e-Government Toolkit

for Municipalities in Eastern Ontario

EORN
EASTERN ONTARIO
REGIONAL NETWORK

EOWC
Eastern Ontario Wardens' Caucus

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1   Executive Summary

Municipalities in Eastern Ontario are adopting e-government policies and technologies to alleviate financial pressures and to provide better service to their citizens. As Eastern Ontario municipalities have better access to broadband service than they did even a few years ago, a major barrier to e-government has fallen.

The improved connectivity is due to the efforts of the Eastern Ontario Warden's Caucus (EOWC) and the Eastern Ontario Regional Network (EORN). Working with the province of Ontario, the federal government, and a number of telecommunications companies, they have improved broadband coverage and speeds available across the region.

The EOWC and EORN are currently working on efforts to further improve the coverage and speeds of fixed and mobile broadband internet infrastructure available to residents, businesses, and public sector users in Eastern Ontario.

EORN has also created a 10-year Digital Strategy to ensure that businesses, residents and public services are able to harness the potential of broadband access to deliver economic growth and improved quality of life.

Municipal governments can leverage technology for a variety of e-government services. E- government refers to government's use of technology, especially web-based internet applications, to enhance the access to and delivery of government information and service to citizens, business partners, employees, other agencies, and government entities. It has the potential to help build better relationships between government and the public by making interaction with citizens smoother, easier, and more efficient. E-government can improve core business operations and deliver information and services faster, at lower cost and to broader groups of customers.[1] Mass adoption of social media has facilitated promotion of citizen engagement and participation through e-government.

There are many e-government service options and various ways to implement and use them. Implementation of e-government initiatives requires orchestrating diverse technology, policy and managerial tasks. This document examines a selection of e-government tools or technologies, a set of municipal practices and policies that support e-government, as well as three technology management processes that can be used in the introduction and management of e-government. The document is intended as a resource for municipalities as they decide how to proceed with the implementation of e-government.

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[1] Karen Layne, Jungwoo Lee, Developing Fully Functional e-Government: A four Stage Model, 2001
http://www.egov.ee/media/1310/developing-fully-functional-E-Government_a-four-stage-model.pdf

The first section examines e-government tools. A web presence and the responsibilities and challenges that surround it have been part of the municipal government service offering for some time now. Social media is growing in popularity among municipal governments. This medium provides both opportunities and challenges. This document looks at the value of using these services and how municipalities can best implement them. It also examines risks of e-government and suggests mitigation techniques.

Other e-government tools, including self-service tools, online recruitment, electronic tendering, electronic invoicing and payment, open data, electronic information management and video of council meeting proceedings are all examined using the framework of: Why do governments use them? How do they use or implement them? What are the risks and challenges associated with these e-government tools?

Municipal practices and policies have a significant impact on the adoption of e-government. Citizens, both residential and business can benefit from e-government, but only if they have access to adequate, reliable broadband service. Municipal government can put in place policies and practices that support ongoing expansion of broadband service. These policies are outlined.

Finally, the process of managing e-government initiatives can be daunting. These projects often involve multiple departments, new technologies and new ways of operating. The technology management processes presented can be used for any type of undertaking, but will be very helpful in managing e-government projects.

Summary of e-Government Tools		
Tool	Benefits	Challenges and Risks
Website	• Highly accessible information • Fewer telephone inquiries to municipality • Opportunity for transparency	• Ongoing support required to ensure accuracy, consistency and appropriateness of information presented
Social Media	• Citizen engagement • Very accessible	• Ongoing support required to ensure accuracy, consistency and appropriateness of information presented • Real-time publication risks • Staff training
Self Service Tools	• High service quality • Accessibility • Low per transaction cost	• Best results require re-design of administrative processes
Online Recruitment	• Extended reach • Targeted audience • Reduced risk of poor hiring	• Requires good data management practices • Requires strong security and privacy practices • Requires strong Service Level Agreements with third party providers.
Electronic Tendering	• Standardization & efficiency • Cost • Compliance	• Capacity of some vendors to use e-tendering • Security and authentication
Electronic Financial Transactions	• Reduced cost • Error and fraud reduction • Improved records management	• Requires good data management practices • Requires strong security and privacy practices
Internet Voting	• Accessibility and convenience • Streamlines pre-election and post-election functions	• Requires strong security and privacy practices • Voting policies to support strong security • Cultural implications
Open Data	• Enhanced transparency and accountability • Enhanced citizen engagement • Support for innovation	• Requires strong privacy practices • Requires resources to manage data
Electronic Information Management	• Improved access to data resulting in improved service • Improved compliance with security and privacy requirements • Reduced data storage • Disaster recovery capability	• Implementation is complex, time consuming and expensive
Video of Council Proceedings	• Increased accessibility to proceedings • Increased transparency	• Cost of system implementation (cost per viewing of proceedings)

