

# Montréal numérique

A collective initiative in support of  
the transformation of Montréal





# Table of Contents

<b>Message from Mr. Francois William Croteau .....</b>	<b>3</b>
<b>How Montréal numérique came into being.....</b>	<b>4</b>
<b>Montréal numérique, a collective initiative in support of the transformation of Montréal .....</b>	<b>6</b>
1. Background.....	6
1.1 Digital technology: A Societal issue .....	6
1.2 Digital technology within the municipal administration.....	7
2. A strategy in support of the Montréal 2030 plan.....	8
2.1 An integrated and cross-cutting vision of digital technology .....	8
2.2 Towards a smart city with a human face.....	9
<b>The Montréal numérique vision.....</b>	<b>10</b>
<b>Montréal numérique objectives.....</b>	<b>11</b>
Objective 1: A responsible digital strategy .....	11
1.1 Digital autonomy and sovereignty .....	11
1.2 Responsible use of digital technologies from every perspective.....	13
1.3 Digital technology in support of the ecological transition .....	15
Objective 2: A humanized digital technology by and for all Montréal residents.....	16
2.1 An improved citizen experience* .....	16
2.2 Public participation in decision-making and project development.....	17
2.3 An inclusive digital technology in support of the autonomy of Montréal's population .....	19
Objective 3: Digital technology in Montréal: A partnership story .....	21
3.1 Accelerating the growth of the local technological and digital ecosystem.....	21
3.2 The city, a terrain for experimentation in support of Montréal-based creativity and innovation .....	23
Objective 4: Cross-sectoral digital technology practices at the city.....	25
4.1 Prioritization of projects in support of the population and the Montréal of the future.....	25
4.2 The growth of a digital culture within the municipal workforce .....	26
4.3 An improved employee experience thanks to digital technology.....	27

# Message from Mr. Francois William Croteau



It is my great pleasure to present Montréal numérique, a collective and inclusive planning initiative in support of the city's transformation.

Drawing on the building blocks for a smart city, Montréal numérique stands

out as an effective lever for delivering accessible and quality services to Montréal residents. Numerous advances have been made over the past four years, and the time has come to take a more comprehensive approach to digital technology within the municipal administration.

The development and implementation of new digital solutions at the city presents a host of advantages, which will facilitate collaboration and increase efficiency. By supporting the emergence of a new digital culture, Montréal numérique constitutes an innovative initiative that's sure to benefit the municipal workforce, and I'm thrilled to present it.

In December 2020, the city unveiled Montréal 2030, a strategic plan for enhancing its economic, social and ecological resilience. Through this initiative, the city today is lending renewed momentum to its digital positioning efforts, in keeping with the spirit of Montréal 2030. In the coming months, we will continue the work of structuring the implementation of Montréal numérique and translating this ambitious vision into a responsible and ethical initiative that puts people front and centre.

Of course, a great deal of work went into bringing this initiative to fruition. Several teams were fully invested, including the Laboratoire d'innovation urbaine de Montréal, which initiated the project and is playing a leadership role in its continued development. I wish to thank all the municipal departments that played a part in the implementation of Montréal numérique, particularly the Service des technologies de l'information, whose collaboration and expertise were essential.

Montréal numérique was conceived and created for all Montrealers, and I hope the city's residents and the municipal workforce will make this transformative project their own and contribute to it in large numbers.

Happy reading!

François William Croteau

Executive committee member  
Responsible for the Smart City, IT,  
Innovation and Higher Education

# How Montréal numérique came into being

The collective project that the city has undertaken with its Montréal numérique strategy is the culmination of a collaborative effort spanning several months. From the outset, it was obvious that Montréal numérique's success would hinge on our collective intelligence and on key stakeholders within the municipal administration. At the same time, there was never any doubt that the **city's residents had to be at the heart of the reflection process.**

Behind each municipal service offered to residents, and behind each project that the municipal administration develops, are public servants with a deep knowledge and love for their city. Montréal numérique is a strategy for improving public services, and it could never come to fruition without the experience and expertise of municipal staff.

A sound co-creation initiative is built collectively from the outset. An interdepartmental committee made up of the following departments was established to oversee the process:

- Service de concertation des arrondissements
- Service de l'expérience citoyenne et des communications
- Service des ressources humaines
- Service des technologies de l'information
- Laboratoire d'innovation urbaine de Montréal

Co-creation workshops were held after a series of strategic consultations that served to generate preliminary findings and identify Montréal-specific digital technology issues. While these workshops were initially scheduled to be held with in-person attendance, COVID-19 forced the city to switch over to virtual mode only. In June 2020, at the height of the pandemic, some 54 people from 21 departments and 10 boroughs<sup>1</sup> took part in the virtual workshops.

Spread out over a week, the workshops allowed participants to get to know one another, share some memorable moments, and above all highlight the city's main aspirations in relation to digital technology, based on an exchange of perspectives around **five the mes**:

1. Strategic positioning of Montréal
2. External relations and partnerships
3. The city's positioning in relation to data
4. Internal digital services
5. Direct services to residents

These exchanges led to the publication of a *digital magazine*, in French only, produced by the participants. The publication featured:

- **A manifesto** (inspired by the Agile Manifesto) setting out the principles favoured by the city, thereby reflecting the Montréal-specific values that must guide the choices made in implementing the vision behind Montréal numérique 2030.
- **A series of 10 articles and 10 storyboards** summarizing the discussions and aspirations of the workshop participants.

The overlapping and complementary viewpoints aired during the exchanges gave rise to a richer proposal based on a cross-cutting approach to digital technology at the city, with the objective of ensuring a successful citizen experience in the highest degree.

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1. See Appendix 1 to view the list of the departments and boroughs involved.

# MONTRÉAL NUMÉRIQUE MANIFESTO

## WE VALUE

Work for and with end users rather than theoretical use cases

The availability of an empathetic human presence rather than the exclusive use of digital tools

The development of internal competencies with added value rather than the delegation of services by default

Respect for ethical, economic, social and environmental principles rather than the rapid development of digital solutions

Local and ethical collaborations or partnerships rather than loan-for-use contracts

we recognize the value of second elements and favour the first

# Montréal numérique, a collective initiative in support of the transformation of Montréal

*In this document, “digital” denotes all the processes, projects, products and services that use technologies and data, as well as the means permitting their use: Access to connectivity, essential user knowledge, social and technical infrastructures, etc.*

## 1. Background

### 1.1 Digital technology: A Societal issue

Digital technology is a vast and ubiquitous notion in our modern societies. It encompasses a set of technologies and uses that over time has superimposed a virtual layer onto our physical world. This digital layer exerts a growing influence on our society and has given rise to a paradigm shift. Digital technologies, increasingly, play a prominent role in shaping today’s cities, superseding advances from previous industrial revolutions (electricity, thermal engine, etc.). These technologies offer ample opportunity for progress, but they also pose potential threats to the population. So, while they allow people to communicate, gather information and access services remotely, they also have undesired effects. These include the harmful impacts of online rental platforms on housing and neighbourhood life, the proliferation of fake news on social media networks, and privacy concerns.

