

City of Toronto Digital Infrastructure Strategic Framework: A new principles-based approach for the planning and use of technology and data in Toronto

Date: March 16, 2022

To: Executive Committee

From: Deputy City Manager, Corporate Services and Chief Technology Officer

Wards: All

SUMMARY

This report recommends City Council adopt the Digital Infrastructure Strategic Framework (DISF) attached to this report to guide a standardized, integrated approach to decision-making related to the City's Digital Infrastructure. The DISF was developed in response to Council's February 26, 2019 direction to "*develop a City-wide policy framework and governance model associated with digital infrastructure and data*". The DISF includes five Working Principles that City Council adopted in January 2020 to advance this work; and reflects feedback gathered from two phases of community consultation and stakeholder engagement held in the summer and fall of 2021.

Technology plays an increasingly major role in City services and residents lives. Recent events in Toronto have highlighted the need for the City to have a strategic framework to guide technology related decisions. The absence of such guidance poses risks to residents' privacy, services that inadvertently reinforce inequalities, enterprise technology and cyber security risks to the City, and trust and confidence in local government. The need for a clear strategic framework has been emphasized by residents and stakeholders.

The DISF was created to equip the City of Toronto to more effectively respond to the opportunities and challenges associated with the use of Digital Infrastructure in today's increasingly digitized world. The DISF establishes a set of principles and guidelines to ensure that decisions the City of Toronto makes related to digital infrastructure are equitable and inclusive, enable high quality, resilient and innovative public services, enhance the quality of life and economic prosperity of Torontonians, prioritize privacy and security, and protect transparency and democracy.

The intended benefits from the successful implementation of the DISF include:

- A clear framework to guide questions about proposed or deployed Digital Infrastructure in Toronto

- Enhanced transparency and insight into decision-making associated with Digital Infrastructure enabling greater trust and confidence in government services; and
- Consistent guidance and standards for new Digital Infrastructure Initiatives for City divisions and services, particularly for emerging issues such as digital equity and inclusion.

For the purposes of the DISF and this report, "Digital Infrastructure" is defined as: all technology assets that create, exchange or use data or information in a digital form as a part of their operation, as well as all data collected or used by the aforementioned technology assets. Examples of Digital Infrastructure include:

- Physical objects and structures such as cameras, sensors, and broadband networks
- Software systems such as mobile applications, websites, digital payment systems, customer relationship management applications, and legacy technology systems
- Fixed devices such as computers and digital kiosks
- Mobile devices such as robots, vehicles and cellphones
- Data collected or stored digitally by the City, including personally identifiable information and non-personal information (administrative data, geospatial data etc.)
- Systems whose functions may rely on computer generated data such as machine learning systems and artificial intelligence

The City is increasingly using Digital Infrastructure to deliver social services, realize efficiencies, and improve quality of life. Some recent examples include:

- The new 311 mobile app, which makes it easier and more convenient for residents, businesses and visitors to connect with 311 Toronto – anywhere, anytime on any smart device;
- The transition to "smart" traffic signals, which automatically adjust signal timing based on actual traffic demand and respond to varying volumes and unpredictable traffic patterns; and
- Free public Wi-Fi in some community centres, Toronto Community Housing common areas, and Tower Neighbourhood buildings to bridge the digital divide.

The increasing use of, and reliance on, Digital Infrastructure to support service delivery presents a variety of challenges, for example: securing data, protecting privacy, ensuring equity and inclusion, addressing climate change, and sharing information across divisions. These issues must be addressed effectively and in a consistent manner. While existing City policies and legislation address a number of these challenges (e.g. privacy and security), there are a number of gaps in areas such as digital equity, digital rights, and community engagement. The DISF sets out objectives and implementation considerations to address these gaps. The DISF is a corporate-wide strategy that provides overall direction and guidance for all Digital Infrastructure Initiatives at the City. In this way, it forms an additional resource that decision-makers can reference to help guide day-to-day as well as long-term decisions related to the City's Digital Infrastructure. Implementation of the DISF is intended to complement existing policies and processes (e.g. purchasing, information management, and security.)

The DISF will apply to all Digital Infrastructure Initiatives. For the purposes of the DISF and this report, "Digital Infrastructure Initiatives" are defined as the use of Digital Infrastructure in City operations, including the provision of services to the public, the procurement of Digital Infrastructure by the City, or regulations of the City which address Digital Infrastructure.