Municipal Practices and Policies in Support of e-Government		
Tool	Benefits	Challenges and Risks
Equal Access	• Increases access to all citizens	• Promoting public internet access points • Providing sufficient training and support
Shared Service Across Government Entities	• Service standardization • Cost sharing	• Jurisdiction – responsibility for service may differ from responsibility for IT service delivery • Service standardization
Policy Support for Ongoing Development of Broadband Services	• Enhances broadband infrastructure deployment and modernization. • Low risk, low cost	• Ensuring the appropriate policy to achieve municipal goals • Requires a will to modernize
Protecting Private Information	• Helps ensure trust in e-government and meet legal requirements • Privacy by Design and strong privacy programs can contribute to breach avoidance	• Ongoing management of policy to ensure protection against new risks
Security Policy	• Helps ensure systematic protection to the municipality's information and IT systems	• As municipal e-government and IT systems evolve and new threats emerge, it is important to continually update security policy to ensure appropriate controls are in place

Technology Management Processes		
Tool	Benefits	Challenges and Risks
Business Analysis	• Structures decision making processes including those about e-government • Assesses all factors influencing the decision	• As some factors can be quantified more easily than others, such as social impacts, judgement is required in estimating their weight and impact on the business analysis
Project Management	• Structures the process of managing introduction of e-government	• It can be challenging to reach the right balance of process vs the problem
Lean Six Sigma	• Applies data driven management techniques to e-government, resulting in higher efficiency, fewer unnecessary activities and reduced cost • Allows employees to raise issues about municipal operations	• Complex process that requires significant training for proper execution

Figure 1 – presents a summary of the e-government tools, practices and policies and management practices analyzed in this document.

2   Introduction

The objective of this e-Government Toolkit is to serve as a reference guide for municipal governments in Eastern Ontario as they implement e-government in step with Canada's vision of itself as a global centre of innovation.

The Honourable Navdeep Bains, Canadian Minister of Innovation, Science and Economic Development, put forward a vision in June 2016, to build Canada as a global center of innovation. To achieve this vision, the Government of Canada will focus on six areas for action.[2] Two of these areas for action, **competing in a digital world** and **improving ease of doing business** are directly supported through implementation of e-government.

The 2016 United Nations e-Government Survey ranked Canada 9th among 193 countries on the E-Participation Index.[3] This index measures the use of online services to facilitate provision of information by governments to citizens, interaction with stakeholders and engagement in decision-making processes. This placement reflects federal government practices and citizen engagement. The EORN e-Government Survey (2016) indicated that e-government is taking hold in Eastern Ontario, but that there is still considerable work ahead. The survey revealed a near ubiquitous use of websites, social media and online job postings by county and local municipal governments in Eastern Ontario, but low usage of e-applications and registrations (50% at county level, 12% at the local level), open data (9% at the county level, 17% at the local level) and e-payments (45% at the county level, 41% at the local level)[4].

E-government tools will support municipal governments and their citizens as they progress in a digital world and improve the ease of doing business in their communities. E-government will improve access to services for residents and commercial entities and streamline municipal government operations.

It will also support Eastern Ontario municipal governments, their employees and clients in global communications and initiatives, such as smarter cities, participation in global forums and in global networking through social media. Most importantly, by increasing the transparency[5] and openness[6] of government, e-government can help increase public engagement resulting in implementation of better policy. The document Open Government: Key Concepts and Benefits, published by the Information and Privacy Commissioner of Ontario is an excellent resource on this subject.[7]

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[2] Government of Canada news Release, June 14, 2016 http://news.gc.ca/web/article-en.do?nid=1084439

[3] UN e-Government Survey 2016 – Annexes
    https://publicadministration.un.org/egovkb/Portals/egovkb/Documents/un/2016-Survey/Annexes.pdf
    https://publicadministration.un.org/egovkb/en-us/Reports/UN-E-Government-Survey-201

[4] EORN Survey on e-Government in Eastern Ontario, 2016

[5] Transparency is government's obligation to share information with citizens. It is at the heart of how citizens hold their public officials accountable.