Naturally, municipal administrations look to draw on digital technologies to improve the quality of life of residents and public services, but here, again, there are challenges to overcome. Security issues are a growing threat. Municipal administrations sometimes are targeted by ransomware, and they can unwittingly participate in the digital divide that isolates and penalizes certain segments of the public.

At no time was digital technology’s influence on our lives more apparent than during the COVID-19 pandemic, when digital solutions and the Internet allowed so many organizations and individuals to continue their activities and social interactions, albeit to a more limited degree. While the pandemic forced the adoption of solutions and opened the door for telework and online consultations, it also exposed the limitations of these technologies.

Montréal’s municipal administration, as a public services organization, must take full advantage of the opportunities presented by digital technology. It must work to optimize the benefits, while minimizing the risks involved for the public. This means updating its operating structure both internally and within city limits in an effort to uphold the common good and account for the rapid growth of technologies. For this reason, in conjunction with its Montréal 2030 strategic plan, the city is reviewing its digital positioning and launching its Montréal numérique 2030 strategy.

## 1.2 Digital technology within the municipal administration

Digital technology is omnipresent at the city, just as it is in society. All municipal departments rely on digital solutions to perform their work. Some departments within the municipal administration create, implement and maintain digital services, and an increasing number of residents use digital services to interact with the city.

### Preliminary conclusions concerning digital technology at the city

First, it's important to highlight some of Montréal's strengths when it comes to digital technology:

- The ever-growing number and quality of digital services offered by the city.
- Strong progress in understanding digital technologies among business units.
- Resources are qualified and current practices are focused increasingly on the personalization of services for residents.
- Montréal has staked out a position as an innovative city on the international stage. In 2018-2019 and in 2020-2021, Montréal ranked sixth and seventh, respectively, among the top-50 smart cities [smartcitygovt.com](http://smartcitygovt.com).

Also worthy of mention is the adaptability and agility shown by Montréal during the COVID-19 crisis, when the city allowed thousands of employees to transition to telework in record time. This major shift allowed the city to maintain a high level of service while protecting the health of municipal staff and the city's residents.

Conversely, the city is facing certain challenges:

- Residents often know little about the municipal services that are available to them, yet expectations are high.
- Data is not used to its full potential due to a lack of understanding and tools.
- Digital business projects abound, but human and financial resources are limited. Projects compete with one another and it is difficult to meet all internal needs.

- The city's IT equipment and software are increasingly obsolete. The city must make up ground as quickly as possible in order to avoid potential service interruptions. While upgrading to current technology poses a challenge, it also presents an opportunity to modernize municipal equipment.

Because technology is constantly evolving, ongoing adjustments and upgrades are always required. So, while digital technology occupies an ever-larger place in the daily lives of public servants, thereby generating savings and organizational improvements leading to greater efficiency, these advantages also come at a growing cost.

### Montréal's digital maturity

Various criteria are used to measure an organization's digital maturity, but it is based primarily on a set of parameters that interact with one another to create a mature ecosystem. An analysis of the municipal administration's ecosystem, specifically its digital maturity, shows that all the ingredients are there, including a certain number of advanced digital functionalities and a relatively developed digital culture. But to raise the level of service and meet expectations, the city must go beyond compartmentalized coordination and adopt a comprehensive digital vision and an integrated governance structure. It must also strengthen its digital culture.

The objectives of Montréal numérique 2030 are as follows:

- Strengthen Montréal's positioning as an innovative and human-centered smart city.
- Improve organizational performance and services to residents.
- Establish an integrated and interdepartmental digital technology strategy within the municipal administration.

## 2. A strategy in support of the Montréal 2030 plan

**Montréal numérique** is among the cornerstones of the **Montréal 2030 strategic plan**. This **digital strategy** – which has been updated to reflect a comprehensive and cross-cutting approach – will act as a vector for transforming Montréal over the next 10 years and meeting the objectives set out in Montréal 2030. Its areas of action – **ecological transition, solidarity, equity and inclusion, democracy and participation, innovation and creativity** – cannot be successfully implemented without the numerous digital transformation projects planned by the city.

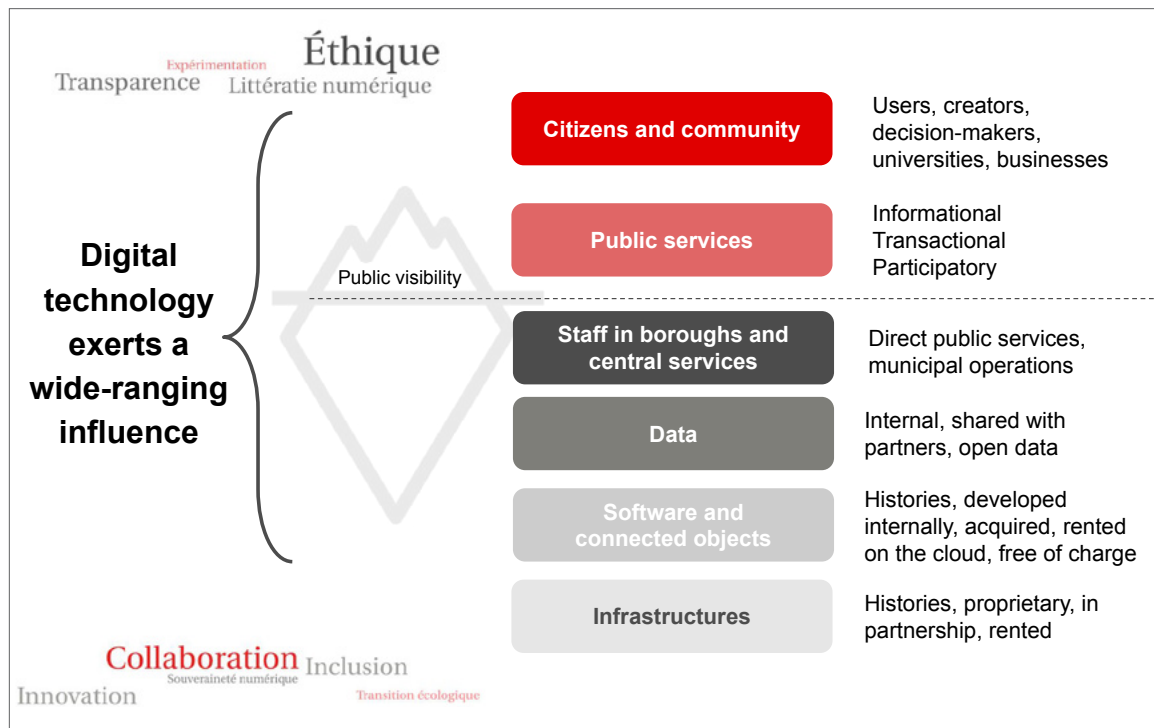
### 2.1 An integrated and cross-cutting vision of digital technology

The Montréal numérique 2030 vision must be built to scale for the entire organization, but also for the broader community and the municipality as a whole. It must consider the common good and integrate a human and ethical dimension, while building digital capacity among staff, residents and partners.