Specifically, the DISF will apply to:

- Digital Infrastructure Initiatives in all City divisions. This includes all new City Digital Infrastructure Initiatives that are developed in-house by the City; operated on behalf of the City; undertaken in collaboration and under contract with third parties; and all policies, plans and strategies related thereto;
- All new Digital Infrastructure Initiatives in publicly-owned portions of the public realm (defined as City-owned streets, sidewalks, parks, open spaces, squares and publicly-accessible portions of City-owned buildings); including those undertaken by City agencies or corporations. Regulatory City control of the City-owned public realm will also be guided by the DISF on a go-forward basis.
- Over time, through established cycles of review and renewal, to existing City Digital Infrastructure.

"Public Realm" for purposes of this report and the DISF means all locations other than private residences in which members of the public by legal entitlement, or invitation are permitted or invited to attend.

The DISF does not apply to:

- Private property including privately-owned portions of the public realm such as malls, pedestrian walkways (e.g. the PATH network), and Privately-Owned Publicly Accessible Spaces (POPS).

City staff will carry out further consultation and research and may report back on the scope of the DISF and the possible implications that may arise as a result.

The Chief Technology Officer will lead the implementation of the DISF and evaluation of all Digital Infrastructure Initiatives on a case by case basis, with the objective of maximizing opportunities for alignment with the DISF. This is consistent with Council direction on October 30, 2019 regarding enterprise risk management for the Chief Technology Officer to take on "*an expanded City-wide scope and mandate providing support, oversight and direction on standards, practices and policies*". The City Manager will share the Digital Infrastructure Strategic Framework with Agencies and Corporations, as appropriate, for their information.

Previously, this work was referred to as the "Digital Infrastructure Plan", however staff changed the name to "Digital Infrastructure Strategic Framework" to better reflect the principle-based guidance nature of this document, rather than a step-by-step plan.

The DISF is a multi-divisional initiative, led by the Technology Services division. It has the full support from the City's Senior Leadership Team. Multiple City divisions and agencies have been consulted in the preparation of this report. A Digital Infrastructure Plan Working Group has provided significant input, with representation from City Clerk's

Office, Office of the Chief Information Security Officer, People & Equity, and Purchasing & Materials Management.

This report aligns with a report from the Chief Technology Officer entitled, ConnectTO Program Update, which is also being considered by the Executive Committee on March 30, 2022.

RECOMMENDATIONS

The Deputy City Manager, Corporate Services, and Chief Technology Officer recommend that:

1. City Council adopt the Digital Infrastructure Strategic Framework included as Attachment 1 to this report as the guiding direction for Digital Infrastructure Initiatives undertaken by the City.
2. City Council request the City Manager to direct the Chief Technology Officer to implement the Digital Infrastructure Strategic Framework included as Attachment 1 to this report in accordance with steps outlined under the headings of DISF Implementation and Next Steps in this report.

FINANCIAL IMPACT

There are no financial implications resulting from the recommendations included in this report beyond what has already been approved in the current year's budget.

The Technology Services Division (TSD) is responsible for oversight and implementation of the Digital Infrastructure Strategic Framework (DISF). Over the past three years, TSD has utilized 7 FTE's to deliver initial work associated with the DISF and related initiatives such as ConnectTO. These costs have been included into the operating budget of TSD, and have no impact on the capital budget. Any additional resources required in future years for implementation of the DISF will be included in future budget requests for consideration through the budget process against all other City priorities subject to approval of City Council.

However, the DISF is not a program itself, with its own budget. Rather, it is a corporate-wide strategy that provides overall direction and guidance to decision-making associated with Digital Infrastructure. As such, the DISF will also be implemented by a wide range of City divisions. Resources required for divisional implementation will either be integrated into the existing base budgets of the relevant divisions, or be subject to new and/or enhanced requests through the budget process.

The Chief Financial Officer and Treasurer has reviewed this report and agrees with the financial impact information.

EQUITY IMPACT

The use of data and technology has multiple equity implications for Indigenous, Black, equity-deserving groups, and those with accessibility needs. These are predominantly associated with: lack of access to the internet and internet-enabled devices (referred to as the digital divide); accessibility needs not being fully understood and/or addressed; and the potential for automated decisions and processes to perpetuate bias and discrimination.