[6] Openness is the capacity to entertain different and non-customary (not necessarily new) ideas and to change one's behavior accordingly.

[7] Open Government: Key Concepts and Benefits, Information and Privacy Commissioner of Ontario, September 2016
    https://www.ipc.on.ca/wp-content/uploads/2016/09/Open-Government-Key-Concepts-and-Benefits.pdf

As EORN, in partnership with private partners, has contributed to improved broadband infrastructure in Eastern Ontario, excellent internet service is now available to most municipal buildings[8]. Over 95% of residents have access to broadband internet service at their homes. In many municipalities, internet service is available through public Wi-Fi at libraries, schools and other public venues. Improved broadband access has ensured that e-government can provide broad-reaching service to residents and businesses. This is an excellent time to expand municipal e-government.

Why do municipalities use e-government?

E-government can provide many benefits to municipalities and their residential and commercial citizens. By implementing e-government, municipalities can expect to realize the following benefits:

• Service Quality – E-government enables quicker, more accessible customer service from anywhere at any time. As consumers shift to e-services in many other aspects of their lives, they often find the level of service and type of access enabled by e-government serves them well. Furthermore, by using the data it collects through e-government, a municipality can better understand and predict the needs of the community, measure the effectiveness of its policies and workers, increase transparency and solve problems.[9]

• Efficiency and cost savings – E-government reduces the cost of service delivery. The cost of a customer service interaction on the web is nearly 11 times cheaper than a phone transaction and nearly 25 times less expensive than an equivalent face-to-face meeting[10]. These figures do not reflect implementation costs.

• Citizen participation – A municipal web presence including social media tools, provides easy opportunities for citizens to participate in municipal decision making. E-voting is the ultimate opportunity for electronic citizen participation in government.

• Transparency – Refers to the principle of operating in an accessible and visible manner making activities and decision making open and clear to the public. A web presence and active social media presence, where employees consciously make available relevant, timely, clear and accurate information, increases government transparency.

• Openness – Refers is the capacity to entertain different and non-customary (not necessarily new) ideas and to change one's behavior accordingly. Openness can be reflected in the municipal web presence as it increases the volume and fluidity of communication between government and citizens.

• Policy effectiveness – The effective communication between citizens and their municipal government can support implementation of good policy.

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[8] EORN Survey, July 2016, 100% of County Governments have access to Fibre. At the local level, 41.2% have access to fibre, 35.3% have access to DSL, 8.8% satellite, 2% DSL, 8.8% don't know.

[9] http://phys.org/news/2014-10-technology-analytics-municipal-professors.html

[10] https://www.socitm.net, https://www.ibm.com/blogs/commerce/2012/02/part-4-social-media-and-the-city-new-value-for-local-government/

How can municipalities deploy e-government?

To realize the value of e-government, municipalities must prioritize which objectives they wish to support with e-government. They can then develop a strategy and plan as to how to proceed.

This Toolkit provides an overview of a number of e-government applications and services relevant to municipal government. It examines policies and practices that municipal governments can adopt in support of e-government and presents three technology management practices that can be helpful in the introduction and operation of e-government.

Most literature on implementation of e-government is developed with large government organizations in mind. As many Eastern Ontario municipal governments are small and sometimes do not have IT departments, smaller, easier to manage e-government options will be required in many situations. The implementation process can be undertaken by developing a clear strategy and deploying e-government one step at a time.

As this is an overview of e-government, a cursory level of information is provided on many topics. Suggestions for further reading are provided at the end of each section.

