



#OnMuni Online

Towards Digital Transformation and Opportunities
for Ontario's Municipal Governments

August 2017

Executive Summary

In 2016, AMO formed a Digital Government Task Force to provide input to the provincial government on digital government transformation, recognizing the potential for impacts to municipal governments and the broader public sector. A key deliverable of the Task Force is the development of a discussion paper that provides the municipal perspective on how to achieve effective and efficient digital transformation. This paper highlights barriers, opportunities, and case study examples to guide municipal governments with their digital development.

AMO recognizes that Ontario's 444 municipal governments are at varying stages of digital maturity. Nevertheless, municipalities across Ontario are utilizing digital means to improve internal administrative processes and engage with their residents. Digital government represents a significant opportunity for municipalities in how to conduct day-to-day business, service delivery and operations. AMO is excited about these opportunities and wants to work collaboratively with the provincial government to enable municipal government digital transformation.

AMO's Digital Government Task Force consists of elected officials and municipal staff with expertise in municipal government services, reporting, and digital initiatives. Chief administrative officers, clerks, information specialists, planners, chief building officers, engineers, risk managers, and legal staff with experience in digital government transformation efforts participate on the committee.

Cathy Downer, Councillor, City of Guelph, and Robert Foster, Councillor, Town of Lincoln co-chair AMO's Digital Government Task Force.

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Introduction to Municipal Digital Transformation

The ever-expanding world of digital is changing how governments interact. All orders of government are exploring ways to harness digital to create and deliver services that will transform the relationship between citizens and government. From social media to paying parking tickets online to using digital procurement, governments are exploring a wide range of initiatives. However, digital transformation is more than implementing the right technology; it requires viewing old problems and processes with new eyes and effectively changing government itself.¹

But what exactly is digital and what does it mean for Ontario's municipal governments? Tom Loosemore, founder of the United Kingdom's Government Digital Service, describes digital as "applying the culture, practices, processes and technologies of the internet era to respond to people's raised expectations."² In its Digital Strategy, the City of Vancouver recognizes digital as a broad range of technology that enables new methods of engagement, service delivery, and administrative processes supported by a robust and accessible digital infrastructure and open government ecosystem.³ Both of these definitions emphasize that digitalization is a transformative process. It means being agile and adaptable to change, especially as disruptive technologies and new ways of doing things are developing at a lightning pace. Governments that are successful with digital transformation have operating models built on speed, adaptability and the sharing of information securely.⁴ The pace of digital change is rapid and for municipal governments to succeed they must continue to reimagine processes and service delivery, while being responsive and innovative when engaging with citizens.

Across Ontario, there are 444 municipal governments unique in their leadership, geography, size and local priorities. Municipal governments provide the majority of services that citizens depend upon every day, from infrastructure to public housing, emergency services to waste management. As Ontario's population grows and ages, competing demands for these services are increasing at a time when local funding revenues are constrained. Each has specific challenges. Many are looking to digitalization as way of addressing local problems, while others may be in the early stages of transitioning to digital solutions or have not yet begun. While degrees of digital transformation vary across the sector, the reality faced for many municipal governments is how to make their communities competitive while acting fiscally responsible. At the same time, there is growing resident expectations that municipal

¹ William Eggers and Joel Bellman, "The journey to government's digital transformation," Deloitte University Press, 2015, 16.

² Tom Loosemore (tomskitovski) "Digital: Applying the culture, practices, processes & technologies of the Internet-era to respond to people's raised expectations." 10 May 2016, 6:00am. Tweet.

³ City of Vancouver, "City of Vancouver Digital Strategy," November 2013, 3.

⁴ Theo Blackwell, "Scaling digital change for better public services – reflections on local UK government digital strategies," November 13, 2016, accessed at <<https://medium.com/@camdentheo/scaling-digital-change-for-better-public-services-reflections-on-uk-local-government-digital-659cc287492b>>

governments offer services digitally and these demands are fueling the need for digital transformation. There are challenges but municipal governments are embracing the opportunities of digitalization by improving resident services through web based tools and apps, becoming more transparent and accountable to residents with open data initiatives, and streamlining internal processes to be more nimble and responsive to the needs of the public. For example, municipal governments offer digital applications to fast track access to services, store information digitally, and provide interactive forums seeking public comment on a development proposal or budget consultation as well as many other outreach initiatives. As municipal governments digitally transform, the role of the citizen will be active and municipalities must strive to ensure that citizens feel that their government is open, honest, and responsive while remaining fiscally responsible.⁵

The Government of Ontario is committed to a “digital by default” approach to improve the online experience of citizens, transform provincial government services, and make Ontario the most open, transparent and digitally connected government in Canada. The Province has hired its first Chief Digital Officer to lead its digital transformation work and implement the provincial Digital Government Action Plan. The Action Plan will serve as a guide for Ontario’s digital transformation with a focus on enabling better online services designed around user needs and equipping the Province to lead in the digital era. Ontario’s municipal governments must be a part of this transformative agenda. AMO is committed to collaborating with the Province on its digital transformation work.

This paper will explore how municipal governments can consider available digital opportunities, overcome perceived barriers to digital transformation, and show how municipal governments can begin moving forward along the digital transformation continuum. Case studies are included to advance the concept of digitalization. Moving forward, the municipal sector will continue to implement digital solutions where appropriate, develop policies, programs and initiatives relevant to digital transformation, and collaborate with all orders of government and other stakeholders to ensure citizens needs are met and being served effectively and efficiently. Leading municipalities are already paving the way with digital best practices and lessons learned from innovators and disruptors. AMO encourages the sector to continue sharing information, especially with those municipal governments that are in the early stages of the digital journey. Information could be shared through forums like AMO’s Digital Government Task Force and other municipal associations such as the Association of Municipal Managers, Clerks, and Treasurers of Ontario (AMCTO) and the Municipal Information Systems Association of Ontario (MISA).

AMO offers the following recommendations to enable municipal digital transformation:

⁵ City of Calgary, “Digital Strategy Report,” June 12, 2014, 3.

1. Recognize that municipal governments are at different stages of digital maturation. Municipal digital transformation is organic, often driven by local needs within the community. The Province should consider local circumstances when developing provincial digital initiatives that may have wide-ranging municipal impacts. Competing local needs and challenges will take precedence.
2. Provide supports to enable municipal digital initiatives and overcome barriers including funding and human resourcing. Local capacity issues will determine the degree to which a municipality can enable digital transformation. The Code for Canada can assist in identifying the right people with the skills to help municipal governments enhance digital literacy and develop technology-based solutions to local challenges.
3. Collaborate with municipal governments to share data and establish coordinated and integrated digital initiatives where appropriate. Establishing provincial-municipal digital government forums to engage with the sector to address municipal challenges such as streamlining reporting would be a quick win. The Province and the municipal sector have collaborated on digital initiatives in the past and it is time to renew the focus.
4. Prioritize improvements to broadband and cellular service so that all municipal governments and their communities have access to the infrastructure that enables them to be competitive and viable in the burgeoning digital economy. The Canadian Radio-television and Telecommunications Commission (CRTC) has declared broadband internet a basic service and the Province of Ontario must prioritize high-speed internet access as its Digital Government Action Plan evolves.

The Future Today

Municipal governments should be sensitive to how digital tools and approaches can prepare local services and program delivery for the future by considering impacts in current strategic planning. The rapid pace of technological change and factors such as the digital economy, the Internet of Things, e-government, autonomous vehicles and other advancements must be considered so that municipal governments can be prepared for a future that is emerging relentlessly in our present. Most importantly, in order to imagine a prosperous future for Ontario's communities, digital transformation must contribute to municipal fiscal sustainability.

What a Digital Government Approach Could Achieve

Digital service and workflows can provide significant opportunity for municipal governments. The example below illustrates the scope of opportunity a digital approach could offer in

terms of resident service and internal process efficiencies. It demonstrates a different way of thinking about doing business, which is one of the broader and more significant advantages of a digital approach.

Digital Proof of Residency⁶

Many municipal governments rely on government photo identification, letter mail bills, or other documentation to prove that an individual is a resident and eligible for certain services. Registering children for recreation programs, paying property tax, and resolving parking offenses often requires bringing paper documentation to a government office. This can be a cumbersome process, involving extensive staff administration, the potential for forged documents, the risk of clients having the wrong documentation and needing to return to the municipal office, or clients needing to visit multiple locations to complete various forms.

