business Improvement Areas (TABIA).
- **The Green Market Acceleration Program**: provides local firms and foreign investors with an opportunity to collaborate with the City of Toronto in order to accelerate the development and commercialization of made-in-Toronto green technologies.
- **Economic Collaboration**: the City regularly shares information about its Digital Infrastructure projects, and works collaboratively with businesses through forums such as the Toronto Region Board of Trade's Smart City Working Group.
- **Transportation Innovation Zone (in development)**: the City is examining a proposed framework for, and designation of, transportation innovation zones for transportation technology trials proposed by third parties.

SOME THINGS WE ARE THINKING ABOUT

- A public-interest intellectual property policy, where the City can create value for Toronto's residents, businesses and others by broadening access to innovation.
- Ensuring that Digital Infrastructure is fit for the purpose it was intended to serve, and not over-complicated or "technology for technology's sake".
- How to support Toronto's businesses while also ensuring our international trade agreements are respected.
- Developing a way to evaluate the environmental impact of energy-intensive advanced Digital Infrastructure, using existing and emerging technologies.
- Further approaches to support competition and incubation of Toronto's innovative organizations.

DIGITAL TECHNOLOGIES & YOUR CITY

Principles of the Digital Infrastructure Plan – DRAFT IN DEVELOPMENT

Privacy & Security

Toronto's Digital Infrastructure must operate in a way that protects the privacy of individuals in accordance with privacy laws, and be safe from misuse, hacks, theft or breaches.

SOME THINGS WE ARE CURRENTLY DOING

- **Municipal Freedom of Information and Protection of Privacy Act (MFIPPA)**: Provincial law outlines conditions when the City can collect, use and disclose personal information. This also applies to all those acting on behalf of the City. Some key highlights in MFIPPA include:
  - The City cannot collect your personal information unless it is authorized by statute, used for the purposes of law enforcement, or necessary for the proper administration of a lawfully authorized activity.
  - When the City collects personal information, it must tell you how it intends to use the information and provide you with the contact information of someone who can answer questions you might have.
  - In most circumstances, you have a right to see your personal information held by the City, and the right to ask for a correction.
  - You have a right to appeal any decisions made by the City or to complain about the City's practices to the Information and Privacy Commissioner of Ontario.
- **Privacy Impact Assessments (PIAs)**: the City conducts PIAs for all business cases and new technology systems that collect personal information. PIAs use a Privacy-by-Design approach to ensure legal and City policy compliance, put in practice fair information practices, and to reduce, mitigate and avoid privacy risks to the public.
- **Cyber Security Program**: the Chief Information Security Officer coordinates the City's cyber security program, which includes initiatives to assess and manage capabilities to identify, protect, detect, respond and recover from cyber requirements associated with digital infrastructure.
- **Legal Contracts**: the City embeds its requirements for privacy and security in its contracts and agreements with private sector entities working on the City's behalf.
- **Cyber Security Enterprise Risk Assessment (ongoing)**: the City is undertaking a review on standards, practices and policies across the City and its agencies and commissions to protect against cyber security risks.

SOME THINGS WE ARE THINKING ABOUT

- More specific guidance on the regulation of data gathered in areas that are "semi-public" (e.g. some privately-owned publicly accessible spaces).
- Clearer guidance about privacy concerns in public-private partnerships, where determining which privacy law applies needs clarity.
- Alternative and new forms of data governance which could further protect and represent the interests of those who have data collected about themselves (such as a municipal data trust).
- How the City can play a role in expanding privacy protections to groups of people.

DIGITAL TECHNOLOGIES & YOUR CITY

Principles of the Digital Infrastructure Plan – DRAFT IN DEVELOPMENT

Democracy & Transparency

Decisions about Digital Infrastructure will be made democratically, in a way that is ethical, accountable, transparent and subject to oversight. Torontonians will be provided with understandable, timely, and accurate information about the technologies in their city, and opportunities to shape the digital domain.