This vision is far-reaching in scope. The municipal administration is working to connect its areas of action in a structured, comprehensive manner and to lend a cross-cutting operational framework to its internal and external ecosystem. This vision will be applied across a variety of areas:

- The employee experience and internal projects
- The city's relations with the economic sector and its local partners
- Relations between the city and its residents, and projects that have an impact on the population
- Relations between the city and other large cities in Canada and the world

This vision will find expression in various projects and positioning efforts, both internal in scope or directly visible to the population. It will be re-evaluated periodically, with a continued focus on the values it embodies.





## 2.2 Towards a smart city with a human face

The city has laid the building blocks of a smart city in recent years, thereby allowing it to stake out a certain leadership position in the field. Those building blocks include data collection, the use of big data, the Internet of Things, digital services, the optimization of interoperability, and evidence-based decision-making.

These advances were reflected in the following emblematic projects:

- A vast public Wi-Fi network available free of charge
- Signing of the Declaration of Cities Coalition for Digital Rights
- Positioning in connection with digital data under the Digital Data Charter
- Adoption of an open-data policy and platform
- Transition to a cloud computing office suite
- Submission of Montréal's candidacy for the Smart Cities Challenge, resulting in the city receiving the \$50 million prize awarded to the winner
- Implementation of the city's new Web site, at montreal.ca
- Policy concerning the use and development of open-source software and hardware
- Establishment of intelligent traffic management
- Development of numerous digital services, such as interior renovation permits, swimming pool permits, pet licenses, the Montréal Services aux citoyens mobile application (which lets residents report a problem), etc.

The smart city concept has encountered its fair share of setbacks across the world: Control centres have not made cities safer, and intelligent traffic systems have been slow to show promising results. At the same time, the ubiquity of technology, notably for use in decision-making, raises ethical questions and threatens public confidence.

The smart city, as conceived by Montréal's municipal administration, is a human city that distinguishes itself through a service-based approach centered around the citizen experience, the development of local community capacities, and the satisfaction of internal partners. It is a city where digital services are not a substitute for all in-person services, when the latter are required. And it is a city that does not hesitate to take a position and regulate technologies if they hinder human rights and the population.

# The Montréal numérique vision

Updating Montréal's digital transformation strategy covers the following main areas of activity:

- Data governance
- Security
- Digital sobriety
- Digital inclusion
- Quality of public policies and the confidence they inspire
- Improvement of digital services

In concrete terms, the Montréal numérique 2030 strategy takes the form of a prospective vision articulated around seven statements:

1. In 2030, Montrealers will benefit from **innovative municipal services adapted to their needs**, supported by a **well-equipped workforce** that is more autonomous in their performance of their duties and capable of **greater efficiency**.
2. In 2030, the city will have a **local democracy** made stronger by the use of digital tools as a lever for **increased and diversified citizen participation**, which in turn will ensure greater transparency and confidence, and improved public decision-making.
3. In 2030, the city will have a standardized data governance structure and will practice the **responsible collection and use of data**, thereby promoting **transparent, justified and effective decision-making processes** on both the operational and strategic levels.
4. In 2030, Montréal will demonstrate how to ensure **respect for fundamental human rights** (privacy, dignity, individual freedoms, etc.) in the digital space.
5. In 2030, the city will contribute to a **strong digital ecosystem**, which will act as a key factor in the city's **recognized dynamism**; the vitality of this ecosystem was achieved through a **vision shared** by all stakeholders and founded on the principle of well-being and prosperity for all residents.
6. In 2030, the organization will be transformed. Through its audacity and exemplary nature, the digital strategy proved to be a key lever for transforming the city's organizational culture by offering tools for **increased agility and a greater capacity for innovation and collaboration**.
7. In 2030, **Montréal's ecological transition and resilience** will be supported by a proactive digital strategy under which energy and material sobriety are an opportunity for technological innovation in support of the carbon neutrality targets of the city (2040) and the community (2050).

The Montréal numérique strategy sets out four cross-cutting objectives for structuring the next steps. Finally, the strategy is made up of 41 commitments affirming how the city will pursue its digital transformation and make it a true asset that can be used to better serve residents, be more effective, and meet future municipal challenges.



# Montréal numérique objectives

## Objective 1: A responsible digital strategy

The Montréal numérique strategy aims to accelerate the city's digital transformation in an effort to protect residents and the common good. In order to ensure that ethical and responsible choices are made in connection with the services it offers to residents, the city has adopted an operational framework based on digital sovereignty, or the responsible use of data in accordance with its values and positioning, as explained in Montréal 2030.

### 1.1 Digital autonomy and sovereignty

The municipal administration recognizes the value of digital assets (infrastructures, software, materials and data) and the importance of properly managing them in order to avoid setbacks and potential dependencies or abuses, notably on the part of dominant actors in the marketplace. This management depends in part on the establishment of risk assessment mechanisms and on opportunities for using digital assets to ensure sound decision-making.

In order to adequately manage these digital assets, the city has several implementation scenarios:

- Invest directly in clean solutions.
- Delegate public services using a contract that is consistent with the principles set out in this report.
- Integrate the requirements of this contract into procurement rules, while ensuring that they are adapted to the type of benefits sought by the city.

The city has made digital sovereignty a fundamental principle in order to ensure that the most appropriate decisions are applied to each project and that it is able, at all times, to prioritize the general interest, the common good, the well-being of Montréal residents, and the protection of their privacy.

The notion of sovereignty extends to digital incursions into municipal jurisdictions over the physical space. For example, in the by-laws concerning unregistered, non-anchoring, self-service vehicles (VNILSSA) and self-service vehicles (VLS), the city asserts its sovereignty over the public space by claiming access to data for purposes of providing sound land use management and generating a data-driven mobility offer.