Alternatively, using a digital proof of residency process, services can be provided through a one-window, client-centred approach rather than having to prove eligibility multiple times. Service Ontario and the Digital ID & Authentication Council of Canada (DIACC) are exploring a system through which a client could use an online platform to confirm residency by having a third party (a bank, utility provider, etc.) provide the confirmation directly to the government as the service provider. The client would sign-on, choose the third party, consent to the residency verification, and the third party would complete the verification, and provide a yes/no response directly to the service provider. For users, the process is simple and streamlined, does not require collecting and presenting documentation to government offices, and user privacy is protected. For service providers, the process ensures documentation is authentic, service application is streamlined, and staff resources are used efficiently by reducing customer service and administrative requirements.

In this example, as in many other digital initiatives, residents receive better service, and service providers can achieve efficiencies that allow for cost savings and increased human resource capacities.

⁶ Service Ontario and the Digital ID & Authentication Council of Canada (DIACC), a non-profit coalition of public and private sector leaders focused on developing a Canadian digital identification and authentication framework are currently exploring this digital approach.

Digital Government Opportunities

Digital transformation presents municipal governments with many potential opportunities including, but not limited to, improving internal workflow processes and efficiencies, enhancing service delivery, and discovering cost savings. This section will provide further information on the opportunities that digital approaches can offer municipal governments.

Internal Workflow Process, Culture, and Efficiencies

Internal workflow processes traditionally burdened by large amounts of paperwork can benefit from digital solutions. Overall productivity within an organization is improved with proven digital document management. The benefits of going digital instead of relying upon paper-based processes include:

- Efficient management of information by centralizing and storing documents in a database (on the cloud or a physical server). Records can be more quickly searched, accessed, and shared. This could also streamline audit processes if the information is readily available digitally.
- Accessible information at multiple work sites for staff e.g. at home, on the road, etc.
- Enhanced security by assigning user access credentials.
- Verifiable official documents can be authenticated when digital signatures are used.

Municipal governments need to consider the ways in which they manage their records. Ultimately, if a municipal government implements a record and data management system, it could see faster response times to internal and external information requests (e.g. *Municipal Freedom of Information and Protection of Privacy* (MFIPPA) requests, reports to provincial ministries, etc.), cost savings in terms of printing and moving physical documents through mail and/or courier (e.g. planning variance approvals), and it may reduce environmental impacts associated with transportation. By using an appropriate data management system, municipal governments will benefit from improved coordination and access to the right data at the right time.

Open Data

Governments across the world are embracing the open data movement to promote transparency and accountability to citizens regarding data that is used to develop policy and inform decision-making. Open data also provides opportunities for innovation to services by making government data accessible to the public. Municipal governments across Canada have opened hundreds of datasets, free to download, to improve service delivery, empower citizens, and enhance public trust in government. The [City of Edmonton](#) is a national leader in open data and is the first municipality in Canada and the United States to adopt the International Open Data Charter, a commitment to implement global best practice standards to achieve the full potential of the open data movement. The City's open data catalogue

includes datasets and visualizations regarding roadways maintenance, school locations, tree varieties, municipal elections data, municipal census data and much more. For those municipalities that are considering beginning an open data initiative, they should be mindful of the details and conditions regarding data ownership if they decide to explore a third party option when providing the service.

Region of Durham: [Open Data Portal](#)

In May 2016, Durham Region Council approved a pilot of nine sources of open data. In December 2016, following a successful pilot, Council approved an “Open Data Policy” and the full creation of an Open Data Portal. Durham’s Open Data Portal now contains over 20 sources of data and continues to grow. Importantly, data from Durham’s area municipalities has been included as well. This Portal allows residents, business owners and developers to pull Regional data to conduct analytics, mapping, and more. Plans are in the works to expand the Portal further. Council approved a staff recommendation that the Region’s open data be provided to Google to update its mapping information. The Regional mapping data is more accurate and current, and by providing it directly to Google, residents who use Google for directions and mapping will be better served.

Case Study: [Niagara Open Data](#)

The Niagara Open Data portal hosts data from multiple municipalities in the Niagara region in addition to not-for-profits, post secondary institutions, and other community groups. It is managed by a consortium of partners from these organizations who share a common goal of increasing openness and access to data in Niagara.

Recognizing the importance of open data initiatives, the provincial government and several Ontario municipalities formed a Public Sector Open Data Working Group to help open data practitioners address common challenges, improve information sharing, and coordinate open data initiatives. The Working Group promotes open data program collaboration and acts as a repository of best practices to empower other municipal governments interested in developing their own open data initiatives. Further provincial-municipal forums, similar to the Public Sector Open Data Working Group, will help enable digital transformation among Ontario’s municipal governments. Similarly, the federal government’s [GC Collab](#) was established to facilitate cooperative information and data sharing among jurisdictions to improve overall discussion on policy and research agendas.

Cloud Computing

Advancements in data storage and high-speed internet also provide local governments with opportunities to eliminate the need to purchase costly IT infrastructure, such as physical servers. These “cloud-computing” services manage and maintain IT systems. For example, a municipal government can rent a range of cloud-computing services from email systems to digital storage space, even office software programs instead of purchasing them outright. An

employee can instantly access data and documents from any device using the cloud, enabling them to work from almost anywhere. Data stored on the cloud is also unlikely to be damaged in the event of a natural disaster thereby allowing a municipal government to continue its business remotely even if municipal property is damaged. Security of information is cited as a key concern that deters individuals and businesses from using cloud storage so municipal governments interested in cloud computing services should thoroughly vet cloud service providers to determine their data privacy and security practices. Robust, high-speed, and good quality internet is also required to optimize cloud-computing services.

The Niagara CIO Consortium is exploring the implementation of a Niagara Public Sector Community Cloud. The Community Cloud has the potential to be shared with many public sector organizations including municipalities, school boards, police services, and more. Once established, area municipalities may be able to uncover cost savings across multiple services.

Municipal Reporting

Digital workflow processes could also help simplify municipal reporting requirements to provincial ministries. It is currently estimated that Ontario's municipal governments submit over 400 reports to the Province every year.⁷ Often viewed as excessive and onerous, AMCTO found that "reporting to the province is negatively impacting the ability of municipalities to effectively deliver services to the citizens of their communities, and to plan, prepare and innovate for the future."⁸ At the same time, municipal staff recognize that reporting is important. Submitting data enhances the values of openness and accountability in the provincial-municipal intergovernmental relationship and with the broader public. However, reporting would be improved if it was streamlined and avoided unnecessary duplication, time, and effort. Utilizing more effective ways of reporting is a possible solution. AMCTO suggests two options that could simplify reporting requirements by enabling better digital workflow processes:

- Establish a list of priority indicators and datasets that municipalities currently report on which allows provincial ministries and the public to access data while removing requirements for municipalities to report on the same data to several ministries often multiple times.
- Create a provincial digital data portal that municipalities can use to submit reports.⁹

Both options align with the Province's Open for Business Strategy and Red Tape Challenge. They may also uncover further reporting requirements that could be either reduced or scaled back. As the Province works on its digital action plan, it should recognize the opportunity to collaborate with the municipal sector to help reduce unnecessary reporting

⁷ AMCTO, "Bearing the Burden: An Overview of Municipal Reporting to the Province," 5.

⁸ *Ibid*, 4.

⁹ *Ibid*, 11.

requirements through available digital options. This would enable municipal staff to complete their work efficiently and allow them to get on with the business of serving their communities.

Region of Durham: [Durham Access to Social Housing \("DASH"\)](#)

DASH is a joint Social Services / IT interdepartmental project. The DASH work team developed a ground-breaking, vacancy-driven wait list system for rent-geared-to-income (RGI) assistance. It is the first of its kind to be implemented as a full initiative in Canada. Faced with the constant challenge of improving the RGI wait list to be more efficient, effective and client-based, the DASH work team developed a creative solution to this ongoing challenge. Prior to this innovation, applicants on the wait list for RGI would submit their applications and then wait to be called for an offer. With almost 6,000 people on the wait list, and an average of only 325 subsidized vacancies becoming available on an annual basis, the process to receive RGI can take several years. The previous process often resulted in frustrated applicants and unit vacancy loss as staff searched the list to find someone still wanting the location of the vacancy, and still prepared/able to move within the timelines offered. With this new vacancy-driven model, vacancies are advertised on a secure login website allowing applicants to express interest in buildings to which they are currently interested in moving, all in "real time". The Region's Housing Services Division presented this innovative solution to wait list management at the Social Housing Centralized Access Network of Ontario (SHCANO). The Province and other Service Managers are watching the Region with interest as they tackle their own wait-list challenges.