SOME THINGS WE ARE CURRENTLY DOING

- **Open Decision-Making Process**: all decisions of City Council are made in meetings open to the public, with limited and specific exceptions. The public are welcome to engage in the decision-making process, submit comments or speak to Committee. If unable to attend in person, the City Clerk's Office provides livestreams of meetings and hosts a video archive of past meetings and all documentation.
- **Internal Accountability Process**: Public complaints about the City's management of information can be sent to City's Corporate Information Management Services unit for investigation.
- **City Accountability Officers**: the City has a number of independent officers who have the mandate to hold the City's decisions to account:
    - *Integrity Commissioner* provides advice, complaint resolution and education to members of City Council and Boards on application of the City's codes of conduct, the Municipal Conflict of Interest Act (MCIA) and other bylaws and policies regarding ethical behaviours.
    - *Auditor General* holds City Council and City administrators accountable for use of public funds.
    - *City of Toronto Ombudsman* speaks for fairness and listens, investigates and seeks to resolve the public's concerns about City services and administration.
- **Freedom of Information**: City records are subject to freedom of information laws, where you have a right to request records held by the City.
- **Routine Disclosure**: many City divisions have a Routine Disclosure plan that identifies records that are available directly from those divisions without having to file a Freedom of Information request.

SOME THINGS WE ARE THINKING ABOUT

- Publishing an education and transparency web page about the City's Digital Infrastructure, sharing our policies and a list of digital items.
- The creation of an advisory body, such as a Community Advisory Group, to provide advice to the City on issues related to Digital Infrastructure.
- Working with the City's agencies, boards and commissions, to determine how these principles could apply to their Digital Infrastructure.
- Investigating what the City can proactively release to improve oversight of Digital Infrastructure.
- Opportunities for the City to create, encourage and use more open source software.

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DIGITAL TECHNOLOGIES & YOUR CITY

Learn more about the Public Consultation

What are these consultations about?

Digital technology is changing the way we access information, work, and connect with each other. Municipal services that integrate digital technology are leading to increased efficiencies, improved decision-making, and the better management of public assets. Some examples of this are highlighted in the **Case Study display panels**.

As the use of digital technologies increases, the City is developing a **Digital Infrastructure Plan** (DIP) to help guide day-to-day, as well as long-term planning directions and decisions, and to help evaluate internal and external proposals in the digital realm (e.g. Quayside). The starting point of this work is to develop a set of principles to guide the DIP. This public consultation will help inform the City as it fulfils the direction received from Toronto City Council in February 2019 to develop a policy framework and governance model associated with digital infrastructure, and a work plan for implementation. It also fulfils direction received in June 2019 to evaluate policies on ethical digital standards and create a code of technological practices.

Through this consultation, the City is hoping to understand:

- What do you like about the draft principles?
- What new policies and/or procedures are needed?
- What topics require further discussion and consideration?
- What suggestions do you have for strengthening the City's approach?

What is digital infrastructure?

Digital infrastructure means infrastructure that creates, exchanges or uses data or information as a part of its operation. Digital infrastructure includes physical structures, cabling and network systems, software systems, data standards and protocols. Some examples include sensors (cameras, GPS sensors, microphones, etc.), broadband and telephone networks, Wi-Fi, apps and open data standards.

How will the Digital Infrastructure Plan be used?

Many existing regulations and policies address a number of related topics: personal information and privacy, security, data management, procurement, intellectual property, consumer protection and others. The DIP will build on these existing regulations to enable a consistent approach for the City to evaluate digital infrastructure policies and proposals. A number of outcomes are possible through the evaluation process, such as approval and implementation; approval with conditions (for example, new regulatory oversight); and refusal to proceed. Proposals may come from:

- City divisions, to improve services or asset management; or
- Private companies, universities, researchers, community organizations, who are looking to partner with the City or launch products or services.

Components of digital projects for review could include:

- Proposed innovations, including new ideas, tools and approaches and how they improve existing approaches, where applicable;
- Broader environmental, social and economic outcomes that the project is aiming to achieve;
- Required City resources (including staff time) to sustain the project; and
- Proposed evaluation criteria, monitoring and reporting outcomes.

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DIGITAL TECHNOLOGIES & YOUR CITY

Consultation Process

Background

The Digital Infrastructure Plan will take approximately 18 to 24 months to finalize. During this time at least three rounds of stakeholder and public consultations will be conducted. The first round of consultation is being held now (December 2019), and includes public meetings, stakeholder, community consultation and online.