3   e-Government Tools

3 e-Government Tools

E-government tools include the mostly web-based internet applications that enhance access to and delivery of government information and service to citizens, businesses, employees, other agencies and government entities. Website and social media tools facilitate communication with citizens, and enhance the productivity of employees. Other e-government tools can streamline government operations, improve access to services, and support citizens, employees and politicians. These include tools such as: self-service tools, electronic invoicing and payment systems, and remote participation at council meetings. There is a huge array of e-government tools available to municipalities. A subset of them is presented here.

3.1 Web Presence

A web presence is the starting point for providing municipal e-government. The first consideration in developing a web presence should be developing a web strategy in support of the organization's marketing, economic development and service delivery objectives. As it is difficult to do everything at once, municipalities should start with a high-level web strategy, then determine the most urgent areas for implementation of e-government through the web. A planned step-by-step deployment is most likely to provide great results.

A web presence – the municipality's connection with its clients through the web – includes, first and foremost, a great website. Social media points of presence including LinkedIn, Facebook, Twitter, Instagram, YouTube, Snapchat and others are also important components of a municipality's web presence. A municipality does not need to use all these channels, it can start with those that best support its strategy.

3.1.1 Website

The website is the most important access point to municipal government information and services. In most cases, it forms the center of their web presence. The website is normally the first approach to finding municipal government information or completing tasks related to municipal services. Just as the town hall and other municipal buildings present the physical face of the government organization, the website is the e-government presence and should provide the most sought after information and services to its citizens.

A 2016 EORN survey of Eastern Ontario municipalities revealed that virtually all Eastern Ontario municipalities have a website. It is important to periodically review the website and ensure that it is meeting the needs of the municipality and its citizens.

The value of a website for municipal government

The website is the new customer service window. This is where citizens come to get service from and interact with their municipality. The website ensures a very high level of accessibility – it can be accessed from anywhere at any time, regardless of user location or level of mobility, as long as internet access is available. If a citizen is out of the county, does not have a car, has limited mobility or is seeking service outside of business hours, service is available to them through the website.

By presenting relevant, important, timely information on their website, a municipality can enhance its transparency. By making information easily available and providing opportunities for input from clients, a municipality can promote citizen engagement.

How to ensure a great website?

There are many elements to a great website and many ways to develop one. The key consideration is whether the site meets the needs of the municipality and its citizens. The following considerations can help ensure a high-quality website.

• Focus on top tasks. Users go to a municipal website to accomplish something (pay taxes, sign up for a program, get a permit, find the office address). Identifying top tasks can be done by surveying potential users. Identifying what users are currently doing on your site may not indicate what they really want to accomplish, especially if the desired options are not present or easy to navigate. Then be sure these tasks can be done easily and well.[11]

• Make the site dynamic by enabling two-way communication. This helps users accomplish their top tasks. It should provide desired information in engaging ways, such as text, video, photos, or links to other social media like Twitter, Instagram or a blog that provides current and relevant information. A site search feature will help visitors find what they are looking for. The site may include online forms, where users can provide information or requests. Two-way communication will help ensure citizen engagement with the municipality.

• Ensure that content can be easily found by search engines.[12] This is known as search engine optimization (SEO). Two techniques for this are: ensuring crawlability by search engines and using XML sitemaps. Ensuring crawlability also ensures access by screen readers for enhanced accessibility.

• Ensure that the website is mobile friendly and compatible with the major mobile operating systems.

• Make municipal contact information easy to find.

• Engage in continuous improvement. The needs of your clients will change over time. Information is time sensitive. Ensure continuous monitoring, updating, testing and improvement of your site.

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[11] http://neoinsight.com/blog/2011/09/25/four-killer-web-strategies-highlights-from-a-fortune-100-case-study/

[12] http://radar.oreilly.com/2009/04/practical-tips-for-government.html

How municipalities manage web development

Website development can be done in house, or contracted to a third party. There can be a tradeoff between cost and quality. An experienced professional website developer can normally produce a more effective site than an employee designing their first website. On the other hand, an employee with website development experience may be able to develop an excellent site. The employee's time and skill should be included in the in-house vs. contract out decision analysis.

There are specialists in municipal website design. They will be attuned to the specifics of delivering municipal services and developing citizen engagement. Specialized features such as service trackers that will track and follow-up on all service requests received and provide statistics might be of interest particularly in light of recent changes to Bill 8, the Ontario Public Sector and MPP Accountability and Transparency Act, 2014.[13] Website host providers can provide metrics on traffic to the site.