Human Resources and Training

Moving to digital workflow processes requires a change in work culture. This can be particularly challenging when municipal councillors are less familiar with electronic devices and digital ways of working. In an AMO survey of municipal governments on digital transformation (see Appendix), almost 20 per cent identified change management and council buy-in as a barrier. Lack of staff training and knowledge was also identified as a common obstacle. Numerous studies have demonstrated that political support and having a manager who thinks positively of digital government are key determinants to municipal adoption of digital approaches.¹⁰ Particularly for small and rural municipal governments, it is hard to know where to begin, especially if staff resources, familiarity with digital solutions, and skills with information technology and digital tools are low.

Some municipal governments have had success surpassing this barrier. Municipalities can work through their IT staff to ensure that they understand how each department works, and then identify opportunities to introduce digital initiatives, create improvements, and fill gaps.

¹⁰ Richard Schwester, "Examining the Barriers to e-Government Adoption," *Electronic Journal of e-Government* Volume 7 Issue 1 2009, 120.

This often allows pre-established goals such as economic development and a high standard of service to be maintained and met more effectively, rather than requiring the creation and endorsement of new goals and strategies.

Municipal Service Delivery

In Canada, citizens' demands are the primary driver for digital transformation.¹¹ With citizens embracing technologies, there are growing expectations of governments to deliver services digitally, efficiently, and tailored to user needs. Successful digital transformation in public sector organizations understands that user experience matters most and governments will need to be agile and responsive to citizens' changing needs as successful digital programs and services do not remain in stasis and are subject to rapid disruption.

City of Vaughan: Smart City Task Force

A Smart City uses information and communication technology and data/informatics to manage assets, improve services, and enable opportunities for the municipality and its people. Created by City Council, the Smart City Advisory Task Force reports to the Vaughan Metropolitan Centre Sub-Committee. It is tasked with providing advice to Council and the City Administration, perspectives into the development of a Smart City initiative, and to endorse Smart City technologies.

Municipal Websites

Websites offer a portal to both the functions and services of a municipality. Websites allow a municipal government to communicate with citizens and allow site visitors to find answers to questions quickly. Municipal websites offer opportunities for citizens to participate and be informed by local government in everything from waste collection schedules to the minutes of the latest council meeting. More importantly, as more people are using the internet, they are more accustomed to finding the information they need online rather than travelling the distance to a municipal office or town hall. Most of Ontario's municipal governments have a website. Some are more intuitive and responsive to the needs of residents than others. It is important for municipal governments to consider what outcomes it wants from its website before making any significant changes. Engage citizens often to understand the usability of your municipality's website through user surveys or focus groups. Organizing the layout of your website that reflects the needs of residents, rather than the internal structure of government, may also help in terms of usability.

Online Services

Governments are finding ways to improve services by enabling and encouraging online interactions. This is a legacy of e-government when technology became available to manage

¹¹ Eggers and Bellman, 3.

front office contact and reduce processing costs. Residents can use online and digital channels to pay a parking ticket, report a missing recycling bin, as well as many other service functions. These virtual counter services can provide good outcomes for both the municipality and residents as well as potential cost savings. It provides a self-service option for residents, developers, and businesses that are looking to conduct a transaction or request for service when offices are either open or outside normal operating hours.

Further enhancements to digital identification is required before municipalities can begin to consider moving towards full adoption of online virtual services. Municipalities will also need to recognize that providing face-to-face services to residents that are either without internet access (due to personal choice, inconsistent/non-existent high-speed internet infrastructure) or who lack the skills or knowledge to engage online will continue. The municipality, with input from the public, should discern which services it provides online that is least disruptive to citizen access.

City of Kitchener: SAP Customer Relationship and Billing Service

Overseen by Kitchener's Finance and Corporate Services (FCS) Department, a new SAP Customer Relationship and Billing (SAP CR&B) system was developed to replace the City's aging Customer Information System, a critical application that supports the City's property tax and utilities revenue management and billing processes. The new system will leverage technology to deliver customer convenience, service improvements and operational efficiencies across the organization. The system has been designed with expectations for 24/7, immediate, multi-channel, mobile service for diverse groups of citizens and will continue to introduce changes in IT processes. A SAP Business Solutions Team was developed in order to supervise the implementation. Through the team, over 40 per cent of IT staff had been involved in partnership with groups such as Capgemini to develop the new system. The new SAP CR&B system went online in 2016.

Municipality of Meaford: [Waste Management App](#)

Launched in March 2017, the new app will act as an online tool where residents can find their garbage schedule, sign up for periodical reminders, or search items to find out if they should be placed in the blue bin, green bin, or garbage.

Public Engagement

Online public engagement is a fast growing municipal service. Offering residents' the option to interface with municipal governments online, either through social media platforms like Twitter, Facebook and many other forums provides the municipality with active feedback in real-time on local issues. Social media provides a space for dialogue but in order to get full value from these platforms, the municipality must have policies and procedures in place that ensure responses to conversations are appropriate, nimble, and if necessary, actionable.

Expanding engagement with residents by telling local stories better through social media, blogs and video are quick-win opportunities that municipalities should consider.

City of Niagara Falls: [Let's Talk Niagara Falls](#)

Let's Talk Niagara Falls is the City of Niagara Falls' online engagement website that allows the public to engage on a range of issues and topics. Feedback can be submitted through online discussion forums, quick polls, forms and surveys on projects/initiatives that are open for consultation. The website allows for a wide range of engagement that might be limited by community meetings held at a specific time and set location. Registered users can participate in public debates from the convenience of an online device and receive notifications on the status of a particular consultation of interest to them.

City of Greater Sudbury: [Sudbury Alerts](#)

Sudbury Alerts is a mass notification system used by the City of Greater Sudbury to issue emergency notification to the public of general community and localized emergencies, as well as other significant situations that may affect public safety. Sudbury Alerts acts in conjunction with the city's emergency management program for the protection and safety of residents. The system delivers notification to residents and businesses via telephone, cell phone, text message, fax or email. The system was delivered in partnership between Glencore, Greater Sudbury Utilities, the Sudbury and District Health Unit, and Vale.

When it comes to digital municipal services, such as paying tickets online or registering pets through municipal websites, some municipal governments have expressed concern about resident uptake. Almost 10 per cent of respondents to AMO's digital government survey listed either low resident interest and/or older populations as a barrier to adopting digital approaches. The City of Guelph approached this issue by convening a group of resident champions, including representatives from academia, the public engagement sector, businesses and others, who led public workshops to gather resident input. This led to suggestions for digital initiatives and services that the City then pursued. The City of Mississauga is also using citizen surveys and user testing to guide the transformation of its web presence.

Cost Savings

Fiscal sustainability is a pressing issue for municipal governments in Ontario so the need to find cost savings in budgets when considering digital opportunities is necessary. The most commonly cited barrier to shifting to a digital government approach is the financial and human resources cost. In AMO's digital government survey, financial resources was identified by 56 per cent of survey respondents, and staff issues (insufficient staff, time, or training) was cited by 44 per cent of respondents.

Adopting internal digital processes and service delivery approaches can involve upfront financial investments, but can achieve significant cost savings in the long-term. This is particularly the case in shifting to digital rather than paper document storage. In one example, Hydro-Manitoba, the province's major energy utility, saved over \$1 million annually in physical storage, printing, and transportation costs by shifting to digital document processes. The organization manages engineering projects involving the signature and approval of tens of thousands of drawings and documents. This organization's internal processes include signing drawings, delivery to construction sites, and archiving. Hydro-Manitoba made the decision to shift to digital forms, using a tool to certify the originality of the documents. This allowed them to eliminate their physical archiving, printing, and transportation costs, and reduce the process time from seven to ten days to a matter of minutes.

There are a number of ways that municipal governments can reduce technology costs including shared services, collaborative procurement, better management of contracts, and by allowing staff to use their own devices.¹² Cost savings may not be seen as a specific dollar amount, but by moving towards a digital approach where it makes sense for services and programs, decreases may be noticed in the level of staff effort it would normally take to work on an initiative prior to digitalization as well as increased efficiency that appears from new streamlined processes.¹³

Shared services occurs when two or more local public sector organizations (including municipal governments, utilities, hospitals, etc.) come together to provide a service to residents.¹⁴ The aim of shared services is to reduce costs while sustaining and enhancing a local service. It's a best practice followed by many smaller Ontario municipal governments that do not have the capacity or the resourcing to deliver the service on its own. Shared services through digital initiatives is no different. This could be achieved through sharing IT services, offering joint procurement programs, promoting training opportunities, expanding online services and co-developing local government apps, just to name a few.

Some municipal governments, including the Town of St. Marys, use online procurement processes, allowing bids and submissions to be made electronically, which could similarly achieve cost savings in mail, printing, and paper processing. The County of Middlesex also uses a digital employee portal for attendance forms, tax forms, pay stubs, and other approval processes, as well as automated workflows for accounts payable, contract management and IT related purchase requests, which eliminates printing and storage costs.