### Data as a development lever

Data and digital technology are indissociable. Digital tools, by their very nature, generate and consume data. Be it to optimize a service, personalize the browsing experience, plan a blue-collar workers' schedule, forecast events or plan a development, data is the main driver of digital potential. It is normal, even desirable, for a city that wishes to position itself in the digital sphere, to collect and analyze certain relevant data based on its activities. This process is a logical component of the smart city.

The city must consolidate the role of data as a strategic asset for internal use and a common good in support of the greater Montréal community. This consolidation involves broadening the scope of data collection and strengthening the data management framework. By 2030, the city would like to see the share of open data increase faster than the overall volume of operational data it manages. This effort will draw on principles of universal access, interoperability and portability, notably through a more complete offer of valorization tools so that all residents can appropriate the value of data.

### Sovereignty and experimentation

Given that some technologies are recent, there are very few guidelines to refer to, if any, and the main principles discussed by the expert community must be measured against this municipal reality. For that reason, it's important to test these disruptive technologies within city limits so that they can be used to good advantage, while also measuring the negative impacts associated with their use. If proactive regulations are the best guarantee of a safe framework, this document also posits the need to assess the impact of new technologies before they are regulated, through prototypes or pilot projects, in order to enact by-laws that are relevant and effective.

### Implementation

- Data partnerships forged through Montréal in Common, the Montréal component of Canada's Smart Cities Challenge
- Signing onto the Declaration of the Cities Coalition for Digital Rights
- Evaluation of business models and establishment of a test zone for the deployment of 5G technology on the city's street furniture

### Commitments

1. Forge partnerships with municipal groups in Quebec and Canada for purposes of developing a scope of action for cities concerning the deployment of technologies.
2. Divide the Digital Data Charter into operational principles and implement them.
3. Define a framework for experimentation with disruptive technologies in order to understand their impacts as well as communicate and integrate them into municipal operations in a controlled manner.
4. Put in place mechanisms to encourage public and private partners to follow the city's standards for the responsible and ethical use of digital technologies.

## 1.2 Responsible use of digital technologies from every perspective

In the digital space, as in physical spaces, individual residents have fundamental rights, including the right to privacy or autonomy. The city promotes respect for human rights in the digital space. Specifically, it establishes guardrails against generalized and individual surveillance, and gives residents an opportunity to manage their personal data after it comes into the city's possession.

### The city's Digital Data Charter clearly shows that:

"... The city undertakes to remain vigilant regarding the deployment of sensors on its territory. It will do so by regulating all technologies that allow personal identification, notably by banning the collection of biometric data, including facial recognition without consent, by entities under the responsibility of the city council, and by applying the principles of inclusive public participation in analyses of the use of these technologies.<sup>2</sup>"

Using digital technology responsibly also means placing digital and technological development in the service of the common good by defining and implementing ethical regulations or developing solutions through the sharing and valorization of public assets.

### Data management, an ethical issue and an issue of transparency

Depending on how it is used, data can pose a threat to human rights and individual freedoms. Examples of issues that cities are facing include the protection of privacy in the use of personal data, or decision-making biases based on data generated by poorly calibrated algorithms. The city must pursue initiatives aimed at regulating the collection and use of data.

The Digital Data Charter was adopted with this objective in mind. Launched in October 2020, the Charter sets out principles and values to abide by in order to ensure the sound and responsible management of digital information. Now, the city must act on it and make it operational. Internally, that means managing the data life cycle by adopting a structured, systemic and cross-cutting approach that builds greater consistency and standardizes our understanding of and access to data. Externally, the city must play a leadership role in the responsible use of data so as to encourage Montréal's ecosystem to join the movement and adopt its principles and practices.

In addition to an operational framework and simplified tools, the city must provide the proper governance, as prescribed by the data governance project currently underway. Proper governance will foster transparency and stimulate the search for acceptable solutions in regards to the collection and use of data. As part of this reflection process, the city is studying the issue of data anonymization when data is collected or made public.

Observing the principles set out in the Charter means applying them across all municipal activities involving data. The establishment of data governance relates directly to organizational efficiency. Once the scope of data collection and use has been determined, the city must ensure that everything is in place so that municipal departments can use this asset. To this end, a data literacy and democratization initiative is also required at the organizational level, as explained in the fourth objective set out in this report (see page 25).

### Cybersecurity

The city places the greatest importance on the protection of personal and confidential information. It uses best industry practices in cybersecurity and ensures surveillance of its systems. It endorses data hosting in Canada, and in cases where data are stored outside city limits, the city ensures that local data protection legislation is minimally equivalent to that of Quebec.

2. Digital Data Charter, October 2020, Laboratoire d'innovation urbaine de Montréal, p. 7. [Online] [laburbain.montreal.ca/sites/villeintelligente.montreal.ca/files/25817-charte\\_donnees\\_numeriques\\_ang.pdf](http://laburbain.montreal.ca/sites/villeintelligente.montreal.ca/files/25817-charte_donnees_numeriques_ang.pdf)

### Data, a decision-making and operational efficiency tool

With a solid data management framework, it is possible to further strengthen informed decision-making, both strategic and operational, by drawing on evidence-based practices. Data whose quality and limitations have been properly determined can serve as the basis for public debate.

This position is aimed at improving decision-making and building public confidence in these decisions and the people making them. When data is properly managed and used, residents benefit from more relevant digital services and are more inclined to trust decisions made by the city, since they are supported by evidence-based practices.

To sum up, the city can draw on data to support its sustainable development and effective management, in the hope that residents will have confidence in its use of digital technology for that purpose.

### Implementation

- Report on the responsible deployment of the Internet of Things
- Signing of the Montréal Declaration for a Responsible Development of Artificial Intelligence
- Implementation of the Montréal Digital Data Charter
- Overhaul of the open data portal and Open Data Action Plan
- Adoption of the Information Security Policy

### Commitments

5. Create and implement an external body capable of fostering a dialogue with the community, evaluating the situation, and issuing recommendations concerning the use of disruptive technologies, the collection and use of data, notably personal data or data with identification potential, as well as data used to support decision-making in connection with individuals and groups.
6. Avoid the use of biometric identification technologies, such as facial recognition, in municipal departments, without the consent of residents.
7. Document artificial intelligence algorithms and their use at the city.
8. Make public the list of data collected in the public space, its use, and the measures put in place to prevent other uses.
9. Establish unified data management governance that includes partners, through the creation of a data committee.
10. Extend the data culture to all levels of the organization, and standardize the understanding and use of data as well as access to data.

### 1.3 Digital technology in support of the ecological transition

The climate emergency demands that the city commit to an ecological transition aimed at reducing greenhouse gases. More generally, the principle of an ecological transition – the centrepiece of the Montréal 2030 strategic plan – applies to a number of areas, including waste reduction, the mitigation of urban heat islands, and the preservation of biodiversity.