The Accessibility for Ontarians with Disabilities Act, 2005 ("Act") specifies requirements for accessibility of websites.[14]

In preparation for website development, it is important to have a clear list of objectives, interview prospective developers thoroughly, review multiple sites they have developed and check references.

Risks associated with municipal websites

The website must contain the information the municipality wants to publish. Attention is required, to ensure accuracy of information published and protection of privacy rights.

Websites lose credibility if they are not kept up to date. Stale or irrelevant information should be removed. As technology evolves and styles change, a full website redesign may be required to present a clean current look. Once a website no longer looks like a credible source for information citizens will bypass it and call the municipality to get current information.

If a website is difficult to navigate, users will be frustrated with the website, but also with the municipality. This can result from poor web design, lack of testing or obsolete information. It is worth ensuring a good website design and keeping it current.

FURTHER RESOURCES:

Ontario Website Creating a Dynamic Web Presence: https://www.ontario.ca/page/creating-dynamic-web-presence

Government of British Columbia Municipal Web Design:
http://www2.gov.bc.ca/gov/content/about-gov-bc-ca/citizen-centric/ux-toolbox/intro-to-the-toolbox

Neo Insight top task: http://neoinsight.com/blog/2011/09/25/four-killer-web-strategies-highlights-from-a-fortune-100-case-study/

Municipal Web Design: http://www.municipalwebsites.ca/web.asp

[13] Under Ontario's Bill 8, the Ombudsman's mandate has been expanded to include municipalities, universities, school boards, hospitals and long-term care homes, children's aid societies and police. The Ombudsman can investigate complaints about municipalities as of January 1, 2016. Using an effective online complaint management system can support better municipal management of complaints and reduce the number of complaints referred to the Ombudsman.

[14] http://www.aoda.ca/nfp-qa-understanding-ontarios-accessible-websites-and-web-content-requirements/

3.1.2 Social Media Communications Tools

Social media is based on dialogue between audiences.[15]

In 2015, 76% of Eastern Ontario municipalities and all county level governments[16] were using social media. Facebook and Twitter are the most heavily used social media channels by Ontario municipalities, as illustrated in the infographic in Figure 2.[17]

Source: Redbrick Communications
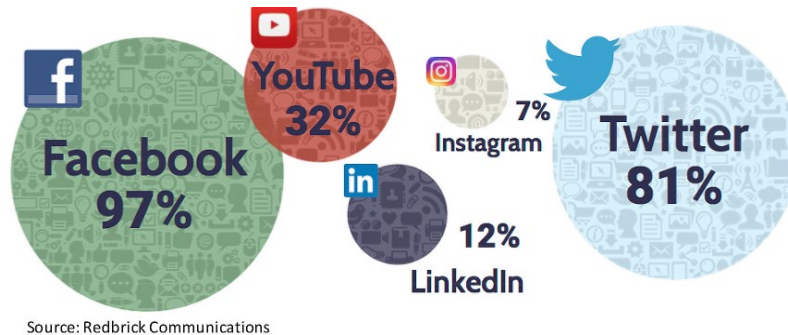
Figure 2 – Ontario municipalities' use of social media

Why do municipalities use social media?

Social media tools are valuable to municipal governments because of the timely, open dialogue they can support. They can be used to create awareness of community issues, programs and events and to increase engagement and participation. They allow direct, measurable feedback from citizens to the municipality.

The use of social media in municipal government, forms part of the overall municipal communications strategy. A social media strategy and objectives, should be developed in support of the municipality's broader objectives.

How municipalities use social media

Municipalities can set up a single account per social media channel, or set up multiple accounts for different departments or undertakings. Smaller municipalities tend use a single account to simplify administration and control. Redbrick's Municipal Government 2.0 is an excellent source of information on Ontario municipalities' use of social media.