¹² Local Government Association, "Transforming Local Public Services: Using Technology and Digital Tools and Approaches", 23.

¹³ Robert Delorme, July 2016, "Digital Strategies in Local Government: Private Sector and Early Adopters Lessons Learned," 15.

¹⁴ MFOA, "Shared Services in Ontario's local public sector: Localizing accountability", 5.

Municipal governments are also finding ways of using technologies such as mobile devices to radically change the way local services are delivered, reducing costs, and providing more streamlined and transparent service delivery for users. As part of its transportation modernization plan, the City of Toronto's Green P parking app allows users to pay, track, and extend parking for on-street parking and at non-gated Green P parking lots across the City from the convenience of a smart phone. This costs the Toronto Parking Authority 10 cents per Green P transaction, less than the cost to operate and maintain parking payment machines.

Using digital approaches to service delivery and resident engagement could have a range of associated costs. For example, having residents report potholes, construction updates, or other municipal service issues through an app or social media requires constant monitoring and potential training on digital communication for staff. The Municipality of North Grenville has added a part-time position to monitor and engage resident reports through its Facebook and Twitter accounts. Maintaining open data GIS platforms also have ongoing associated costs. However, the benefits in terms of resident engagement and quality of service are significant, and some municipal governments may find the investment worthwhile. Some governments are finding that having residents communicate service issues and hear back directly about progress builds civic engagement and a sense of government accountability.

Overcoming Barriers to Digital Transformation

There are a number of commonly held barriers among the municipal sector when considering digital government approaches, including legal compliance, IT systems, and internal capacity. The following section will provide information and tools to assist in dispelling and overcoming these barriers.

Broadband

A significant barrier to any digital activity is the limitation of reliable, adequate, high-speed internet. Particularly in rural and remote areas, this continues to be a challenge. In AMO's digital government survey, 16 per cent of municipal respondents identified that they could not access internet consistently in their municipality, or that internet speed would not support digital ways of working. While the Canadian government has declared broadband a basic service, establishing it across the country will take time. More advocacy is needed to ensure appropriate and reliable high-speed internet is available to all residents. AMO encourages the Province of Ontario to prioritize high-speed internet access within its Digital Government Action Plan. A long-term strategy for broadband expansion in Ontario linked to the provincial digital strategy would be positive and would signal to those communities lacking high-speed internet infrastructure that they are vital to the growth of Ontario's digital economy.

[Eastern Ontario Regional Network \(EORN\)](#)

Recognizing that not all Canadians have equal access to internet, EORN was created by the Eastern Ontario Wardens' Caucus to provide residents of eastern Ontario fast and reliable internet service. EORN includes a 5,500km network of new and existing fibre optic cable, with 160 new access points for Internet Service Providers (ISPs). High-speed internet services is provided for residents and businesses through wired, wireless or satellite technology, depending on the best fit for the area. EORN has negotiated with ISPs to increase coverage area, bandwidth, and speed. This bridges the urban-rural price gap and access to high-speed internet. Residents and businesses are able to connect to the network by contacting their ISP. EORN was built with the support of federal, provincial, municipal, and private sector partners. EORN continues to be a leader in community broadband in Canada and has developed tools and resources that eastern Ontario municipalities, and others, can use when considering digital transformation.

[SouthWestern Integrated Fibre Technology \(SWIFT\)](#)

SWIFT was initiated by the Western Ontario Wardens' Caucus in 2011 and represents the combined connectivity interest of 15 rural municipalities in southwestern Ontario as well as the Town of Caledon, the City of Orillia, and Niagara Region. It was created to help southwestern Ontario compete, connect, and keep pace in a changing digital world by building an affordable, open access, ultra-high speed fibre optic regional broadband network.

Once completed, SWIFT's fibre optic connectivity will be accessible to 350 communities and 3.5 million people. SWIFT is being built with support from federal, provincial, and municipal governments as well as other partners. The initiative is based on the principle that everyone deserves access to high-speed internet regardless of the size of their community, their age, education, or where they work.

External Acceptance and Legal Compliance

There is also concern that digital tools used by municipal governments (such as electronic forms and signatures) may not be accepted by external municipal partners such as engineers, lawyers, planners, accountants, or the Province. However, many municipal staff have experienced demand from lawyers, engineers, and other certified professionals for online ways of working. Preparing and sending documents electronically, rather than printing and delivering through letter mail, could offer an opportunity for cost savings, especially in rural and remote areas where documents may need to be sent across long distances. Some municipal governments, as well as lawyers, planners, engineers and others are using specific software to ensure the authenticity of digital documents and signatures. For example, software is being developed to allow for signing and stamping of original digital drawings and documents that secures the signer's identity.

In regards to provincial legislation, the *Electronic Commerce Act, 2000* clearly states that the use of electronic signatures is valid and acceptable. Section 15 (1) reads: "If a public body has power to create, collect, receive, store, transfer, distribute, publish or otherwise deal with information and documents, it has power to do so electronically." The Act defines a municipal government as a public body.

Additionally, Langlois Lawyers also provided a legal analysis on the use of electronic signatures, finding that there are no barriers in their use instead of written signatures. They find:

"The applicable Canadian statutes are based on the principle of technological neutrality, and provide that in most cases, reference to a written instrument does not presuppose the use of any specific medium, thus leaving it up to the parties to choose whether to use paper-based or electronic documents. Consequently, the legal effect of a document will not be negated by the fact that it is in electronic form or was signed electronically. Electronic signatures are thus recognized as a valid means of expressing consent and concluding agreements, to the extent that the integrity of the signed document can be established. In Canada, there can therefore no longer be any doubt that a document in electronic form, signed via an e-signature solution, is legally valid. [...]Any organization that seeks to reduce its risks regarding the integrity of its documents is thus well-advised to use an e-signature solution that maximizes the organization's comfort level regarding the origin and integrity of its documents."¹⁵

¹⁵ Jean-François De Rico, Lawyer, Partner, Langlois Lawyers, "Legal framework for electronic signatures".

When working with consultant reports and architectural drawings, it is important to consider whether these are subject to copyright requirements, which may pose a concern to municipal governments. It is also important for municipal governments to clarify whether data is either owned or can be made public and/or shared, in the context, for example, of populating a municipal open data platform.

External acceptance factors have also posed a problem in one specific municipal activity: internet voting. Some municipal governments have identified a main roadblock to implementing internet voting – having to correct MPAC’s preliminary list of electors. Security vulnerabilities and voting infrastructure have also been raised as issues, but ones that have more straightforward solutions. The main issues identified with the MPAC electors list are accuracy and cost to municipal governments. An AMCTO study of 2014 voting data found that the electors list was incomplete, incorrect, or inaccurate, leaving many eligible residents off the list. The study found that 40 per cent of respondents were somewhat or very dissatisfied with MPAC’s ability to provide accurate and useful data for the 2014 voters’ list.¹⁶ In regards to costs, while municipal governments are required to pay MPAC to create Preliminary Lists of Electors (PLE), they also spend extensive time and money on revisions to the PLE, voters’ list revisions, advance vote and election day revisions, and post voting revisions, totalling an estimated \$51,600 to \$155,800, depending on population.¹⁷ The fact that MPAC is responsible for delivering voter data but is removed from the implementation and delivery of municipal elections also creates an accountability challenge. A municipal best practice to internet voting would prove very useful in helping the sector move toward addressing barriers and implementing solutions.

Information Management and Technology

Shifting to internal digital processes and service delivery comes with some technological system requirements. This was cited as an issue for almost 10 per cent of municipal respondents to AMO’s digital government survey. For smaller municipalities, this could be the ability to connect online payment or document submission platforms to municipal finance or other internal systems. For example, the Town of St. Marys has online registration and payment for recreation programming which requires compatibility with municipal finance systems. The City of Guelph also has an online payment process for parking tickets. Similarly, some municipalities, including the County of Grey, have established planning application web portals, and would require back-end processes to ensure processing can happen. For larger municipalities, challenges could include back-end limitations and legacy technology that requires replacement in order to develop apps or interconnected digital tools and information to residents. A municipality may also have the capacity to establish an

¹⁶ AMCTO, “Position Paper: Time to Fix the Voters’ List”.

¹⁷ *Ibid.*

open data portal, but their information management processes have not produced sufficient reliable data to populate it, which could require staff time and expertise.

To address technological challenges, many municipal governments have chosen to invest funding in establishing or upgrading appropriate systems, and done so incrementally, seeing the value in the improved resident service and more efficient processes. Municipal governments may also want to consider collaborating to share the cost of technological tools or staff.