The DISF establishes guidelines that foster digital inclusion and integrate digital equity considerations into the decision-making process. The DISF includes an Equity and Inclusion Principle; supports the City of Toronto Data for Equity Strategy; and directs the City to use Digital Infrastructure as a means of creating and sustaining equity and inclusion. Implementing the DISF will lead to positive equity outcomes for Indigenous, Black, equity-deserving groups, and those with accessibility needs. Some future initiatives following adoption of the DISF include:

- Creation of a digital equity policy for the City of Toronto, which will include exploring the provision of affordable high-speed internet, and access to internet-enabled devices to residents;
- Establishment of data governance mechanisms that protect the dignity and human rights of Toronto's equity-deserving communities; and
- Greater transparency and accountability that will enhance equity.

DECISION HISTORY

On June 29, 2021, the General Government and Licensing Committee received a report for information from the Chief Technology Officer about the inclusion of a commitment to the City's control and autonomy of its Digital Infrastructure within the Digital Infrastructure Plan.

<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2021.GL24.18>

On February 2, 3 and 5, 2021, City Council directed the Chief Technology Officer, the Chief People Officer and the Executive Director, Social Development, Finance and Administration to develop a digital equity policy as part of the Digital Infrastructure Plan, building on the Data for Equity Strategy, in consultation with residents and stakeholders, that outlines a vision for an equitable and resilient Toronto through inclusive access to technology and internet.

<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2021.EX20.8>

On November 25 and 26, 2020, City Council directed the Chief Technology Officer and the City Clerk to include an update on the alignment of the Data for Equity Strategy with the Digital Infrastructure Plan, Open Data Master Plan, and Information Management Policies and Guidelines in the Digital Infrastructure Plan progress report to the Executive Committee in the third quarter of 2021.

<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2020.EX18.6>

On January 29, 2020, City Council adopted the following Working Principles and related vision statements as the guiding framework for the City's Digital Infrastructure Plan:

Equity and Inclusion; A Well-run City; Social, Economic and Environmental Benefits; Privacy and Security; and Democracy and Transparency. At this meeting City Council also directed the City Manager to ensure that any proposal submitted to the City prior to such time as the Digital Infrastructure Plan has been adopted to be in compliance with all five of the Digital Infrastructure Plan Working Principles; and directed staff to consult on the inclusion of a commitment to the City's control and autonomy of its core Digital Infrastructure, and on consideration of the highly sensitive nature of data collection of children.

<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2020.EX12.2>

On October 29, 2019, City Council directed the Chief Information Officer (CIO) to take on an expanded City-wide scope and mandate providing support, oversight and direction on standards, practices and policies to all City divisions and the listed agencies and corporations, with immediate effect with respect to all technology assets, goods, and services. Council also directed the CIO to report on a centralized model implementation plan. Council further directed the City Manager to request listed agencies and corporations conduct risk assessments on cyber security and risk mitigation plans in the latter half of 2020.

<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2019.AU4.1>

On February 26th, 2019 City Council directed the Chief Information Officer and the City Clerk, in consultation with appropriate City staff, to develop a City-wide policy framework and governance model associated with digital infrastructure and data, such as Smart Cities, and a work plan for implementation in accordance with the following principles:

- Privacy, transparency, and accountability;
- Public ownership and protecting the public interest; and
- Equity and Human Rights.

City Council also directed that the framework and governance model ensures City data can be shared internally and externally as much as possible within legislative requirements; and directed staff to conduct a City-wide public consultation process on the data governance principles and proposed model to inform the implementation of the plan to be applied to Smart City developments.

<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2019.MM3.2>

On March 26 and 27, 2018, City Council requested the Chief Information Officer and the Chief Purchasing Officer to report on a digital inclusion and digital equity approach to re-purpose City computers and other appropriate IT equipment.

<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2018.MM38.17>

Also on March 26 and 27, 2018, City Council requested the City Manager, in consultation with the Chief Information Officer to establish appropriate governance and accountabilities to ensure that divisions with Information Technology services operating independently from the Information and Technology Division follow Corporate Information Technology policies, procedures, and standards in acquiring and managing Information Technology services.