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[15] Local Government Management of British Columbia:
http://www.lgma.ca/assets/Misc/Social-Media-Primer.pdf

[16] EORN e-Government Survey: July 2016

[17] Redbrick Communications, Municipal Government 2.0:
http://www.redbrick.ca/assets/file/resource/SMS-Infographic-2015-Full.pdf

Integration of social media tools with the municipal website is a good way to ensure consistent and persistent messaging, and mutual support across tools. For instance, links to Facebook and Twitter on the website will lead users to interactive discussions on an issue. These channels facilitate discussions among multiple citizens and the municipality. Though users may be able to share their views on the website via forums, doing so on Facebook or Twitter is much simpler and more intuitive. A website link to YouTube can provide visual detail, perhaps a message from a politician or a video clip on how to appropriately sort material for recycling. For heads of council, Twitter is the most popular social media platform.[18]

Social media channels are often accessed on mobile devices, either through a web browser or mobile apps[19]. This enhances their convenience as users access them on the go. Their convenience also makes them an effective medium for communicating emergency messages. People can receive these messages (weather alerts, updates on expected power restoration) on-the-go and in situations where other forms of communications are limited, such as in power outages. Appendix A provides descriptions of selected social media tools often used in municipal government.

Social media is a two-way street. In addition to providing information to citizens, social media provides the municipality with information, data and opinions from its citizens. Techniques that will help make social media more effective include[20]:

- **Metrics** – the metrics available on most social media apps typically don't tell a whole story, but can provide valuable input on issues.

- **Photos** – photos get more engagement than text alone on Facebook, Twitter and even LinkedIn. Pinterest, Instagram and Snapchat are based almost entirely on photos.

- **Headlines** – Choose descriptive titles. When you post multiple times, use different titles. Do A/B testing to learn which titles are most effective.

- **Timing** – Compile a posting schedule and post when your audience is online.

- **Post multiple times** – It is effective to promote the same content multiple times on social media using multiple images and multiple headlines for content.

- **Ask questions** – You can drive social media users to communicate with you, encourage engagement and help you understand the interests and needs of your citizens on the topics you are addressing.

- **Share on the right platform** – Be effective for your staff and your audience. Select the platforms your audience is most likely to use and target your message for each platform.

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[18] Redbrick Communications, Municipal Government 2.0, http://redbrick.ca/assets/file/resource/SMS-Infographic-2016-FINAL.pdf

[19] A mobile app is a software application designed to run on mobile devices such as smartphones and tablet computers. https://en.wikipedia.org/wiki/Mobile_app

[20] http://www.curata.com/blog/11-effective-ways-to-use-social-media-to-promote-your-content/

Risks associated with municipal use of social media

Social media is a real-time medium of communication, and there are a number of risks to consider: confidential information can be shared inappropriately, fact-checking can be neglected, and people can exercise poor judgement when posting in a pinch (to name a few). The municipality should determine the level of care expected from employees in determining what they publish. The municipal social media policy and privacy policy should provide guidelines on what is suitable to post.

There are challenges with managing multiple social media channels. It is important to post to the most appropriate channel and to ensure consistency across channels. Social media management and tracking is discussed in the next section of this document.

FURTHER READING:

Using Social Media in Municipal Government:
http://www.fcm.ca/Documents/presentations/2011/AGM2011/Continuing_the_Conversation_Using_social_media_in_municipal_government_EN.pdf

Redbrick Communications, Municipal Government 2.0:
http://redbrick.ca/assets/file/resource/SMS-Infographic-2016-FINAL.pdf

Federation of Canadian Municipalities, How to use Social Media in your Municipality:
http://www.fcm.ca/home/events/past-conferences/halifax-annual-conference-and-municipal-expo/how-to-use-social-media-in-your-municipality.htm

Local Government Management Association of British Columbia, Primer for Effectively using Social Media in Local Government:
http://www.lgma.ca/assets/Misc/Social-Media-Primer.pdf

Social Media – A Guide for Entrepreneurs:
https://www.bdc.ca/EN/Documents/marketing/SMeBook_2012_EN.pdf?utm_campaign=130325_AUTO_SocialMediaEbook_130325_EN&utm_medium=email&utm_source=Eloqua

3.1.3 Social Media Management and Tracking

Social media management and tracking tools allow management of multiple social media accounts from a single dashboard. These tools allow scheduling of posts on all social media accounts, helping to ensure consistency and post frequency. The tools provide metrics on the number of views, likes, shares and so on, helping the municipality to understand the effectiveness of its social media tools and specific campaigns.

Why do municipalities use social media management and tracking tools?