Town of Lincoln: CityView

The CityView application began in 2000 as an internal system designed to handle building permit applications. As well as helping with record keeping, application reports, and streamlining available data for building application management. In 2011, direction came to expand the application so that it encompassed developers and development plans. The available data was expanded to operate as a large internal hub. The system was also given application tracking systems, development plan data retrieval, and a central data management system.

County of Middlesex: Enterprise GIS

Since 2005, the Middlesex Geography Network (MGN) partnership has existed as an opportunity for GIS users to work in a coordinated and integrated manner to elevate the level of GIS availability. In 2015, the GIS system was updated to be an in-house service. The implementation of an in-house Enterprise GIS system allowed the County to undertake a number of new GIS and mapping initiatives focused on four priority areas: Public Middlesex Map; Planning, Building & Source Water Protection; Public Works; Economic Development.

County of Grey: Planning Application Portal

From 2012 to 2013, the County had been developing an Application Portal to address the developer application process. Previously, the tracking and application process for developers was confusing as it passed from lower to upper tiers of local government. The Application Portal digitally tracks developer applications, cross-references applications with geographical spatial GIS data, and the document path of the application is streamlined as it passes from one tier to another.

Privacy

The *Municipal Freedom of Information and Protection of Privacy Act* outlines how personal information is to be protected. Other pieces of legislation also direct the protection of personal information for community services and health professionals. To comply with these requirements, municipal governments must make sure to redact information that cannot be shared before sending electronic documents or posting online. This is no different from what is required for paper forms. Digital tools are available on the market to secure original

documents and allow for redactions, which may make the process more efficient and less time consuming. As always, it is the responsibility of the municipality to vet appropriate vendors before deciding on an appropriate platform.

Cybersecurity

National, provincial and municipal orders of government will continue to be vulnerable to cybersecurity risks. It will be important for municipalities to maintain awareness and vigilance regarding this particular multi-faceted threat. Accenture's 2016 Cybersecurity Report finds government organizations at the bottom of all industries in terms of security, and suggests addressing this at the local level through a number of approaches. Keeping up to date on potential risks and threats, and ensuring policies are in place to cover data breach notification, disaster recovery, IT service continuity, remote access, employee departure, and acceptable use are recommended. Performing a cybersecurity self-assessment audit, reviewing disaster recovery plans, and ensuring key vendors are prepared are also recommended.¹⁸

Some municipal governments have found good insurance options, including one which provides first and third party cyber liability coverage to protect against cyber exposures, and covering own computer systems, service providers, and shared network arrangements for media service liability, network security liability, privacy liability, extortion threats, crisis management expenses, and business interruptions. Municipal governments may want to explore cybersecurity insurance options from providers to ensure appropriate protections are in place. As cyber attacks become more persistent, a provincial role in building access and awareness of cybersecurity insurance could benefit smaller municipal governments that lack the capacity to do this work on their own.

¹⁸ Ashley Fruechting, "Digital Trends: 2017 and Beyond", *Municipal World*, June 2017, 24.

Towards Digital Transformation

Municipal governments in Ontario will have different approaches and methods in moving towards digital transformation. There is neither a specific nor a “correct” methodology of implementing a digital government approach. There are considerations that may help a municipality that has yet to begin digital transformation as well as those that are well underway. Research has shown that if local leaders address the following key areas, they can help accelerate digital transformation within their municipality:¹⁹

1. Develop a Digital Strategy
2. Emphasize the Role of the Citizen (or User)
3. Foster a Digital Organizational Culture
4. Improve and Expand Employees' Digital Literacy

Digital Strategy

Designing a digital strategy helps guide a municipality towards its digital transformation vision. A digital strategy lays a framework that enables the municipality to set the goals, objectives and actions that support its vision. Key goals of a digital strategy often include making a municipality more inclusive and citizen focused, accessible and barrier-free, innovative, and transparent in terms of access to data and information. The goals often underscore core values of a municipality that reflect how it intends to engage with the community, its partners, and the wider world. Goals are supported by tangible actions, timelines, as well as ways the municipality intends to track and measure progress. Some municipalities have developed comprehensive, public facing digital strategies. However, a digital strategy does not necessarily need to be a written document but it could be a mutually agreed approach to municipal digital transformation that is built into government administration and processes. It is up to the municipality to decide the approach best suited to its local circumstances.

Digital strategies are aimed at fundamentally transforming government processes and changing the organizational culture to embrace innovation and disruption. While technology facilitates digital transformation, it should be considered only as a means to the broader aims of digital change. That includes empowering citizens through a user focus approach to municipal service delivery, changing organizational culture to embrace innovation and disruption, having the right leaders in place to lead digital transformation, and improving the digital literacy of employees. Digital strategies can also reveal the barriers to success. They can identify processes, legislation, and other elements that hinder digital transformation and explore opportunities to overcome these barriers.

¹⁹ Eggers and Bellman, 22.

A good digital strategy is informed by citizen engagement. Citizens are critical to assisting the municipality in setting the goals and actions it wants to pursue in the strategy since local residents and businesses will be the end users of many of the actions that a municipality proposes. Citizen engagement also informs how the municipality can provide better information to its residents, enhance opportunities that technology has to offer, improve municipal operations, and provide services efficiently, effectively, and responsive to user needs. Engaging stakeholders throughout the digital strategy development process is critical when securing public support to implement a digital strategy.

City of Kitchener: [Digital Kitchener Strategy](#)

Digital Kitchener is the City of Kitchener's smart city strategy. The strategy is guided by four themes:

Connected - Offering communications infrastructure with access and capacity required to remain globally competitive, reimagining wireless access in Kitchener as a more seamless service, and looking beyond traditional uses for existing infrastructure and integrate emerging sensor technologies;

Innovative - Providing flexible IT solutions internally that support service delivery and process improvement, deploying more mobile solutions and automating more business processes, and testing new service delivery ideas through co-developed initiatives and piloting new concepts;

On Demand - Providing more centralized information that is of high value and easy to access, using information in more dynamic ways to inform decision making, and offering digital service options that are convenient and intuitive; and

Inclusive - Providing opportunities for equitable access to information and digital services, supporting increased digital literacy and skills development for citizens, and creating conversation around digital inclusion and turning it into a broader philosophy across the region.

Recent 2017 projects include: LED Street Light Conversion, Civic Innovation Lab, Internet Speed Testing, Tax and Utility e-Billing, and Digital Inclusion Standards.

City of Ottawa: 2015 -2018 Strategic Plan Digital Service Delivery

In the City of Ottawa's 2015-2018 Strategic Plan, a key objective was improving access to City services, as well as efficiency and effectiveness of delivery, by transforming the organization's processes and technologies to meet the increasing client demand for digital service delivery (e.g., online, mobile, social media). Improvements suggested include: Program Registration, Facilities Booking and Payment System Replacement; Legacy

Technology System Replacement; Open Data Implementation Program; Digital Service Strategy and Implementation and IT Department Transformation.

User Focus

Redesigning government begins with understanding user needs. Digital transformation efforts are about changing the traditional public service model of a provider-centric model, to a user centric approach. A key goal of any governments' efforts when offering a program or service digitally should be how it can make the lives of its residents easier and better. This means extensive user testing and constant, iterative refinements to understand how residents will use a service. It may take time to get it right but when a government understands what the users' needs are, a service or a program can then be truly user-centric.

Citizen insights can also provide the impetus for change, transforming an old approach to a program or service. Often, users are the ones that are driving change, causing the disruption, and finding new solutions to government problems. Municipal governments can empower citizens by crowdsourcing ideas through hackathons, local competitions, user-centred design or co-creation when creating digital programs and services.²⁰

Culture and Leadership

In 2016, the results of the Gartner Financial Innovation Services Survey unveiled the most significant threat to innovation as "internal politics and an organizational culture, which doesn't accept failure and/or doesn't accept ideas from outside and/or cannot change."²¹ This threat recognizes that a resistance to change is a barrier to digital transformation. Where transformation succeeds, an organization's culture is risk receptive, fosters innovation and collaboration, and embraces disruption. An organization or government is open to implementing digital trends and using technology to reinforce the culture of innovation and collaboration.²² Municipal governments in Ontario are not change adverse. They are often leaders in creating a culture that embraces the capabilities needed to support digital transformation. For example, they are addressing the digital skills gaps in their workforce by offering the right training and supports employees require. They are looking at innovative ways of procuring and investing in resources and technology to help with change. However, a culture of innovation cannot exist without accepting some degree of potential failure. Often, it is in failure that lessons are learned and innovations emerge. Organizations that foster a culture of innovation tolerate the occasional misstep particularly if those errors emerge along well-structured iterative processes. Embracing failure allows organizations to fix

²⁰ Eggers and Bellman, 23.