At the same time, we are in the midst of an unprecedented digital transition that offers an enormous number of tools and practices for ensuring greater agility. The desired convergence of these two transitions (digital and ecological) dovetails into a discussion about the responsible use of digital technology. Digital technology is both an ecological risk and a potential solution for reducing our environmental footprint.

The city has adopted a climate test to ensure that all its actions and operations contribute to the fight against climate change. It has pledged to be exemplary in all its decisions and to place digital technology in the service of its ecological transition with the goal of achieving municipal (by 2040) and community carbon-neutrality (by 2050).

To further benefit the ecological transition through the use of digital technology, the city supports digital solutions applied to soft and shared mobility, the circular economy, and the mutualization of resources—approaches made viable thanks largely to digital infrastructures. They also apply to the city's internal activities (vehicle-sharing and sharing of IT solutions, for example) and public services (car-sharing, multimodality, recycling electronics to favour digital inclusion, etc.).

In support of the ecological transition, the city also wishes to develop knowledge specific to its environmental footprint and digital sobriety. By documenting climate challenges and related opportunities in digital intelligence, the city will be able to evaluate the means through which digital technology can serve the objectives of the ecological transition, thereby minimizing the impacts of digital technology in various areas, including storage, equipment, infrastructure, uses, etc.

The city wishes to analyze opportunities for the use of digital intelligence in promising fields, such as transportation (e.g., sustainable and shared intelligent mobility), energy (e.g., energy sobriety) or building (e.g., operational carbon neutrality), for purposes of building greater resilience in neighbourhoods, improving quality of life, and achieving carbon neutrality.

#### Implementation

- 2020-2030 Climate Plan
- Montréal in Common mobility projects
- Sustainable development plan adopted by the Service des technologies de l'information

#### Commitments

11. Provide sound data management in order to reduce the energy impact of data warehousing and processing.
12. Use data and digital services as a lever for hastening the ecological transition in high-potential fields, including the development of citizen solidarity, the local and circular economy, soft mobility, and energy efficiency.
13. Establish paperless bodies and gradually replace paper documentation with digital documentation.
14. Recycle computing equipment at the end of its service life.
15. Promote staff mobility and provide remote access to technologies.

## Objective 2: A humanized digital technology by and for all Montréal residents

Digital technologies occupy an ever-greater place in the daily lives of populations. They have become an indispensable medium for many municipal activities and services. This can lead to a certain dehumanization of our communities. While technologies can bring people together, they can also serve to isolate them. For that reason, the city does not wish to take a purely technological approach to the smart city, whereby technology is the catch-all solution to everything; rather, its aim is to offer digital technology with a human face, by and for Montrealers.

### 2.1 An improved citizen experience\*

The city offers a wide variety of content and services centered around its residents and the needs of local organizations. Currently, many of these services, which by nature are highly diversified, have been digitized. Great strides have been made, specifically in regards to information or transactional services provided by boroughs and central services, but further steps need to be taken.

Given the ever-evolving needs of residents and organizations, on par with the rapid pace of technological change, services must be continuously developed and upgraded. In step with the investments already made in modernizing services, the city wishes to optimize its offer of digital services by 2030. More than 100 services will be converted to digital. In order to simplify life for residents and organizations, the desired digital experience is omnichannel, personalized and accessible to each via a digital account.

\* In this context, "citizen experience" also refers to the "experience of the business citizen."

### Service design, an approach rooted in the user experience

In order to improve services and the citizen experience, the city wishes to position itself in relation to service design. Its aim is to strengthen its design posture by making the user the focus of its operations. In order to achieve this, a set of mechanisms and tools will be established to ensure interaction and co-construction with residents and stakeholders at every stage of project and service development (design, planning, delivery, evaluation). This user-centered design approach makes it possible to produce services that are more consistent with the needs and realities of residents, and to limit the negative impacts of projects. The *Citoyens testeurs* (Citizen tester) program is aimed at getting residents and stakeholders involved. Based on a service design model, it will include a volunteer database made up of residents and representatives of the city's diversity.

### A human approach to digital services

Cities are local governments. People and interpersonal contact will continue to play a part in municipal services, in spite of technological changes. Digital technology must be viewed as a means to increase and improve services, and not just a lever for technical and operational efficiency. While it's important to seize opportunities presented by digitization and automation, non-digital options must be available as well, and exchanges with municipal employees must remain possible, where necessary.

The Services des technologies et de l'information and the Service de l'expérience citoyenne et des communications are already using best practices to promote accessibility, both for residents and municipal employees. In spite of their ubiquity, digital services are still relatively recent, which is why there are great opportunities to improve new services as well as systems that use older technologies.

Finally, mechanisms will be put in place to assess the risk posed by algorithms used for public services and digital tools. They reflect a willingness on the part of the city to put people front and centre when decisions are made.



## Implementation

- Transactional digital services offered to the public and organizations (e.g., occupancy permit, municipal tax balance, library subscription, public property occupancy permit, etc.) and supported by the new Web site Montreal.ca
- Integrated citizen account providing access to digital services, and universal authentication card
- Espace pour la vie mobile application (Biodôme and Insectarium)
- Citoyens testeurs program
- Invoice management project aimed at paying suppliers in a timelier fashion

## Commitments

16. For all municipal services, when the 10-year capital works program and operating budgets are tabled, determine and publicly promote digital transformation projects, notably in connection with digital services offered to the public and organizations.
17. Offer residents Web content that is accessible to everyone and that uses simple and clear language based on principles of universal accessibility.
18. Position Montréal as a municipal services design leader.

## 2.2 Public participation in decision-making and project development

### Digital democracy

Citizen participation is among the touchstones of a healthy and dynamic local democracy, together with trust in public authorities and improved municipal services. For that reason, it is an indispensable component of today's modern cities. Digital technology gives the city a unique opportunity to improve, diversify, and broaden participation to as many people as possible.

Digital technology offers new and greater possibilities to strengthen the community's role in actions taken by the city. From consultation to co-creation, digital democracy can take several forms, and it holds various advantages and limitations. The city is committed to improving its practices in order to encourage public participation in decision-making, and to put this commitment into practice, it must use digital tools to their full potential, while taking into account their limitations.

Digital technology, with its multiplicity of ever-evolving consultation and collaborative work platforms, has paved the way for a wider array of citizen participation activities that reach more people with greater ease. It allows users to avoid moving, eliminates scheduling conflicts thanks to its asynchronous potential (each person participates at their convenience, receiving the information and contributing based on their availability), and favours work-family reconciliation as well as participation in civic life in general.