The use of social media facilitates interaction with a municipality's citizens, but as the number of media used and the number of interactions increases, it becomes difficult to track and manage them. Social media management tools help integrate and track inbound and outbound communications across multiple platforms including social networks (Facebook, Twitter, LinkedIn), websites, e-mail, blogs and more. Social media management tools can also help integrate social networking activities with other communications tools such as contact management systems, and client requests and complaints.

Metrics on traffic, likes, views, shares and what participants are saying, can provide the municipality insight on the needs and interests of their citizens. These metrics can be used to provide feedback on municipal initiatives and programs. Social media management tools also deliver data that indicates the effectiveness and payback on social media efforts.

How do municipalities use social media management and tracking tools?

There are many social media management and tracking tools on the market such as Sprout Social, Hootsuite, and TweetDeck. Municipalities should choose a tool that will meet their current needs and can scale as the municipality's use of social media grows.

Managing a small number (often less than 5) of social profiles is often free. It is wise to set reasonable expectations as to how many social media platforms will be used and how often they will be monitored and updated. As the task of managing social media grows, migrating to a paid service will result in a monthly fee for service.

Start small with one or two platforms and expand as success is demonstrated.

3.1.4 Social Media Policy

A strong, well-communicated municipal social media policy will help ensure optimal results from using social media and mitigate the risks associated with it.

The online image and reputation of a municipality is important. To protect it and to manage social media well, a policy around accepted use of social media should be developed.

A social media policy will help ensure that employees and citizens have a clear understanding of what to expect from the municipality as it uses social media and what the municipality expects of them as they interact with it over social media. The policy should guide employees as they use social media on behalf of the municipality and help prevent social media mishaps.

A municipal social media policy outlines for employees the standards and principles of communicating online on behalf of the municipality. In more specific terms, the policy should:

• Protect the municipality's reputation and ensure consistency and professionalism in how the municipality and its employees communicate municipal business with the public online and via social media.

• Specify the acceptable municipal and personal use of social media as they relate to discussing the business of the municipality.

• Establish protocols, criteria and courses of action for:

  - Establishing what social media tools can be used by the municipality.

  - Monitoring and administration of municipal social media tools, i.e., who is responsible for managing and participating in social media? One employee? A team?

- Providing timely, effective and accurate information and responses. Posting and response schedules should be established.

- Personal participation in social media – employees need the freedom to participate in social media, but must protect themselves and the municipality.[21]

• Ensuring appropriate records management and retention.

• Ensuring appropriate protection of privacy of confidential and proprietary information and respect for the privacy rights of employees and the public. (See Section 6.6: Protecting Private Information)

• Provide clarity around ownership of content. Municipal social media accounts should belong to the municipality, not the employee who manages them.

Social media is an area that evolves quickly. The municipal social media policy should be reviewed and updated regularly.

Covering potentially inflammatory events on social media can be challenging. The Citizen Engagement Handbook for BC Government Employees, offers some suggestions.[22]

There is always the risk of negative responses and poor public relations on social media. In the case of a municipal shortcoming, the municipality should be prepared to make an apology and offer a solution. It is acceptable to reiterate strengths and advantages and to take most of the discussion offline.

FURTHER READING:

Redbrick Communications, Is your Social Media Program Measuring Up?
http://www.redbrick.ca/assets/file/resource/SMS-Article-2015.pdf

Intel's Social Media Policy
http://www.intel.com/content/www/us/en/legal/intel-social-media-guidelines.html

The balance: How to develop social media policy
https://www.thebalance.com/how-to-develop-a-social-media-policy-1919167

Kitchener Online Communications Strategy including Social Media Guidelines for Staff – off the job
https://www.kitchener.ca/en/insidecityhall/resources/Online_communications_strategy.pdf

Citizen Engagement Handbook for BC Government Employees, June 2014 http://www2.gov.bc.ca/assets/gov/about-gov-bc-ca/citizen-centric/ux-toolbox-better-web-for-citizens/citizen-engagement-social-media/citizen_engagement_planning_handbook.pdf

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[21] Intel's social media policy guidelines
http://www.intel.com/content/www/us/en/legal/intel-social-media-guidelines.html