²¹ Mark McDonnell, "Do #Agile and #Scrum Alliances foster a #Culture of #Innovation? by #AgileMinder," November 26, 2016, accessed at <<https://www.linkedin.com/pulse/do-agile-scrum-alliances-foster-culture-innovation-mark-mcdonnell>>.

²² Eggers and Bellman, 24.

errors, learn from mistakes and continue efforts to work towards mutually desired outcomes.

Effective leadership can drive the culture change to digital and a savvy leader can help an organization navigate through the transformative processes. AMO applauds the Government of Ontario's hiring of its Chief Digital Officer to deliver the Province's Digital Government Action Plan. This is in line with a trend of many governments across the world in hiring CDOs to disrupt and challenge the existing state of government processes. These leaders are the catalysts for new skills and ways of thinking. AMO looks forward to collaborating with Ontario's CDO on current and emerging opportunities that can help municipal governments internally manage and better deliver digital services and programs to the growing expectations of our residents.

Workforce

The internal digital transformation of a municipality's workforce is key to delivering user-centric services. Municipal governments will need to ensure that the skills of its staff are equipped to deliver the services needed in a digital world. A "digital first" way of thinking for employees' approaches to work could be beneficial as "each process that collects data in electronic form lends itself to better analysis, reporting and decision making. Employees can improve their digital literacy by optimizing the use of existing systems and considering data and system integration. This will allow for employees to leverage technology in innovative ways with every new business problem, initiative, or project."²³

Although most municipalities in Ontario may not have the capacity or the resourcing to integrate a "digital first" approach to their workforce, they can look to other municipal governments that are leading the digital transformation and learn from them. Other municipal governments and associations may also offer training opportunities to help current employees reach the next stage of digital thinking. Existing talent pipelines can also help municipal governments recruit the next generation of employees and leaders that are digitally savvy and knowledgeable through university co-op programs, internships, or through the Code of Canada that could offer mid-career tech industry professionals the opportunity to work on municipal digital initiatives.

A Digital Continuum

Considering the key areas of digital transformation: digital strategy, user focus, culture and leadership, and workforce, a municipality can pinpoint where it sees itself on the digital continuum and what it can undertake to improve its progress. A municipality might be fully mature, evolving, or is "offline" with its digital transformation efforts. The following circumstances might be reflective of the conditions within a municipality:

²³ Frank di Palma and Robert Lane "Digital Strategy for a Smart City" in *Municipal World*, June 2017, 18.

Mature

- Implemented and is following a digital strategy/vision
- Implemented and is continuously improving digital initiatives/services/programs that account for user needs
- Embraces and encourages a culture and leadership of disruption, is receptive to risk
- Workforce is digitally literate
- Continuously adapting to emerging digital trends, technology and innovation

Online and Evolving

- At early to medium stages of digital maturity
- Addressing and overcoming barriers to digital transformation
- Considering or implementing a digital strategy/vision
- May have capacity/resourcing issues that stalls transformation efforts
- May offer some digital services and programs, has an understanding of emerging digital trends and opportunities
- Leadership/culture receptive to innovation but may be risk averse
- Some digital literacy among workforce

Offline

- Has little to no digital presence
- Digital transformation not a local priority
- Resources/capacity low to non-existent
- Barriers impede movement towards digital transformation

As in all municipal decisions, choices are made based on the appropriateness for the community as well as local resourcing and capacity. A digital approach to a service or a program may not always be suitable or even the better option for the community's needs, as they currently exist. Although these communities may not fully embrace digital opportunities at this time, the community's needs and resident desires may evolve to a point where it becomes more appropriate and cost effective to pursue potential options.

Looking to the Future Now

Technological change is happening quickly. Municipal governments will need to respond as new challenges arise and residents will have different expectations of local service and program delivery. As innovations such as autonomous cars and drones become available, municipal governments will need to understand the impacts of new and emerging technologies and how to respond appropriately. It will also be important to think about what the municipality of the future will look like, and then plan towards it.

Case Study: Hastings-Quinte Paramedic Smart Glasses

Hastings-Quinte Paramedics is in the process of exploring an initiative involving the use of wearable “smart” glasses technology for paramedic services to allow them to send and receive real-time actionable data during operations. The goal of this initiative is to send and receive data, visual images, and voice-to-text information collected by the paramedics and pass this information to hospital staff, or in the event of a large-scale emergency, to the Emergency Operations Centre. “Smart” glasses are wearable computer display screens, which would allow paramedics to connect to patient records, medication information, and other information to provide faster and more accurate treatment. It would also allow paramedics to send video and photo information of a patient to their primary care provider and receive direction, which could replace, in some cases, transportation of the patient, and improve care. Transmitting video footage of a large-scale emergency could also help hospitals prepare to respond to medical situations, and lower response times. It fills a time gap of voice communications as emergency officials are seeing in real time the emergency allowing the time for local officials to prepare a response.

Disruption to programs, services, and ways of doing things is the new normal and municipal governments are not immune to change. For example, municipal transit services and infrastructure are being disrupted by ongoing developments with digital technologies. Autonomous vehicles currently being tested have the potential to significantly change the future of how transit services are delivered and the way in which municipalities design, build, and operate infrastructure to accommodate this emerging vehicle concept. Municipalities should begin considering how autonomous vehicles will impact the way in which services are delivered to ensure they are receiving the maximum socio-economic benefit that this technology will create. In a similar vein, the Town of Innisfil has launched an innovative pilot approach to offering residents transit services. Looking for a solution to the high costs of traditional bus services, the Town entered into a [ride sharing and transit partnership agreement with Uber](#), the first of its kind in Canada. Residents can book trips anywhere in Innisfil and the Town will subsidize a portion of the travel costs (\$5 anywhere within the Town’s boundaries). There are also certain destinations in the Town that are subject to a flat fare, for example \$3 for any ride to and from the Innisfil Recreational Complex. These digital and technological innovations are now beginning to disrupt traditional municipal approaches to service and program delivery and it is anticipated that this will only continue. Municipal governments need to be prepared and adaptable to these changes.

While it is difficult to predict future technological innovations, municipal governments can adopt ways of working that allow them to be more nimble in how they respond to user needs. This could happen through pilots, ongoing project assessment and modification, and other evidence-based learning. This could involve stronger public engagements through digital tools, or working with the private sector to solve problems in new ways.

City of Guelph: [Guelph Civic Accelerator](#)

Launched in June 2016, the Civic Accelerator Pilot Project is designed to engage in innovation by selecting entrepreneurs, startups, students and companies to create solutions for complex municipal problems as Solution Partners. Solution Partners are embedded within City departments to develop internal solutions in collaboration with City employees. These problems have been identified as:

Water Usage Data – how can Guelph Water Services enable citizens to detect leaks and reduce their water use?

Parking – how can the City maximize the value of parking space in the downtown?

Statutory Notices – how can the City make it easier for the public to provide feedback on planning decisions?

The Civic Accelerator was developed in conjunction with the Guelph Lab, the City of Guelph's civic innovation partnership with the University of Guelph. The Accelerator is in partnership with Innovation Guelph, the Guelph Chamber of Commerce, Canada's Open Data Exchange and the University of Guelph's Centre for Business and Student Entrepreneurship (CBaSE).

Conclusion

Digital government transformation is happening now and municipal governments in Ontario need to be flexible, adaptable and responsive to ongoing digital innovations. It will be a challenge but the ongoing process of digital transformation will be beneficial for citizens, municipal employees, and elected councils alike. Municipal governments can begin by considering what their vision of digital will look like for their community. The vision could include priorities such as increasing citizen engagement, developing economic opportunities, or enhancing innovation by embracing disruptive advancements to traditional ways of doing things. Creating an organizational culture that is risk receptive, empowering leaders to challenge the status quo, developing a workforce that is digitally literate, and continuously learning new trends and opportunities of digital will lay a solid foundation for municipal governments to be adaptable and agile to user needs and the rapid pace of change. By encouraging and embracing digital transformation, municipal governments may also find efficiencies to help them along the path to fiscal sustainability while improving the day-to-day lives of their residents.²⁴

AMO offers the following recommendations to enable digital transformation for Ontario's municipal governments:

1. Recognize that municipal governments are at different stages of digital maturation. Municipal digital transformation is organic, often driven by local needs within the community. The Province should consider local circumstances when developing provincial digital initiatives that may have wide-ranging municipal impacts. Competing local needs and challenges will take precedence.
2. Provide supports to enable municipal digital initiatives and overcome barriers including funding and human resourcing. Local capacity issues will determine the degree to which a municipality can enable digital transformation. The Code for Canada can assist in identifying the right people with the skills to help municipal governments enhance digital literacy and develop technology-based solutions to local challenges.
3. Collaborate with municipal governments to share data and establish coordinated and integrated digital initiatives where appropriate. Establishing provincial-municipal digital government forums to engage with the sector to address municipal challenges such as streamlining reporting would be a quick win. The Province and the municipal

²⁴ Corydon, Ganesan, Lundqvist, "Digital by Default: A Guide to Transforming Government", McKinsey Center for Government, November 2016, 12.

sector have collaborated on digital initiatives in the past and it is time to renew the focus.