<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2018.AU11.3>

COMMENTS

The Digital Infrastructure Strategic Framework (DISF) represents a new principles-based approach and thinking about Digital Infrastructure within the City. It is intended to facilitate a common understanding of how decisions related to the City's Digital Infrastructure are made, including the values that should guide decision-making. While some policies already exist for this (e.g. privacy, security and purchasing policies) there are a number of policy gaps where additional guidance is also needed. In the absence of guidance for these types of matters, they are either not factored into decision-making; or are addressed inconsistently, on a case-by-case basis. This can result in missed opportunities to increase service efficiencies and quality of life; the provision of services that inadvertently reinforce inequalities; and reduced trust and confidence in local government. The primary purpose of the DISF therefore, is to instil a holistic and standardized framework of considerations that can be applied to Digital Infrastructure decisions within the City.

With this purpose, the objectives of the DISF are to:

- Ensure that decision-making at the City related to Digital Infrastructure does not occur in isolation, and is reflective of City priorities and values including equity, inclusion, efficiency, transparency, privacy, security, and digital autonomy
- Set consistent City-wide standards and expectations for Digital Infrastructure Initiatives, particularly in areas where policy is currently lacking
- Establish a clear framework to help residents understand - or ask questions about - Digital Infrastructure investments proposed or deployed by the City
- Increase transparency and insight into the City's decision-making related to Digital Infrastructure, including how data is used
- Establish a common vision and expectation for how Digital Infrastructure intersects with and responds to issues such as reconciliation, equity, inclusion, and the environment; and
- Provide strategic guidance for the use of Digital Infrastructure to create new business processes and customer experiences (i.e. digital transformation)

Developing the DISF

The DISF has been developed with input and advice from a wide range of audiences including those internal to the City, members of the public, and industry stakeholders. Development of the DISF was initiated in response to direction from City Council in February 2019 to develop a City-wide policy framework and governance model associated with Digital Infrastructure. The DISF itself is founded in the five Working Principles that were developed through public consultation in November 2019, and subsequently adopted by City Council in January 2020: Equity and Inclusion; A Well-run City; Social, Economic and Environmental Benefits; Privacy and Security; and Democracy and Transparency. In adopting these Principles, City Council also directed staff to "ensure that any proposal submitted to the City prior to such time as the Digital Infrastructure Plan has been adopted to be in compliance with all five of the Digital Infrastructure Plan Working Principles". Furthermore, City Council also directed to staff

to consult on the inclusion of a commitment to the City's control and autonomy of its core Digital Infrastructure, in development of the Digital Infrastructure Plan.

The following actions were taken by Technology Services staff in response to these directives from City Council:

- Undertook a series of interdivisional roadshows to raise awareness of the Digital Infrastructure Plan;
- Developed draft guidelines to help guide compliance with the Digital Infrastructure Plan;
- Explored opportunities to integrate the Digital Infrastructure Plan into suitable Digital Infrastructure Initiatives; and
- Undertook consultation on the inclusion of a commitment to the City's control and autonomy of its "core" Digital Infrastructure. The summary report from this consultation is available online:
<https://www.toronto.ca/legdocs/mmis/2020/ex/bgrd/backgroundfile-141691.pdf>

Key outcomes from these actions included:

- An information report outlining this process submitted to the General Government and Licensing Committee at its meeting of July 2021;
- Formation of a sixth "Digital Autonomy" Working Principle for the Digital Infrastructure Plan.

Key lessons from these actions included:

- Requiring compliance with the Working Principles can be challenging in the absence of associated materials needed to support an objective compliance evaluation (policies, standards, guidelines etc.); and
- Requiring compliance with the Working Principles can be challenging in instances where flexibility is needed.

Fall 2021 Consultation and Engagement Overview

Building on these outcomes and lessons, in the fall of 2021, staff undertook public consultation and stakeholder engagement on the draft Digital Infrastructure Plan including principles, vision statements, policy areas, and policy statements. The draft Digital Infrastructure Plan version that was presented during this phase of consultations is available online:

<https://www.toronto.ca/wp-content/uploads/2021/09/8ff3-DIP-FINAL-Ethelo-Sep-23-Accessible.pdf>

This phase of consultation ran from September to November 2021. Consultation events included two public meetings, three drop-in sessions with the project team, 10 stakeholder and community partner meetings, and meetings with all of the Council Advisory Bodies. Staff received a decision from the Aboriginal Affairs Advisory Committee on October 22, 2021, to incorporate the Committee's feedback into the work on the draft Digital Infrastructure Plan, which has been done.