While this observation remains speculative for the time being, a certain change was observed in the profiles of participants in the virtual consultation sessions, notably in regards to the presence of families with children. Moreover, the Office de consultation publique de Montréal has noted that digital technology increases the proportion of women participating in activities.

Digital technology also favours greater transparency, since it can be used to make documents, processes and public decisions more widely available.

### Citizen participation during the COVID-19 pandemic

During the COVID-19 crisis, the city succeeded in maintaining its essential consultation and public participation activities thanks to digital technology. Municipal democracy, which flows from city council, continued to function thanks to the shift to virtual meetings. At the local level, boroughs followed suit by maintaining dialogue during borough council meetings. Standing committees, in large part, were able to continue their work in virtual mode, and online public assemblies were held.

### Limitations of the virtual realm

A certain number of setbacks have darkened the prospects for digital democracy, notably those related to the digital divide (see objective 2.3, page 19). Given that the digital divide is often compounded by pre-existing vulnerabilities (socioeconomic status, language barriers, etc.), the accelerated shift to digital technology in public participation can pose the risk of a disconnect between the city and a segment of its population. Added to this is the risk of an empathic disconnect, along with certain qualitative limitations, given that interactions and deliberations are more limited in virtual mode than they are with in-person meetings. This reality underscores the importance of providing simplified textual content, upholding accessibility standards, and offering mixed means of participation, both digital and non-digital.

### Towards a hybrid approach

These Montréal-specific considerations are part of a broader reflection undertaken by public participation practitioners worldwide. Considering that these democratic mechanisms are recent, vigilance and an attitude of observation and learning are required. Digital consultations cannot replace all other forms of public and citizen participation, but instead must be used in complement with other mechanisms already in place at the city. The shift to hybrid in-person and virtual modes is already underway. While the in-person mode remains predominant, the distribution between the two modes will likely be reviewed post-pandemic. Mixed means make it possible to meet a variety of needs and must be used to take into account Montréal's diversity.

### Implementation

- Montréal participatory budget 2020-2021, carried out in hybrid, but primarily virtual, mode
- Community of practice in public participation
- Development of support tools for improving public participation practices and citizen engagement

### Commitments

19. Establish citizen participation mechanisms and contribute at various levels to the development of digital services in order to offer an improved citizen experience.
20. Apply the "community of citizen testers strategy" to digital services.
21. Maintain the delivery of diversified services accessible to all clients (e.g., digital, at the service counter, postal, telephone, etc.).
22. Measure public satisfaction using instant polling and cybermetrics.

## 2.3 An inclusive digital technology in support of the autonomy of Montréal's population

### The digital divide

Inclusion is among the city's core values. It also applies to digital technology. In order to include all residents in the digital transformation process, the city wishes to address issues related to the digital divide.

These issues come under two categories: Access to equipment and an Internet connection, and digital competencies or the capacity to use digital technology and its various tools, also called "digital literacy." In order to promote inclusion for the greatest possible number of people and reduce discrimination in connection with digital technology, we must act on these two dimensions.

### Universal Internet access

Under the first principle in the Declaration of Cities Coalition for Digital Rights it signed in 2018, the city recognizes Internet access as a universal right and intends to participate in the development of a strategy for providing quality affordable Internet access to all residents. Actions have already been taken in this regard, including the deployment of an accessible Wi-Fi network free of charge (MTLWiFi) and the Wi-Fi access stations launched during the COVID-19 pandemic.

### Digital competencies, a source of collective wealth

Addressing the issue of digital inclusion also means taking a closer look at individual and collective capacities in regards to digital technology. Be it for personal use or to access the job market, find housing, participate in a debate, or make informed choices on societal issues related to technologies, including digital technology, access is a must, as is education and the development of capacities. Residents must be able to act as consumers of digital technology, but also to participate fully in societal life; the city considers that it has a critical role to play in the development of digital capacities among its residents.

The development of digital capacities provides numerous benefits. Offering the most advanced technologies will always be limited if a segment of the population is not apt to use them. As well as reduce obstacles to their use, dealing with the digital divide will help make Montréal's population less vulnerable and more resilient. This approach promotes social mobility and by extension economic growth and innovation, and it helps reduce unemployment. For example, digital competencies are vital to the success of the creative industries for which Montréal is renowned; further developing them will make it possible to train skilled labour and grow the industry.

### Wi-Fi stations

While the issues raised by the digital divide pre-date the pandemic, the health crisis served to exacerbate them, making Internet access that much more necessary, and even becoming a public security issue. Quickly, under the leadership of the Service de la diversité et de l'inclusion sociale, the city formed a permanent multiservice unit to study issues concerning the digital divide.

In an effort to bridge the digital divide, this unit established 13 Wi-Fi stations during the pandemic. These stations are safe, publicly accessible places that provide free Internet access while complying with public health guidelines. Some offer complementary user support services (psychosocial services, telemedicine, educational support, employment assistance, etc.), promote services offered by local community organizations, and test different types of digital services in order to improve them.

### The city's role in the digital divide

Like digital technologies, digital divide issues are relatively recent. This represents a new challenge, therefore, one that opens up a new area of action for the city. Certain aspects, such as Internet access, come under other levels of decision-making. The governments of Canada and Quebec have already launched a handful of initiatives in this regard. However, the city can play a complementary role, notably by fostering strong collaborations and reinforcing the networking effect between all local actors in the field. The city could take the following actions in this regard:

- Help assess the situation:
  - Who is vulnerable?
  - What type of vulnerability is it?
  - What are the available levers?
- Develop technological infrastructures:
  - Deploy the city's MTLWiFi public Wi-Fi in areas with the lowest rates of access to connectivity.
  - Pursue efforts carried out across the library network.
  - Ensure the reuse of the city's obsolete materials.
  - Etc.
- Create conditions for collaboration between actors:
  - Leverage municipal infrastructures with telecommunications networks in order to develop affordable access services.
  - Promote contact between complementary actors involved in the development of Internet access or digital literacy.

### Equity, diversity and inclusion in digital technology

The application of gender and intersectional analysis (ADS+) in digital projects to ensure respect for principles of inclusion is part of the city's overall positioning, and the city is committed to integrating ADS+ principals into all its policies, programs and initiatives.

In addition to measures aimed at bridging the digital divide, a better knowledge of municipal service users is needed to address issues of inclusion and interact with a representative segment of Montréal's population. The Citoyens testeurs program thus calls for the establishment of a representative database.