4. Prioritize improvements to broadband and cellular service so that all municipal governments and their communities have access to the infrastructure that enables them to be competitive and viable in the burgeoning digital economy. The Canadian Radio-television and Telecommunications Commission (CRTC) has declared broadband internet a basic service and the Province of Ontario must prioritize high-speed internet access as its Digital Government Action Plan evolves.

Appendix: Municipal Digital Government Survey Results

In April 2017, AMO distributed a survey to Clerks and CAOs to assess municipal involvement in digital government initiatives. The following questions were asked:

- Is your municipality undertaking a digital government initiative or approach, such as an online tool or application? If yes, please describe the initiative(s):
- Is there an initiative that you are not currently doing but that you would like to do through a digital government approach? Please describe it.
- Are there specific barriers preventing you from initiating a digital government project? Please explain.

AMO received 63 responses to the survey. Below are highlights of the survey results.

Question #1: Is your municipality undertaking a digital government initiative or approach? If yes, please describe the initiative(s).

Municipality	Digital Government Initiative
City of Brockville	<ul style="list-style-type: none"> • Currently in review/planning stage for online services
City of Cambridge	<ul style="list-style-type: none"> • Implementing a Customer Relationship Management (CRM) tool to assist with City's customer service strategy
City of Greater Sudbury	<ul style="list-style-type: none"> • Leisure Program Management - online tools for citizens • Web based and mobile technology for citizen requests • Community engagement software • Open data program • GIS apps for citizens
City of Guelph	<ul style="list-style-type: none"> • Civic Accelerator • Intake work order management and service delivery via social media
City of Kitchener	<ul style="list-style-type: none"> • Digital Kitchener, based on four pillars: connected, innovative, on demand, and inclusive • Building one of Canada's first city-wide Internet of Things (IoT) mesh networks • Municipal innovation lab in North America's largest tech incubator (Communitech) • Aligning e-services to single sign on • Public Wi-Fi at all city owned faculties • New SAP tax and utility e-portal
City of Markham	<ul style="list-style-type: none"> • 70 services available online • City-app

Municipality	Digital Government Initiative
	<ul style="list-style-type: none"> • Digital Markham strategy • 75 interactive services (forms)
City of Mississauga	<ul style="list-style-type: none"> • Online services such as Ticket Payment, Tax Certificates, Recreation Program Registration, Library Services, eStore, eBuild, Property Information, Pet Licencing, Service Requests, 311, Mobile Applications for Roads and Service Requests • Live stream Council and Committees of Council, video archive, agendas and minutes • Digital engagement projects • Partnership with Sheridan College and UTM on projects, and wireless internet access for students to their networks • Web presence transformation with involvement from citizens, through surveys and user testing • Reports and information published on website and through Open Data Portal
City of Ottawa	<ul style="list-style-type: none"> • Contracted IBM for the development of ServiceOttawa. In its first five years of operation, the Program implemented over 30 new technologies and more than 250 service enhancements that benefitted members of the public, including business owners. City of Ottawa's Strategic Plan for the 2015-2018 Term of Council identified "improving access to City services through digital service delivery" as a strategic objective under the Service Excellence Priority (SE-2). • Digital Services Strategy (DSS) in development, including: <ul style="list-style-type: none"> ○ Citizen Engagement -leveraging digital channels to enable two-way communication and participation in municipal decision making ○ Self Service (Online Client-Centric Services and Information) - Increasing the availability of online services and information to enhance efficiencies and the level of client self-service ○ Data, Information and Analytics - improving data-driven decision making and service design through the use of data, analytics and visualization, including client feedback and usage patterns (e.g. leveraging call and web volume data of 311 transactions)

Municipality	Digital Government Initiative
	<ul style="list-style-type: none"> ○ Effective use of Digital Channels – delivering services to clients via the most effective and appropriate channels (i.e. the right service types in the right channels) ○ Digital Workforce Development - build a workforce that integrates innovative technology into daily activities and service delivery
City of Toronto	<ul style="list-style-type: none"> ● Open Data strategy ● Public engagement portal toronto.ca/consultations crowdsourced and posted by staff across all City Divisions ● Online engagements including e-townhalls, online surveys and ideation and social media applications ● New applications and portals to support public information, registration and payment are being implemented including a new on-line research request portal that will allow members of the public to search Committee of Adjustment decisions ● MyWaterToronto detailed online information for residents on total and average water use by day, week, month or year in an easy-to-read graph or chart format. Additional details, such as temperature and precipitation, help residents better understand usage during particular time periods, identify water leaks and become more aware of water use habits, helping to encourage water conservation ● Progress Portal and Toronto's Performance Dashboard provides information to assess trends and directions of key indicators for Toronto as a whole and for City of Toronto services ● Meeting Management and Information Service (TMMIS) provides real-time updates on agenda hold, motions, amendments, releases to the public
City of Vaughan	<ul style="list-style-type: none"> ● Creating an implementation plan for City's Digital Strategy ● Smart City Task Force ● Service Vaughan initiative ● Open Data Vaughan ● Office 365 roll out ● Adaptive Controls for street light ● Improving GIS and Data Visualization tools

Municipality	Digital Government Initiative
	<ul style="list-style-type: none"> • Public Wi-Fi Rollout • Automated agendas for Council meetings
City of Welland	<ul style="list-style-type: none"> • Reviewing City's website to make it user friendly
County of Elgin	<ul style="list-style-type: none"> • Online job applications • Online library services (eBook loans) • Online bookings for tourism
County of Grey	<ul style="list-style-type: none"> • BGDISC is an open data portal for sharing Bruce and Grey County data sets with the public • Developing a planning application portal
County of Hastings	<ul style="list-style-type: none"> • Undertaking a GIS open data initiative. • Hastings County maintained GIS data will be available to the public, businesses and communities. • Access will be granted via an online portal and licensed via the Government of Canada ("Open Government License")
County of Huron	<ul style="list-style-type: none"> • Set a vision and the direction through Digital (Business Systems) Road map (5 years Program) to achieve improvements in the different areas of technology-in-use • Automate the business processes and establish/enhance the real-time access to the data • Work is in progress on the following core initiatives among others: 1. Enterprise Resource Planning System (ERP) 2. Enterprise Content Management System (ECM) 3. Online Council Agenda Management System 4. Business Process Management Focus • Areas include (but are not limited to): 1. Integrated Processes 2. Process Standardization 3. Adoption of Best-Practices 4. Workflows (e.g. Account Payables, Employee onboarding etc.) 5. Data Quality
County of Middlesex	<ul style="list-style-type: none"> • Electronic Document Management using Automated Workflow • Expanding our Laserfiche implementation to include a forms based, automated process approach for the collection and retention of information • Accounts Payable, Agreement/Contract Management and IT related purchase requests • Enterprise GIS, including Asset Management, Open Data Sets, Planning Application Notification System, Heritage Trails, Road Closures with Detours, etc.