Approximately 350 individuals participated in this phase of consultation. In addition to feedback provided during these meetings, submissions were provided by email, telephone, and via an online questionnaire. Feedback from interdivisional staff was also

sought, with approximately 150 City of Toronto staff attending a Lunch and Learn session; and 13 divisions providing comments on the draft DISF. The Toronto Public Library and the Toronto Parking Authority were also engaged.

Development of the Digital Infrastructure Plan was also guided by:

- An Inter-divisional Working Group, consisting of representation from City Clerk's Office, City Planning Division, Office of the Chief Information and Security Officer, Purchasing and Materials Management Division, and People and Equity;
- The City's membership in national and international working groups such as the Artificial Intelligence (AI) in Municipal Government Community of Practice; and the Cities Coalition for Digital Rights; and
- A Community Advisory Group (CAG), comprised of approximately 20 individuals representing a range of interests and demographics.

Summary of Issues

Overall, participants were supportive of the draft Digital Infrastructure Plan. This support came from a variety of audiences including members of the public, the Canadian Council of Innovators, and the Canadian Civil Liberties Association. However, some audiences were critical of aspects of the draft Digital Infrastructure Plan, or requested additional information. A summary of questions and concerns follows:

- Participants expressed some confusion with the Digital Infrastructure Plan terminology, particularly the "Plan" component, indicating that this created expectations that the DIP would include details about what types of technology would be deployed in Toronto in the future, and when (i.e. timelines)
- Several participants asked how the Digital Infrastructure Plan would be implemented (with questions regarding timeframes, governance, accountability, monitoring, and resourcing)
- Questions about how the Digital Infrastructure Plan would support reconciliation were asked, with some suggestions to integrate a new Principle for reconciliation into the Plan, while other suggestions called for further consultation
- Some participants indicated that the Privacy and Security Vision, as presented for consultation, was not sufficiently visionary
- Some participants raised concerns that the proposed data residency policy could stifle innovation
- Some participants suggested that the City will have difficulty achieving some objectives (for example, the Digital Autonomy Principle) without significant investment in updating its internal IT management capabilities

The summary report from this phase of consultation is available online:

<https://www.toronto.ca/wp-content/uploads/2022/02/8da0-DIP-Fall-2021-Engagement-Summary-Report-AODA-Final.pdf>

Following this process of consultation and engagement, the Project Team worked to address this feedback. In response to the comment regarding confusing terminology, the Digital Infrastructure Plan was re-structured into a Strategic Framework (the DISF). The primary distinction with this change is that the DISF is intended to serve as a strategic principles-based document to provide decision-making guidance while allowing for a degree of flexibility. This move also responds to lessons learned through earlier

implementation of the draft Digital Infrastructure Plan, specifically that requiring compliance with the Working Principles can be challenging in instances where flexibility is needed. The complete DISF is included as Attachment 1 to this report.

DISF Scope

For the purposes of the DISF and this report, "Digital Infrastructure" is defined as: all technology assets that create, exchange or use data or information in a digital form as a part of their operation, as well as all data collected or used by the aforementioned technology assets. Examples of Digital Infrastructure include:

- Physical objects and structures such as cameras, sensors, and broadband networks
- Software systems such as mobile applications, websites, digital payment systems, customer relationship management applications, and legacy technology systems
- Fixed devices such as computers and digital kiosks
- Mobile devices such as robots, vehicles and cellphones
- Data collected or stored digitally by the City, including personally identifiable information and non-personal information (administrative data, geospatial data etc.)
- Systems whose functions may rely on computer generated data such as machine learning systems and artificial intelligence

With this broad definition, the DISF will intersect with nearly all City services and operations, including those that are internal facing (staff working within offices, civic centres, etc.) and external facing (residents or clients accessing online services or using physical spaces such as recreation centres, sidewalks, public health hubs etc.).

For the purposes of the DISF and this report, "Digital Infrastructure Initiatives" are defined as the use of Digital Infrastructure in City operations, including the provision of services to the public, the procurement of Digital Infrastructure by the City, or regulations of the City which address Digital Infrastructure.