### Implementation

- Agreements to promote support for and collaboration with associations that recycle IT equipment
- Establishment of ADS+ in data collection and management
- Creation of a multidisciplinary advisory committee made up of members of the business community, the broader community and the research community
- Creation of a permanent multiservice unit responsible for issues related to the digital divide
- Survey on digital inequalities in Montréal

### Commitments

23. Deploy connected municipal libraries with digital laboratories.
24. Apply ADS+ principles to digital projects.
25. Simplify access to online and offline services around a unique and universal citizen identifier (montreal.ca), which will ultimately include all municipal and borough services, together with services offered by other partners, primarily in the public sphere.
26. Adopt a digital inclusivity strategy across Montréal.

## **Objective 3: Digital technology in Montréal: A partnership story**

Creating a digital environment that Montrealers will favour cannot be achieved without the collaboration and support of the city's ecosystem. Businesses, non-profit organizations, civil society stakeholders, universities and other public and private organizations—all have a part to play when it comes to digital technology, in complement to the actions undertaken by the city.

On the one hand, by supporting innovative organizations and making active use of digital technologies, the city helps foster digital competencies among its residents and organizations, thereby paving the way for positive impacts in connection with employment, economic development and international promotion. On the other, these same organizations can complement the city's offer of services. In order for that complementarity to express its full potential, the city's shared objectives and guidelines for the responsible use of digital technology provide a solid and necessary foundation, one that the technological ecosystem can draw on to inspire public trust.

### **3.1 Accelerating the growth of the local technological and digital ecosystem**

The city is a key actor in the digital space, through its capacity for regulation, intermediation, support and financing. By virtue of its unique ability to harness local potential, the city must use all the means at its disposal to establish favourable conditions for innovation, both within municipal bodies and across the city at large.

The municipal administration knows how to mobilize and unify its community around major projects. By lending vitality to and supporting its ecosystem, the city creates synergies and helps attract and retain talent. A strong digital strategy reinforces Montréal's identity, mobilizes the community around these values of innovation, and makes the city more attractive to digital enterprises.

Montréal must act as a development accelerator and a leader when it comes to best practices. It must be considered a partner for excellence by local and international actors, which can be achieved by placing all its assets in the service of its ecosystem. Its key roles consist of facilitating responsible data-sharing and use, galvanizing the supporting the innovation ecosystem, and promoting services and projects that are compatible with its digital vision. These areas of action must favour the emergence of useful and positive digital technology for Montréal and its residents.

### **Data in support of the community**

In multiple areas, the city holds data that can contribute to its development. Accessible as open data, these data allow companies to develop services and products that have added value for residents, for example in connection with mobility, recreation or housing. These data also allow the business ecosystem and various local organizations to draw on evidence-based data to grow and prosper.

### **Cultural and creative industries**

Montréal's cultural and creative industries already enjoy an international reputation, but the city is also recognized as an AI hub and a research leader in numerous fields. These sectors, as drivers of innovation, dynamism and employment, harness the effervescence and vitality of Montréal's digital ecosystem in order to grow. By supporting the development of technologies and the city's digisphere, the municipal administration supports the entire city, and it will continue to do so in the future. For example, the city contributed to the development of Synapse C, a data valorization and mutualization initiative in the arts and culture field. At the interface between the creative and cultural industries, data science and organizational collaboration, this non-profit organization helps highlight the benefits of digital technology for an entire sector of Montréal's economy.

### The city supporting the digital shift among small and medium-sized businesses

The digital shift undertaken by companies in sectors other than technology, such as in retail trade or manufacturing, represents one of the main vectors of productivity and wealth creation for the business community and the local economy. The city draws on support levers, making local expertise and financing available to SMEs with the goal of giving them better tools with which to integrate digital technology into their business practices.

In addition, the city's digital presence helps promote Montréal and its ecosystem. The city's brand image is a catalyst for Montréal numérique's reputation and creativity in areas such as video gaming, 3D production and artificial intelligence, and in its strong network of start-ups. It intends to continue consolidating its image and stature in order to support the business community.

### Implementation

- Collaboration between the city, universities and businesses through the Carrefour de la recherche urbaine de Montréal
- Workshops aimed at the valorization of data held by the city, by the Montréal community (businesses, universities and citizen groups)
- Fonds Entrepreneuriat Commercial, which supports e-commerce projects undertaken by start-ups and scale-up companies

### Commitments

27. Under the city's policy on the use and development of software and open-source hardware, increase the proportion of software codes made public in order to promote reuse.
28. Continue supporting Montréal companies, notably SMEs, with their digital shift.
29. Support the development of digital solutions that promote local purchasing and commercial activities (such as urban delivery services and design initiatives).
30. Develop new financing, resource mutualization and data-sharing tools in support of creative and cultural industries.
31. Launch a subsidy program to support the digitization of performance halls.

### **3.2 The city, a terrain for experimentation in support of Montréal-based creativity and innovation**

Other than its support and collaboration role, the city must be actively involved in its ecosystem so as to promote creativity and innovation across Montréal. This involvement can take several forms.

#### **The needs of the population: A source of business opportunity**

By consulting the community and giving it a voice, the city expresses business needs that can be transformed into business opportunities. In concrete terms, this can lead to brainstorming and project development activities. Whether in conjunction with the Smart Cities Challenge or events such as innovation marathons (Hackathon), the city's contribution consists of presenting needs and structuring evaluation criteria used to develop projects with a strong digital component, independent development potential (outside the municipal structure), and a positive impact on Montréal and its residents. Innovation arising from these projects can be useful for both the municipal administration and the community.

#### **Digital commons**

Projects involving collaboration between universities, civil society and companies make it possible to develop digital commons that are useful for the entire population. Some of these common assets, including open data, can stem directly from work undertaken by the city. Others can be produced by the community; these include crowdsourcing, jointly created free software, and digital applications that the entire community can use. The emergence of a civic tech community, in Montréal and elsewhere, shows a willingness on the part of many stakeholders to use digital assets to contribute to city life.

#### **Using the municipal space to support innovation**

Using government procurement and the municipal space to encourage innovation and support experimentation is probably the most important lever for all cities throughout the world.

In Montréal, the legislative and regulatory framework for procurement and the use of public space are significant obstacles to innovation. One of the related challenges lies in reconciling the Cities and Towns Act, which requires opening markets, and the potential for supporting the emergence of tech start-ups whose innovative solutions are often unique and intended for specific uses. The city must continue to explore the possibility of removing these obstacles and finding ways to play an active role while complying with the regulations in force. Work on procurement criteria and processes is underway at the city. This work presents an opportunity to be seized for the innovation sector.

For example, the conditions of use of the public space and street furniture (lampposts, traffic lights, etc.) are currently being explored through a 5G pilot project. This approach calls for a small-scale deployment covering an area overseen by the city for purposes of testing a new technology while assessing the impact of its implementation. With a steadfast focus on collaboration, the pilot project allows partners (universities, small and medium-sized enterprises, start-ups, etc.) to test potential applications for technology. By taking this approach, the city is acting on behalf of its community in an effort to promote technological development, innovation and entrepreneurship, but also to evaluate innovation conditions in the management of its assets.