Municipality	Digital Government Initiative
	<ul style="list-style-type: none"> • Electronic Council Agendas, recently fully implemented an online eGenda solution • Online Time and Attendance for Employees including Employee Portal to access time-banks, T4s, pay stubs, approval processes, etc.
County of Perth	<ul style="list-style-type: none"> • Redeveloping the website to one that is dynamic and responsive to varying sizes of devices, with online forms and ecommerce capabilities, where any financial transaction that is currently available over the counter will be available online • New software to modernize our operations by automating manual, repetitive tasks, freeing up time for employees to focus on more high level initiatives • Working on an open data portal, and enhancing our use of GIS across all departments
Municipality of Arran-Elderslie	<ul style="list-style-type: none"> • Municipality has a social media presence through Facebook
Municipality of Bayham	<ul style="list-style-type: none"> • Digitizing all administrative and operational processes
Municipality of Chatham-Kent	<ul style="list-style-type: none"> • Enhancing website for community engagement • Job applications, public inquirers, and payments accepted online • Internet voting • Public library has extensive online presence
Municipality of Meaford	<ul style="list-style-type: none"> • Launched an app for waste management • Online forms (report road issues, online business directory) • Residents can pay for dog licences through the website
Municipality of North Grenville	<ul style="list-style-type: none"> • Re-designed website, focus on providing online services (i.e. online bill payments, online applications and renewals of burn permits and dog tags, service request feature, etc.) • Added a part-time position to monitor and engage via social media (Twitter & Facebook) • Increasing use of Survey Monkey surveys to engage key segments of the public (i.e. parents for a playground redesign) or on key topics (i.e. budget preparation) • In discussion about app development, budget approved in 2017 • Live streaming of Council meetings is budget approved and in process for 2017

Municipality	Digital Government Initiative
Municipality of The Nation	<ul style="list-style-type: none"> • Online billing (taxes and water / sewer bills) • Online Payments for taxes, water / sewer bills, and invoices • Appointment requests through online forms • Hall rental requests through online forms • Digital calendar for availability of hall and community centres • Facebook page and website for communication
Municipality of Trent Lakes	<ul style="list-style-type: none"> • Implementing an electronic records management system and an electronic human resources training and tracking module
Municipality of Wawa	<ul style="list-style-type: none"> • Exploring digital opportunities and solutions as part of the municipal business plan
Municipality of West Grey	<ul style="list-style-type: none"> • Considering offering online options for residents to view tax and water accounts as well as pet licences • Considering option to allow residents ability to make online payments
Region of Halton	<ul style="list-style-type: none"> • One Halton (app) • Online tools and forms
Town of Arnprior	<ul style="list-style-type: none"> • Web based registration is in development, as well as online complaints
Town of Bracebridge	<ul style="list-style-type: none"> • On-line Bill Payment • On-line Permit Applications • Web Streaming of Council and Committee meetings • On-line complaint/Comment submission • On-line bid submission
Town of Huntsville	<ul style="list-style-type: none"> • Open Data Portal in development • Webcasting of council meetings • "FilePro" online portal to more easily view Council agendas and minutes
Town of Kingsville	<ul style="list-style-type: none"> • Updating Town's website, • Investigating the installation of self-serve kiosks • Developing a Town app
Town of Minto	<ul style="list-style-type: none"> • Fully electronic meetings • Initiated electronic TOMRMS application where paper correspondence is scanned and processed electronically. • Purchased CityWide software asset management, GIS and complaint processing modules to develop

Municipality	Digital Government Initiative
	<p>electronic tools to assist with capital budgeting, engineering initiatives and public complaints.</p> <ul style="list-style-type: none"> • Information for facility booking is online so that customers can check schedules for recreation facilities and make inquiries electronically for new bookings. • Using the Town website and social media the municipality has increased its points of contact with ratepayers and business. • Building permit processing is increasingly electronic including in field inspection recording.
Town of Mississippi Mills	<ul style="list-style-type: none"> • Online open burn permits https://mm.burnpermits.com/
Town of Mono	<ul style="list-style-type: none"> • Facebook/Twitter accounts • Online payments and recreation registrations • Open data mapping • OP/Zoning and Real Estate inquiries online
Town of New Tecumseth	<ul style="list-style-type: none"> • Working on Town's online presence both intranet and internet • Undertaking a review of e-government opportunities
Town of Plympton-Wyoming	<ul style="list-style-type: none"> • Online voting • Online payments • Online public feedback
Town of St. Marys	<ul style="list-style-type: none"> • Recreation Programming online registration and payment Online Procurement (bids and tenders submissions) • Collection of public feedback for upcoming projects
Town of Tecumseh	<ul style="list-style-type: none"> • Launched a town app last year to complement Tecumseh's website and social media presence
Town of Whitchurch-Stouffville	<ul style="list-style-type: none"> • Online forms and payments • Live streaming of Council meetings • Electronic agenda and minutes available online
Township of Admaston/Bromley	<ul style="list-style-type: none"> • Public Wi-Fi • Online payments • Electronic agendas • Social media updates • Online surveys
Township of Edwardsburgh/Cardinal	<ul style="list-style-type: none"> • Online sale of dog tags and municipal landfill tickets
Township of Lucan Biddulph	<ul style="list-style-type: none"> • Use Township's website, Facebook/Twitter accounts to keep residents up to date and informed

Municipality	Digital Government Initiative
Township of Madawaska Valley	<ul style="list-style-type: none"> Working towards online payments and electronic billing including tax billings
Township of Muskoka Lakes	<ul style="list-style-type: none"> Online registration system for recreation programs
Township of North Stormont	<ul style="list-style-type: none"> Using web-based applications (i.e. iCompass, Recycle Coach, Odoo, CRM software, Open VADIM)
Township of Puslinch	<ul style="list-style-type: none"> Exploring opportunities around submitting online forms and payments
Township of South Frontenac	<ul style="list-style-type: none"> Online agendas Paperless Council meetings Online recreation registration with payments (with fees absorbed) Planning a customer self-serve module for 2017 for property tax that would enable accessing account balances online
Township of Tay Valley	<ul style="list-style-type: none"> Implementation of on-line forms and on-line payment via credit card
Township of Wilmot	<ul style="list-style-type: none"> Township's website utilizes several digital service options for providing information and getting feedback from residents, businesses and visitors. Implemented an online payment module and online form module. Engage with residents using social media.
Village of Westport	<ul style="list-style-type: none"> Offer online payments, pre-authorized payments Online scheduling for Village facilities Use social media as an information tool

There were 11 respondents who indicated either they were not undertaking a digital government approach or initiative at present or skipped this question.

Question #2: Is there an initiative that you are not currently doing but that you would like to do through a digital government approach? Please describe it.

General observations:

- Municipalities should be looking at ways to digitalize all processes where possible
- New or ongoing projects/initiatives should consider a digital approach

Build an online virtual presence to make it easier for residents/businesses to access services:

- Allow online completion of forms and payments for services such as registering for recreation programs and building permit applications
- Electronic billing for taxes or utility payments
- Online complaint processes and citizen reporting tools

- Allow residents to search and review the status of property tax information and utility accounts.
- Install self-serve kiosks
- Development of a digital concierge for business connections and innovation hub.
- Online sign up for emergency and service messages
- Real-time tracking of snow plow and garbage pick-up services

Improvements to internal department processes:

- Mobile updates of condition assessments for asset management
- Electronic ticket system to present issues/complaints to staff in multiple departments
- Online budget tool
- Bringing complete natural heritage and GIS mapping online
- Automate intake processes for long-term care and road permits
- Introduce mobile applications for services such as ambulance and road construction.
- More robust networks for library branches
- Online building permit and planning related services
- Enhancements to municipal websites and shared networks to improve internal processes

Digitalize records and documents management:

- Record retention and digitalization
- Electronic records Management for vital records and document management
- Implement an Electronic Document Records Management System for more effective records management for staff.
- Electronic document signatures for clients and business

Increased council presence online:

- Video council meetings
- Video conferencing
- Allow council and committee members to participate in regular meeting online (requires change to the *Municipal Act*)
- Digitalization of council agenda/minutes

More Open Data for accountability and transparency:

- Increased access to government records – requires digitalizing with proper AODA compliance and metadata
- More support for open data initiatives to share information with public
- Informative dashboard and performance measures made publicly available would further support transparency.

Broder public engagement:

- Offer electronic newsletters

- Increase social media presence
- Communication through emails or text messages for press releases, updates, etc.
- A robust Public Engagement tool that is intuitive, user-friendly, scalable, replicable, resource-efficient, translatable, AODA compliant and incorporates a variety of engagement methodologies (ideation, surveying, polling, panels, mapping etc.) and data management, analysis and reporting tools including social sentiment analysis, theming and open data preparation and anonymization.
- Use of collaboration technology, such as video conferencing, during service delivery processes with citizens. This may help fill some of the transportation related challenges for staff and citizens particularly in rural municipalities.
- Looking for ways to leverage digital channels to enable two-way communication between municipalities and residents to ensure that citizens are engaged in municipal decision making through digital dialogue.
- More regularized long term planning for community engagement online

Question #3: Are there specific barriers preventing you from initiating a digital government project?

Note: some respondents included multiple answers to this question

- Limited financial resources: 35 respondents, 56%
- Staff issues (insufficient staff or staff time, insufficient staff training, staff turnover): 28 respondents, 44%
- Change management (Council buy-in, not knowing where to start): 12 respondents, 19%
- Insufficient internet speed and access: 10 respondents, 16%
- IT issues (back-end system limitations, legacy technology replacement): 5 respondents, 8%
- Few residents/older residents/low interest: 5 respondents, 8%
- Policy/process: 1 respondent, 1%
- Cybersecurity/privacy: 1 respondent, 1%

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