Specifically, the DISF will apply to:

- Digital Infrastructure Initiatives in all City divisions. This includes all new City Digital Infrastructure Initiatives that are developed in-house by the City; operated on behalf of the City; undertaken in collaboration and under contract with third parties; and all policies, plans and strategies related thereto;
- All new Digital Infrastructure Initiatives in publicly-owned portions of the public realm (defined as City-owned streets, sidewalks, parks, open spaces, squares and publicly-accessible portions of City-owned buildings); including those undertaken by City agencies or corporations. Regulatory City control of the City-owned public realm will also be guided by the DISF on a go-forward basis.
- Existing City Digital Infrastructure, in which case the DISF will be applied over time through established cycles of review and renewal;

"Public Realm" for purposes of this report and the DISF means all locations other than private residences in which members of the public by legal entitlement, or invitation are permitted or invited to attend.

The DISF will not apply to any Digital Infrastructure Initiative other than City of Toronto Digital Infrastructure and Digital Infrastructure in the City-owned public realm as described above. For greater clarity, the DISF will not apply to the following circumstances:

- Private property including privately-owned portions of the public realm such as malls, pedestrian walkways (e.g. the PATH network), and Privately-Owned Publicly Accessible Spaces (POPS).

Examples of Digital Infrastructure that are out of scope include 'smart' door bells and closed circuit television cameras operated on property that is not City-owned.

City staff will carry out further consultation and research and may report back on the scope of the DISF and the possible implications that may arise as a result.

Examining the DISF in Detail

The DISF is founded on 6 Principles that were developed over the 2-year consultation period outlined above. Five of these were previously approved by Council and one was added through the consultation process. There is no implied priority of importance to the Principles, despite the order that they are presented in: they are all equally significant, and the DISF should be read as a whole to understand the comprehensive and integrative intent as a policy framework for priority setting and decision making. When more than one objective is relevant, all appropriate objectives should be considered.

The six Principles are used as an organizing element for the DISF, with each Principle having its own dedicated chapter. Each Principle has an accompanying Vision Statement that expresses the associated aspirations. Each Vision Statement is expanded upon through Strategic Priorities, Objectives, and Implementation Considerations that provide case-by-case guidance. An outline of the DISF Principles, Vision Statements, and Strategic Priorities are included below.

Principle 1: Equity and Inclusion

Vision: Digital Infrastructure will be used to create and sustain equity, inclusion, accessibility, and human rights in its operations and outcomes. Digital Infrastructure will be flexible, adaptable and human-centred, responding to the needs of all Torontonians, including Indigenous, Black, equity-deserving groups, and those with accessibility needs.

This Principle is comprised of the following 4 Strategic Priorities:

1. Digital inclusion and Human Rights
2. Accessible Digital Infrastructure
3. Human-Centered Digital Infrastructure
4. Connectivity and Digital Equity

This Principle is about ensuring that people can enjoy their rights and freedoms, feel safe and secure when accessing digital City services (apps, web pages, bill payments, reservations, online permits etc.), and have equitable access to digital City services.

Achieving equity in the digital realm requires intentional strategies and investments to reduce and eliminate barriers for individuals with disabilities, as well as other pervasive barriers (including but not limited to affordability, ability, access to devices, access to the internet etc.) to ensure that people are able to trust, participate and fully leverage the benefits of the City's online digital services and technology. This approach requires an understanding of people in the full context of their lives, and considers a range of perspectives, from childhood through to old age.

Principle 2: Well-Run City

Vision: Digital Infrastructure will enable high quality, resilient and innovative public services, and support the use of data and evidence to inform decision-making.

This Principle is comprised of the following 5 Strategic Priorities:

1. Digital Transformation
2. Data Governance
3. Asset Management
4. Digital Literacy and Adoption
5. Collaboration

This Principle is about using Digital Infrastructure to provide simple, reliable and connected City services that improve the lives of residents, businesses and visitors; facilitate the responsible management of City assets; and build trust and confidence in local government. It recognizes the value of using data to inform evidence-based decisions; and the need for these decisions to consider equity-based solutions. Importantly, this principle also recognizes the importance of digital and data literacy skills within the Toronto Public Service, with these skills being an essential component of a modern results-driven organization.

Principle 3: Society, Economy, and the Environment

Vision: Digital Infrastructure will enhance quality of life for Torontonians, support economic prosperity, and advance environmental sustainability, while also avoiding potential harms that could result from its use.