### Supporting the start-up ecosystem

Finally, the city is taking direct action through its support for incubator and accelerator programs that benefit start-ups, or for projects aimed at developing innovation hubs or zones.

All these initiatives favour the emergence of an urban space adapted to the economy of the future, one in which the city works with its ecosystem to make digital technology a force for positive development for the entire Montréal community.

### Implementation

- Innovative procurement initiative
- 5G deployment zone
- Creation of the Service du développement économique's start-up support program

### Commitments

32. Promote pilot projects in order to experiment with the ecosystem (universities, businesses, laboratories).
33. Pursue explorations aimed at promoting innovation in procurement processes.



## Objective 4: Cross-sectoral digital technology practices at the city

The paradigm change underlying the Montréal numérique strategy is aimed specifically at making digital technology a discipline and a cross-sectoral responsibility in order to meet the city's objectives. On both an organizational and an individual level, digital technology must serve, on the one hand, as a springboard for improving the employee and citizen experiences, and on the other, as a lever for the development of services as well as economic development, social inclusion, and the ecological transition.

The city's work and best digital tech practices show that a positive citizen experience hinges on a positive employee experience. In other words, the digital divide exists within the municipal administration itself. Municipal employees do not all have the same access to the Internet and IT devices, nor do they have the same digital competencies. In order to expand digital services and improve public services, therefore, the city is also making efforts to give its employees access to tools and to support them, in part by offering ongoing training.

Digital technology is much more than technical tools and complexities. It affects the organization's practices and values, it promotes collaboration and the growth of collective intelligence, and for employees, it constitutes a lever for autonomy and efficiency.

### 4.1 Prioritization of projects in support of the population and the Montréal of the future

Digital projects abound, and they are significant, costly and widely awaited. That said, resources and budgets are limited, yet expectations are high in terms of the offer of services, the ecological transition, and ethical practices.

In order to meet the challenges that lie ahead, the city has begun the process of reviewing its prioritization mechanisms for digital projects. This prioritization is aimed notably at striking a balance between the various objectives and key components of sound management:

- Support for the transformation of the municipal administration in accordance with the Montréal 2030 strategic plan and the Montréal numérique strategy (this document).
- Reduce the technological debt.
- Amend by-laws concerning technological systems.

This prioritization will make it possible to better pair investments in technological development – overseen by the Service des technologies de l'information – with investments in digital technology in other areas, such as the development of competencies among municipal staff and the public, ongoing efforts to shrink the digital divide, investments in economic development, or partnerships with universities.

This new comprehensive and cross-sectoral management of digital tech issues must make it possible to recalibrate and update current organizational planning tools. By strengthening stakeholder alignment, this new management model will help optimize the consistency of the city's actions in the digital field.

### Implementation

- Participatory budget
- Integration of Montréal numérique priorities into the Comité corporatif de gestion des projets et des programmes d'envergure and the Comité de coordination des projets et des programmes d'envergure
- Integration of Montréal numérique priorities in budget exercises and in the 10-year capital works program

#### Commitments

34. During the annual presentation of the 10-year capital works program, use a standardized template to highlight all digital transformation projects led by municipal departments.
35. Publish prioritization criteria for digital transformation projects.
36. Establish a short-term entity responsible for completing the Montréal numérique process: the Comité Présence numérique renforcé (Stronger digital presence committee).

### 4.2 The growth of a digital culture within the municipal workforce

The digital culture that helps consolidate the Montréal numérique vision is implemented through a competency development program. The Service des ressources humaines, in collaboration with competent departments in this field, is studying digital literacy and data issues in the municipal context. This program is aimed specifically at ensuring that all staff understand the benefits of quality data collection and the potential inherent in digital technology. In the medium term, the goal is for each and everyone to know how to make the most of the analyses conducted with this data or with other sources, in such a way that a data culture becomes hardwired into the municipal DNA.

This program also includes digital technology and innovation practices, which are now considered the standard for new working methods: Collaboration, collective intelligence, accountability, trial and error approach, agility, openness to change, etc. In this way, digital technology, with its tools and underlying culture, helps break up silos, promotes horizontal collaboration, and sparks learning. Finally, it stimulates creativity and innovation within an organization.

Senior management must vigorously support this vision and internal transformation so that this ambitious objective – the growth of a digital culture – can be attained within an organization as vast and diversified as Montréal's municipal administration. In addition to strengthening the active role of staff as part of the city's digital transformation, ultimately from a perspective of improving services, investing in training helps retain and develop talent, and makes the city more attractive as an employer.

### Implementation

- Community of practice for data governance

#### Commitments

37. Develop digital competencies among staff.
38. Include digital competencies in the evaluation of competencies.

### 4.3 An improved employee experience thanks to digital technology

Like any other large organization, the city has a complex work environment:

- Multiple digital tools and software, with a significant technological debt
- Complexity of decision-making chains
- Significant number of stakeholders and levels involved
- Collective agreements to observe
- Etc.

Digital services geared to staff are one of many means of easing the learning curve and allowing employees to be more autonomous and efficient and therefore more fulfilled in their work.

Thanks to the digital transformation, each employee has easier and timelier access to the information required to perform their duties. The city's digital services are facilitators and not obstacles to effective work. Staff can draw on data analysis tools when required, to go along with quality software. This digital tool context, coupled with efforts to create a modern and updated digital culture, allows employees to feel productive, useful and mobilized, thereby increasing their work satisfaction.

### Flexible work modes

The establishment of digital tools represents one of the elements that will allow the city to further steer the organization of work in the direction of a hybrid model that combines telework and a physical presence in the workplace (for staff whose duties allow it). This hybrid model presents various benefits, both for employment resources and for the organization:

- **Flexibility:** A model that offers staff flexibility while guaranteeing quality public services.
- **Inclusion:** A work organization that offers improved equality of opportunity to employees from the city's diverse cultures, people living with a disability, or vulnerable people.
- **Ecological transition:** A reduction in the volume of travel and the use of paper.
- **Attractiveness:** Human resources practices that help attract and retain top talent.

### Implementation

- Support services for the deployment of the Google suite
- Vision Ressources humaines 2025, which calls for a forward-looking work environment as well as proactive and innovative employees

### Commitments

39. Deploy a flexible approach to work arrangements.
40. Finalize the implementation and adoption of cloud computing solutions.
41. Pursue the generalized use of video-conferencing equipment and other telework tools.

Montréal 