Public Meetings

There will be three public events during this phase of public consultation:

- December 7, 2019 -- McGregor Park Community Centre, 10 a.m. - 12:30 p.m.
- December 9, 2019* -- Toronto City Hall, Council Chamber, 6:30 - 9 p.m.
- December 12, 2019 -- North York Central Library, 1:30 - 4 p.m.

*This meeting will be livestreamed at **youtube.com/thecityoftoronto**

Online Questionnaire

The online questionnaire will be available at **toronto.ca/connectedcommunity** until December 19, 2019. Comments, questions and feedback can also be submitted by email to **digitalfeedback@toronto.ca**

Community and Partner Consultation

In addition to the public, feedback will be sought from stakeholders and other groups that include, but are not limited to Academics, Toronto Region Board of Trade, Indigenous people, etc.

How will my feedback be used?

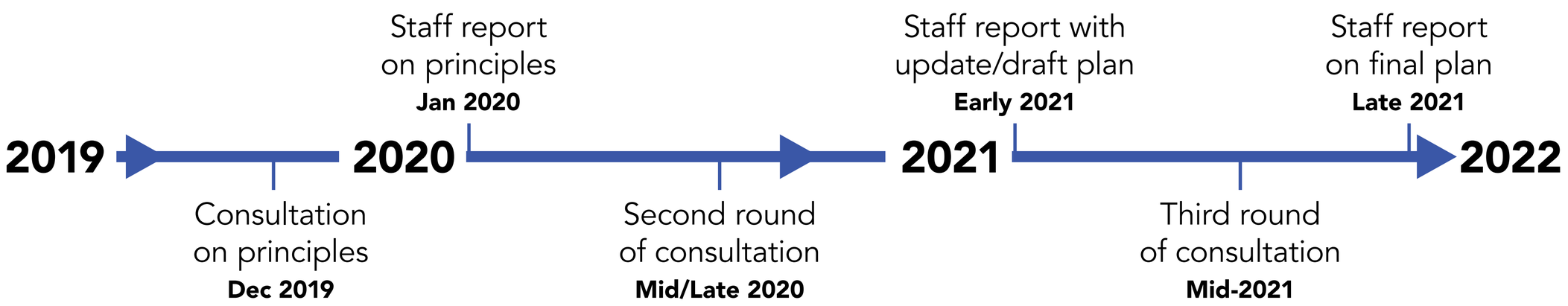
The feedback received during these consultations will be used to develop guiding principles to form the foundation of the Digital Infrastructure Plan. Therefore, it is important to get them right. Staff will report on the outcomes of these consultations to the Executive Committee at its meeting of January 23, 2020. This report will include an updated version of the principles which reflect feedback received during these consultations.

Are there any other opportunities to get involved?

- Additional stakeholder and public consultations will be scheduled in 2020.
- A Community Advisory Group (CAG) will be established in 2020 to provide input on the design of additional consultations and implementation, as well as on the project content itself. Anyone can apply to be part of the CAG. Please take one of our CAG overview documents if you are interested.
- All future opportunities will be promoted online and will be sent to subscribers of the Digital Infrastructure Plan list. Sign up to be notified of future opportunities at **toronto.ca/connectedcommunity**

Roadmap to the Digital Infrastructure Plan

The Digital Infrastructure Plan will be informed by at least three rounds of stakeholder and public consultations.



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Federal and Provincial Processes

Government of Canada

In May 2019, the Federal Government launched Canada's Digital Charter, with the goal of laying a foundation for modernizing rules that govern the digital sphere in Canada, and rebuilding Canadians' trust in these institutions. The Charter launch included 10 Principles, a report on the broader action plan and the following initiatives:

- Proposals to reform the Personal Information Protection and Electronic Documents Act (PIPEDA) to respect individuals and protect their privacy by providing them with meaningful control without creating undue restrictions for business.
- Creation of a Canadian Statistics Advisory Council that will provide advice on the relevance, quality and transparency of the national statistical system.
- The Canadian Data Governance Standardization Collaborative, which will help better coordinate the development and compatibility of data governance standards in Canada.
- The Minister of Innovation, Science and Economic Development's (ISED) letter to the Commissioner of Competition requesting that the Competition Bureau work with ISED Canada on competition law, policy and practice to ensure that they keep pace with the marketplace. The letter emphasizes the impacts of digital transformation, the importance of maintaining the confidence and trust of citizens, and the value of making Canada a top choice for data-driven innovation.