This Principle is comprised of the following 3 Strategic Priorities:

1. Society
2. The Economy
3. The Environment

This Principle is about leveraging Digital Infrastructure to support equitable and inclusive benefits, whether for social, economic or environmental prosperity. Central to this Principle is the understanding that potential harms and negative consequences that can arise through the use of technology should be avoided. Examples of such harms include: the exclusion of residents from digital services who may not be able to afford residential internet connection; privacy violations; errors, malfunctions or hacks resulting in data leaks or security breaches; and inaccessible digital services resulting in exclusion or discrimination. This approach requires an understanding of the supports

that are needed for vulnerable populations in the digital realm including children, youth, and older adults.

Principle 4: Privacy and Security

Vision: Toronto will uphold human dignity, autonomy and safety by limiting the collection of personal information, implementing safeguards that uphold privacy rights, and protecting Digital Infrastructure from misuse, hacks, theft or breaches.

This Principle is comprised of the following 6 Strategic Priorities:

1. Consent, and Authorized Collection and Use of Information
2. Privacy
3. Data Residency in Canada
4. Cybersecurity
5. Digital Identity and Access
6. Surveillance

This Principle is about maximising privacy, cybersecurity and cyber-resilience considerations as part of all Digital Infrastructure Initiatives. It recognizes that many public services are now deeply reliant on Digital Infrastructure, and that this brings an increased potential for vulnerabilities that could lead to cybersecurity attack, breach, failure, or disruption. A fundamental driver of this Principle is the understanding that privacy is essential to upholding equality, preventing discrimination, facilitating democratic participation, and maintaining trust in digital services.

Principle 5: Democracy and Transparency

Vision: 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.

This Principle is comprised of the following 4 Strategic Priorities:

1. Consultation and Participation
2. Open Government, Transparency, and Access to Information
3. Open Contracting
4. Algorithmic Transparency and Responsibility

This Principle is about the importance of upholding democratic values such as access to information, transparency, accountability, and public participation, within decision-making associated with Digital Infrastructure. It builds on existing concepts such as Open Government, and places an emphasis on providing residents with opportunities to participate in the development and design of Digital Infrastructure Initiatives through open and transparent processes. Fundamental to this principle is the concept that information should be provided in a "plain language" accessible manner, so that residents can understand what is being proposed, and how it might impact them. This Principle will help create a culture of accountability, which in turn can build trust and confidence in digital services.

Principle 6: Digital Autonomy

Vision Statement: The City will maintain control in the selection, use and design of its Digital Infrastructure, so that it - and its residents - can act with autonomy and in a self-determined manner within the digital realm.

This Principle is comprised of the following 5 Strategic Priorities:

1. Open Source
2. Intellectual Property
3. Open Standards and Interoperability
4. Maintenance and Repair
5. Democratic Control

This Principle is about ensuring the City has the ability to develop, maintain and control the selection, use, and design of its Digital Infrastructure assets, where appropriate. While there is likely to be a continued role for proprietary Digital Infrastructure, at least in the short term, this Principle is intended to position the City, over time, in a way that helps avoid situations where it is overly reliant on a private-sector technology vendors. This reliance can have a range of impacts such as product design and interface (i.e. the look and feel of a product); product outputs or artifacts (for example, ownership of data); and product maintenance and management (i.e. having in-house skills to undertake repairs, rather than relying on a vendor).

DISF Implementation

The DISF is a corporate-wide strategy framework that provides overall direction and guidance for all Digital Infrastructure Initiatives at the City. In this way, it forms an additional resource that decision-makers can reference to help guide day-to-day as well as long-term decisions related to the City's Digital Infrastructure (see Scope, above).

The DISF should be read as a whole to understand its comprehensive and integrative intent as a framework for priority setting and decision making. The DISF is therefore more than a set of individual policies, and objectives within the DISF should not be read in isolation or to the exclusion of other relevant objectives. To move Toronto closer to the future envisioned in the DISF, all Digital Infrastructure Initiatives should over time align with the objectives, regardless of project scope or budget. Implementation of the DISF is intended to complement - not change - DISF related elements of City operations that already have an established administrative structure and associated policy framework (for example, purchasing, privacy, information management, security, data for equity).

The Technology Services Division (TSD) is responsible for implementation of the DISF, including monitoring. The Connected Community team (within TSD) will lead this work on a day-to-day basis. Following adoption by City Council, the technology intake process will be amended to ensure that all Digital Infrastructure Initiatives which proceed through this process align with the DISF objectives:

- To ensure the DISF is considered during the early stages of project conception, the business case template will be amended with a new requirement to demonstrate how the DISF has been considered; and

- To ensure that project-specific elements are considered at the appropriate stages of development (privacy, security, accessibility etc.), the project gating process will also be amended with similar alignment considerations.

Through this process, Digital Infrastructure Initiatives will be evaluated on a case by case basis, with the objective of maximizing opportunities for alignment with the DISF.

In addition, TSD will develop briefing materials for circulation to City divisions. Divisions may then review their existing practices and examine the need for change. TSD staff will provide assistance and consultation services with divisions as needed. The cross-divisional DISF Steering Committee - presently under formation - will provide strategic guidance as required. The City Manager will share the Digital Infrastructure Strategic Framework with Agencies and Corporations, as appropriate, for their information.

Next Steps

Through the direction of the City's senior leadership team, TSD staff will initiate work to coordinate and support implementation of the DISF following adoption by City Council. In addition to the implementation steps noted above, this includes:

Data Governance

Technology Services and the City Clerk's Office are collaborating on a scan of the current data governance policy landscape, examining jurisdictions as well as internal policies, to identify gaps and create a policy roadmap. In addition, the City has engaged researchers from the University of Toronto to determine how data can be used, managed, and shared in innovative ways that benefit the community, lead to improved decision-making, and ensure trust in government. This project is intended to inform creation of a City-wide Common Data Model that identifies common data elements to be standardized for data-sharing purposes; and modalities of trusted data sharing. In addition, Technology Services intends to engage on longer-term consultations on the City's policies and plans concerning Indigenous Peoples, Black Communities, as well as other equity-deserving groups, and those with accessibility needs to see where the DISF could achieve positive equity outcomes. This project will align with and advance the following DISF Strategic Priorities: Digital Inclusion and Human Rights; Data Governance; Society; and Democratic Control.

Digital Equity and Digital Literacy

The City has partnered with Ryerson University (renaming in process) to examine digital equity and inclusion needs in Toronto. This project will inform baseline parameters for a new Digital Equity Policy for the City, and will be used as content for upcoming community and stakeholder consultation. Additional information about this partnership is included in the ConnectTO Program Update report, which is also being considered by the Executive Committee on March 30, 2022. Additionally, the City and the Toronto Public Library will continue to collaborate and advance public education on issues related to digital literacy, Artificial Intelligence, and digital access. These projects and collaborations align with and advance the following DISF Strategic Priorities: Accessible Digital Infrastructure; Connectivity and Digital Equity; and Collaboration.

Public Registry for Sensors and Use of Artificial Intelligence (AI)

TSD staff have initiated the formation of two new public registries, with the objective of making government-held information available to the public: a public registry of City-owned sensors that are used in the public realm; as well as a public registry of City Initiatives that involve the use of Artificial Intelligence (AI). Work to develop the sensor registry is being undertaken in collaboration with the University of Toronto. These projects and collaborations will continue into 2022, with the registries estimated to be published online in Q3 2022. This work aligns with and advances the following DISF Strategic Priorities: Asset Management; Surveillance; Open Government, Transparency and Access to Information; Algorithmic Transparency and Responsibility.

Monitoring and Alignment

The Chief Technology Officer is responsible for leading implementation of the DISF, which includes monitoring and ensuring alignment. Technology Services staff are in the process of developing processes, including measurable outcomes and targets - where feasible - to track uptake and alignment, and to ensure transparency and accountability. This will include establishing checkpoints to monitor implementation success and effectiveness over time (e.g. changes in behaviour/business processes/compliance).

The DISF is envisioned as a document that will be updated by City Council on a regular basis, as needed from time to time as the use and nature of technology evolves, or community values shift, or as changes take place within the City with respect to Digital Infrastructure, or the use or role of the DISF itself. All substantive changes to the DISF would be recommended to City Council for approval.

CONTACT

Alice Xu, Connected Community Manager, Technology Services Division, 416-392-2085, Alice.Xu@toronto.ca

SIGNATURE

Josie Scioli
Deputy City Manager, Corporate Services

Lawrence Eta
Chief Technology Officer
Technology Services Division

ATTACHMENTS

Attachment 1: Digital Infrastructure Strategic Framework (DISF)