Government of Ontario

On February 5, 2019, the Ontario Government launched consultations to create an Ontario Data Strategy. The consultations explore three topics:

- **Promoting Public Trust and Confidence**: In the face of growing risks, ensure public trust and confidence in the data economy by introducing world-leading, best-in-class privacy protections.
- **Creating Economic Benefits**: Enabling Ontario firms to develop data-driven business models and seize the commercial value of data.
- **Enabling a Better, Smarter, Efficient Government**: Unlocking the value of government data by promoting the use of data-driven technologies.

Consultations have included the release of three discussion papers, one for each topic, public roundtables and an online consultation website.

The Ontario Government also created a Minister's *Digital and Data Task Force*, who will participate in the development of Ontario's Data Strategy and provide recommendations and advice to the Minister.

DIGITAL TECHNOLOGIES & YOUR CITY

Privacy and Freedom of Information Policy in Canada

There are several laws in Canada which relate to privacy and freedom of information. Some of these are as follows:

Federal Government

- Information that is collected, used and disclosed by a private sector business for private use is primarily governed by the Federal *Personal Information Protection and Electronic Documents Act* (PIPEDA).
- The *Privacy Act* governs how the federal government handles personal information that it collects, uses or discloses from the general public and its own employees.
- The *Office of the Privacy Commissioner of Canada* (OPC) provides advice and information for individuals about protecting personal information, and enforces PIPEDA and the Privacy Act. The OPC is independent of government and reports directly to parliament.

Provincial (Ontario)

- The purpose of the Municipal Freedom of Information and Protection of Privacy Act (MFIPPA) is to:
  a) Provide a right of access to information under the control of government organizations in accordance with the following principles:
    - information should be available to the public;
    - exemptions to the right of access should be limited and specific;
    - decisions on the disclosure of government information may be reviewed by the Information and Privacy Commissioner.
  b) Protect personal information held by government organizations and to provide individuals with a right of access to their own personal information.
- Similar to MFIPPA, the *Freedom of Information & Protection of Privacy Act* (FIPPA) governs the provincial public sector. The *Personal Health Information Protection Act* (PHIPA) governs the health sector.
- The *Information Privacy Commissioner of Ontario* provides oversight of Ontario's access and privacy laws. The Commissioner is appointed by, and reports to the Legislative Assembly of Ontario, and is independent of government.

Municipal (Toronto)

- The City cannot collect, use or disclose personal information unless it is legally authorized to do so. The City must give you advance notice of collection in writing (either on a form or online).
- Personal information may only be used in limited circumstances, including for the purpose for which it was collected or with your consent. With few exceptions, you have a right of access to your own personal information or you may consent to have it shared with another person.
- A number of internal policies have been created to ensure that privacy protection continues to play a key role in an open, accessible and transparent government.
- If you believe that the City has breached your privacy, you can contact Corporate Information Management Services, within the City Clerk's Office. Your concerns will be confidential and they will respond to you directly.

What is personal information?

MFIPPA defines personal information as "recorded information about an identifiable individual," and includes a list of examples of personal information.

Recorded information includes information recorded in any format, such as paper records, electronic records, digital photographs, videos or maps.

Information is about an identifiable individual if:

- it is about the individual in a personal capacity; that is, it reveals something of a personal nature about the individual; and
- it is reasonable to expect that an individual can be identified from the information (either alone or by combining it with other information).

Some examples of personal information include a person's name when combined with other information about them, such as their address, sex, age, education, or medical history.

Draft Digital Infrastructure Plan: Introduction to the Principles

Digital infrastructure means infrastructure that creates, exchanges or uses data or information as a part of its operation. Digital infrastructure includes physical structures, cabling and network systems, software systems, data standards and protocols. Some examples include sensors (cameras, GPS sensors, microphones, etc.), broadband and telephone networks, Wi-Fi, apps and open data standards.

Purpose: How will the principles be used?

The digital governance principles will form the guiding framework for the City's Digital Infrastructure Plan. They will help guide day-to-day, as well as long-term planning directions and decisions, and will be used to help evaluate internal and external proposals in the digital realm.

In addition to City policies and regulations, digital infrastructure projects will need to comply with all applicable Provincial and Federal legislative and regulatory requirements, including the Canadian Charter of Rights and Freedoms. If changes are made to the legislative and regulatory framework, the higher standard shall apply. It is anticipated that a process of monitoring and evaluation will be needed to ensure the plan and principles remain current over time.

Status of the Digital Infrastructure Plan

The principles presented in this round of consultation are in draft format. They will be further refined based on your feedback. **We would like your feedback on these!** Through this consultation the City is hoping to understand:

- What do you like about the draft principles?
- What new policies and/or procedures are needed?
- What topics require further discussion and consideration?
- What suggestions do you have for strengthening the City's approach?

Organization

The draft principles are based on the direction of City Council and on research from other jurisdictions. Some implementation policies and processes which currently exist - or which might be needed - are also identified below each principle.

DIGITAL TECHNOLOGIES & YOUR CITY

Next Steps

The feedback received during this consultation will be used to develop guiding principles to form the foundation of the Digital Infrastructure Plan. Therefore, it is important to get them right.

Staff will report on the outcomes of these consultations to the Executive Committee at its meeting of January 23, 2020. This report will include an updated version of the principles which reflect feedback received during these consultations. This report will also include a summary of feedback received during these consultations.

Online Questionnaire

The online questionnaire will be available at **toronto.ca/connectedcommunity** until December 19, 2019.

Comments, questions and feedback can also be submitted by email to **digitalfeedback@toronto.ca**.

Community and Partner Consultation

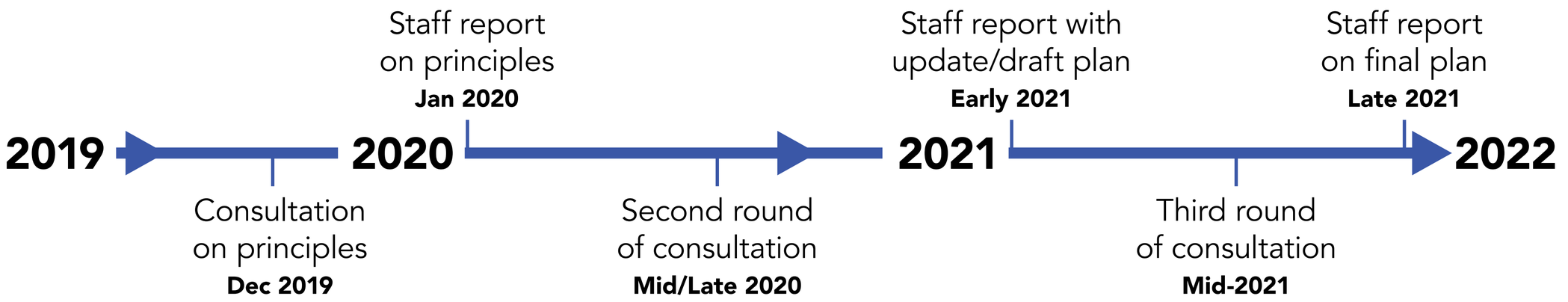
In addition to the public, feedback will be sought from stakeholders and other groups, that include, but are not limited to Academics, Toronto Region Board of Trade, Indigenous people, etc.

Are there any other opportunities to get involved?

- Additional stakeholder and public consultations will be scheduled in 2020.
- A Community Advisory Group (CAG) will also be established in 2020 to provide input on the design of additional consultations and implementation as well as on the project content itself. Anyone can apply to be part of the CAG. Please take one of our CAG overview documents if you are interested.
- All future opportunities will be promoted online and will be sent to subscribers of the Digital Infrastructure Plan list. Sign up to be notified of future opportunities at **toronto.ca/connectedcommunity**.

Roadmap to the Digital Infrastructure Plan

The Digital Infrastructure Plan will be informed by at least three rounds of stakeholder and public consultations.



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Principles of the Digital Infrastructure Plan

DRAFT IN DEVELOPMENT

Equity & Inclusion

After reviewing this draft principle and example policies:

- What do you like about this draft principle?
- What suggestions do you have for strengthening the City's approach?
- What are the key questions that need to be addressed or clarified as the process continues?
- Do you have any additional advice related to this principle?

Principles of the Digital Infrastructure Plan

DRAFT IN DEVELOPMENT

A Well-Run City

After reviewing this draft principle and example policies:

- What do you like about this draft principle?
- What suggestions do you have for strengthening the City's approach?
- What are the key questions that need to be addressed or clarified as the process continues?
- Do you have any additional advice related to this principle?

Principles of the Digital Infrastructure Plan

DRAFT IN DEVELOPMENT

Privacy & Security

After reviewing this draft principle and example policies:

- What do you like about this draft principle?
- What suggestions do you have for strengthening the City's approach?
- What are the key questions that need to be addressed or clarified as the process continues?
- Do you have any additional advice related to this principle?

Principles of the Digital Infrastructure Plan

DRAFT IN DEVELOPMENT

Social, Economic & Environmental Benefits

After reviewing this draft principle and example policies:

- What do you like about this draft principle?
- What suggestions do you have for strengthening the City's approach?
- What are the key questions that need to be addressed or clarified as the process continues?
- Do you have any additional advice related to this principle?

Principles of the Digital Infrastructure Plan

DRAFT IN DEVELOPMENT

Democracy & Transparency

After reviewing this draft principle and example policies:

- What do you like about this draft principle?
- What suggestions do you have for strengthening the City's approach?
- What are the key questions that need to be addressed or clarified as the process continues?
- Do you have any additional advice related to this principle?

DIGITAL TECHNOLOGIES & YOUR CITY

King Street Transit Pilot Study

Transportation Services & Planning, Big Data Innovation Team, TTC

The King Street Transit Pilot Study was about moving people more efficiently on transit, improving public space, and supporting business and economic prosperity. A variety of digital technologies were used in public places to collect data needed to evaluate the pilot project.

THE PROBLEM

King Street is Toronto's busiest surface transit corridor, serving an area with significant population and job growth. Before the Pilot, the downtown section of King Street operated as a typical major arterial street with two lanes in each direction, and streetcars operating in the median lanes in mixed traffic. This led to unpredictable travel times, severe delays and unreliable service. On some portions of King Street, it was faster to walk than take transit. Several past initiatives had been undertaken by the City and TTC to provide more prioritization for transit, with limited effectiveness.

THE SOLUTION

In 2017, the City conducted a one-year study that tested changes to the design of King Street to prioritize streetcars.

To optimize the Pilot, a number of design changes were made including:

- expanding wait areas for streetcar riders;
- removing street parking;
- limiting private car access;
- removing the ability to drive through intersections;
- creating patios and other new and improved public spaces; and
- adding loading zones and taxi stands for special uses.

A Public Life Study was conducted manually with 100 volunteers observing and writing down how people used new public spaces.

THE TECHNOLOGY

Data collection and monitoring was conducted using a variety of technologies:

- **Intersection cameras** measured the types of travellers and intersection use (e.g. pedestrians, bikes, cars, trucks) without gathering personal information.
- **Bluetooth sensors** tracked travel times between intersections anonymously.
- **GPS units** and ridership data tracked the movement of streetcars and buses and the number of people using transit.
- **Point-of-sale machines** evaluated purchase data for changes in business sales.
- **Data** from Toronto Parking Authority parking lots and on-street spaces data was reviewed for trends.
- **Bike Share** provided ride information from their docks in the area.

THE NUMBERS:

- Weekday ridership increased by nearly **17%** during the Pilot to approximately **84,000 customers** per day.
- Afternoon peak period travel times for transit improved by approximately **four to five minutes.**
- The Pilot resulted in over **30,000 minutes** of travel time saved by King streetcar customers every weekday (on average).

THE RESULTS

- Data collection and monitoring allowed for more responsive adjustments to the Pilot project, such as service changes to accommodate increased ridership and changes to operations of traffic signals.
- The results and data were provided publicly in monthly and Annual Status reports, and through the City's Open Data Portal.
- In general, the King Street Transit Pilot resulted in more reliable, productive and efficient operation of streetcar service in the corridor.
- On April 16, 2019, City Council made King Street a permanent Transit Priority Corridor.

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Toronto Water Goes Digital

Toronto Water, Information & Technology

Traditional water meter reading processes were replaced by new automated water meters to provide a standardized system for all Toronto Water customers.

THE PROBLEM

In Toronto, it is mandatory for all property owners to have a water meter installed on any pipe that delivers water into the building. Property owners pay for water based on the amount they use, which is tracked by a water meter.

Prior to the installation of the automated meters, City staff had to visit each property to obtain water meter readings. The meter readings were then used to calculate the amount of water used for billing purposes. This process was time consuming and labour intensive.

THE SOLUTION

The City has installed new automated water meters in almost every home and business in the city to provide a standardized system for all Toronto Water customers. This new technology integrates all water meter reading, data storage and billing operations across the City of Toronto.

To further educate customers on their water use, help detect leaks and encourage water-efficient behaviour, the City developed a tool called MyWaterToronto, where customers are able to view their water consumption data online. The tool includes the ability to view current and past water use by day, month and year, and maps the information against temperature and precipitation for context. Future updates include an automated message to alert customers of higher than normal water use.

THE NUMBERS:

- A leaky toilet can waste up to 20 cubic metres of water a day, at a cost of about **$2,400** monthly.
- Automated meters send residential water meter readings to the City **four times a day** and send readings for larger accounts that use more water **every hour**.
- Water usage data is uploaded to MyWaterToronto every **24 hours**.

THE TECHNOLOGY

- This new technology integrates all water meter reading, data storage and billing operations.
- Each automated water meter sends data wirelessly via radio, several times a day, to a series of collection units.
- The data is then sent to a central server, which allows for fast, secure access and storage of all information.
- All data contains only the water serial number and consumption data; no identifiable property owner information is transmitted.
- The radio frequency used by the transmitter is licensed by the federal government. Only Toronto water meters can operate on it.

THE RESULTS

The new water meters eliminate the need for manual readings and provide a more accurate, fair and efficient way to administer water use.

The MyWaterToronto online tool helps property owners detect leaks faster by highlighting unexplained increases in water usage, resulting in better resource management (i.e. less wasted water) and improved customer service.

TORONTO

Vehicle-for-Hire (Uber/Lyft) Licensing Regulations

Municipal Licensing & Standards, Information & Technology, City Clerk's Office, Legal Services, Transportation Services, Ontario Ministry of Transportation

Data sharing agreements and innovative uses of technology and analytics were used in the modernization of Vehicle-for-Hire licensing and enforcement (Taxis, Uber, Lyft etc.).

THE PROBLEM

Toronto's taxicab industry has a lengthy and complex history. In September 2014, Toronto's vehicle-for-hire market significantly changed when Uber launched UberX, connecting Torontonians with unregulated drivers and vehicles.

The City introduced new regulations for the vehicle-for-hire industry in 2016. Some of the challenges were conducting background checks, verifying vehicle safety and issuing licenses for the thousands of new drivers that needed to be regulated. In 2019, the City further reviewed those regulations and made additional changes based on data and research.

THE SOLUTION

The objectives of the regulations are:

- establish consistent and equitable requirements between Private Transportation Companies (i.e. Uber, Lyft, etc.) and established transportation companies (taxis, limos, etc.);
- replace in-person manual business processes with fully automated processes that take minutes to complete;
- use new data gathering and analysis tools to protect public health and safety, enable data-driven decision-making around enforcement and compliance, and prioritize real-time automated review of drivers on platforms.

THE TECHNOLOGY

- Automated data sharing between licensed parties and the City via a **Data Sharing Agreement**.
- **Automated licence application process** for Private Transportation Company drivers with new licensing issuance technology;
- **Near real-time validation of driving history** through web-service to web-service with the Ministry of Transportation.
- **Business intelligence data warehouse** to collect data on the thousands of daily Private Transportation Company trips.
- **Data is used for audit and compliance** purposes, and to inform future decision-making.

THE NUMBERS:

- As of January 2019, **90 million Private Transportation Company (PTC) trips** have been completed in Toronto. Trips from September 2016 to March 2019 were used in a traffic management study to determine PTC travel impact in Toronto.
- Today, driving records of all licensed drivers are automatically pulled and vetted at least every **7 days** to ensure public safety.

THE RESULTS

In July 2016, the City of Toronto started regulating companies like Uber and Lyft. This resulted in safer trips for residents, new requirements for accessible service, increased data and understanding of travel patterns and recovery of costs associated with licensing and enforcement. New technology solutions streamline licensing processes and enhance regulatory compliance.

Raising the Village

Toronto Children's Services, Toronto Child & Family Network

This case study showcases how the City collaborates with partners to collect, share and analyze data to promote positive outcomes for children and families in Toronto through evidence in policy, planning and decision-making.

THE PROBLEM

In 2016, more than 1 in 4 children lived in poverty in Toronto. The gap between those who are thriving and those who are not is growing. Poverty and income inequality are linked to many social, emotional and economic consequences, which can lead to limited social mobility. These trends have a significant impact on children, who can experience gaps in opportunities to participate in beneficial programs our city has to offer.

The City of Toronto and the Toronto Child & Family Network wanted to improve child and family well-being and use relevant data to plan services that were responsive to the communities we serve.

THE SOLUTION

Toronto's Children's Services division, in partnership with the Child & Family Network, developed and shared outcomes for the entire child and family sector to embed measurement and data-driven decision-making into the coordination of Toronto programs and services.

Raising the Village outlines five child and five family outcomes that together define child and family well-being. These outcomes include physical health & development, mental health & social development, learning & education, rights & opportunities, nurture & care, family health, resilience and support, lifelong learning, financial security and community and culture.

To effectively measure these child and family outcomes, this project relies on collaboration and data sharing agreements with the many partners and organizations across the sector. The data has been made public so all programs and services can use the data to create change.

THE NUMBERS:

- The project produced the development of **10 common well-being outcomes**, with **5 additional outcomes** specific to Indigenous children and families.

THE TECHNOLOGY

The key technologies used were data sharing agreements, data analysis, and web visualization.

- The data sources come from multiple governments and service providers, including information on food bank use, maternal health in hospitals, immunizations, Statistics Canada Census of Population and early age development instruments.
- Data visualization tools were used to tell a story about inequities in opportunity across geography (neighbourhoods), income, race, gender, family type, and more.
- Interactive data visualization tools were used to allow users to drill down and ask specific questions of the data.

THE RESULTS

The data included within Raising the Village is displayed using dynamic and interactive maps and charts to be used by organizations across the sector and the public. This data supports evidence-based and data-driven policy development, program planning and decision-making to close the gap in opportunities experienced by children and families in Toronto.

Toronto's Open Data Program

Information & Technology

The City created an Open Data Portal and Open Data Master Plan to help the City's delivery of public services, engage with citizens in government decision-making and find innovative approaches to civic problems.

THE PROBLEM

When government data is made open to the public, new ideas and perspectives unlock the potential for it to be reused, analyzed and correlated to help improve the City's delivery of public services.

Prior to 2012, the City did not have a comprehensive Open Data Policy that outlined the principles, roles and responsibilities related to the City's efforts to make data routinely available for any public use.

The lack of a comprehensive, strategic way forward in this realm meant that the City was failing to capitalize on data that could be used to generate new ideas and perspectives on civic problem solving.

THE SOLUTION

In 2012, the City proposed the Open Data Policy to remove barriers and set rules by which City data is made available to the public. This included sharing its open and accessible datasets while adhering to rights of privacy, security, and confidentiality as identified in MFIPPA.

In 2018, the City released its Open Data Master Plan, which provides a strategic framework for City staff to advance Toronto's vision for open data, and provide visibility into how open data helps meet the needs of Torontonians.

Datasets cover a vast range of topics including finance, transportation, community services, development and infrastructure. The Open Data Portal was designed to give residents a deeper look into what kinds of data is kept and aggregated by the City. It also helps app and program developers access open data about the city.

THE TECHNOLOGY

Open Data is digital data that is made available with the technical and legal characteristics necessary for it to be freely used, reused and redistributed by anyone, anytime and anywhere.

- Digital data, in this context, is **machine-readable data** (i.e. CSV, XML< JSON, Shapefiles, APIs), that can be repurposed, synthesized and modelled by computer applications to generate insights, analysis, and/or used to develop web/mobile applications.
- Data that contains **pers[illegible]**

[illegible]

analysis, and/or used to develop web/mobile applications.

THE NUMBERS:

- As of November 2019, **322** datasets are available on the new Open Data Portal
- **67%** of current open data contribute to addressing civic issues
- Data access products have been downloaded **1,100+ times** since July 2019
- **18 data stories published**, aimed at improving data literacy and the value of open data

TORONTO