[22] Citizen Engagement Handbook for BC Government Employees, June 2014
http://www2.gov.bc.ca/assets/gov/about-gov-bc-ca/citizen-centric/ux-toolbox-better-web-for-citizens/citizen-engagement-social-media/citizen_engagement_planning_handbook.pdf

3.2 Self-Service Tools

Self-service can be defined as an interaction between a service provider and a consumer, where the consumer can obtain information or complete a transaction without the intervention of a live agent.[23] Technological changes and fiscal pressures are forcing both private and public sector organizations to reconsider how they deliver services to their clients. The rapid, broad adoption of mobile devices and social media, improved access to broadband internet and the deficits and growing debt load experienced by many government organizations make the value proposition of self-service channels too compelling to ignore.[24]

Why do municipal governments use self-service tools?

Self-service tools provide the following benefits to the client and the municipal government:

Quality of service, user expectations – Clients have become accustomed to using digital channels for corporate and government services. Delivery of services through self-service channels can be more efficient, resulting in quicker, better service.

Accessibility – Self-service channels provide a high level of service accessibility. They support service at anytime from anywhere. There is a high level of access to broadband services in Eastern Ontario, which enhances the access to self-service options.

Accountability – A digital interaction leaves a trail. For follow-up on service requests, both the client and the municipal organization have records of past interactions. Service metrics like average time to satisfactory resolution can be useful, however, it is important to focus on customer satisfaction and engagement over surface level metrics.

Data management – The data surrounding self-service provides the opportunity for municipal governments to react to trends in service requests that may indicate interest in policy changes or changes in service offerings. By exploring issues highlighted by this data, municipalities can become more responsive and accountable to their residents.

Cost – Once self-service systems are implemented they generally result in significantly lower cost service delivery. A customer service interaction on the web is nearly 11 times less expensive than a phone transaction and 25 times less expensive than a face-to-face meeting.[25]

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[23] Deloitte, Innovative self-service practices, 2013
http://www.iccs-isac.org/library/2011/10/Deloitte_Self_Service_-_Final_Report_-_20130422.pdf

[24] Deloitte, Innovative self-service practices, 2013
http://www.iccs-isac.org/library/2011/10/Deloitte_Self_Service_-_Final_Report_-_20130422.pdf

[25] https://www.socitm.net, https://www.ibm.com/blogs/commerce/2012/02/part-4-social-media-and-the-city-new-value-for-local-government/
Research carried out by the Society of Information Technology Management in 2010 reveals the scope of potential savings. Their research indicated the cost of a customer service interaction on the web is nearly 11 times cheaper than a phone transaction and nearly 25 times less expensive than an equivalent face-to-face meeting

How can municipalities use self-service tools?

Municipal government self-service tools can take several forms. The most common of these is the website. This is where citizens can go to find much of the information they need from the municipality. Simple, repeated inquiries can be well handled by keeping Frequently Asked Questions (FAQs) updated and offering interactive voice response (IVR). Other self service offerings may be more specific and handled through online interactions with clients.

Online forms and custom mobile apps are also effective self-service tools for municipalities. Municipal governments tend to use both online forms and mobile apps for service requests, problem reporting, applications, registrations, civic participation such as submitting opinions, as for participatory budgeting and e-voting. Self-service can also be used for e-payments and e-commerce, recruitment and many other services.

Citizens tend to see the municipality as a single entity. However, because of varying areas of expertise required to deliver different types of services, municipal governments may find themselves structured in silos. Though waste management, recreation, transit and parking are all managed by different departments, residents tend to see all these items as 'municipal services". Integrating customer services into a single customer-focused service delivery portal, can increase the uptake of self-service delivery. If clients need to get garbage tags, register for swimming lessons, buy a transit pass and pay for a municipal parking permit, they prefer to go to the municipal website once, complete each of these tasks and make a single payment.[26] As citizens go online for one item and realize they can accomplish additional tasks at the same time, they are likely to do so. The single, customer-focused portal.

Using online forms and mobile apps are two ways municipalities can deploy self-service tools.

Risks and challenges with municipal self-service tools

While front-office self-service solutions may be relatively easy to develop and implement, to realize their full value, integration with back-end processes and systems is important. Larger-scale technology modernization may be required to realize the business case for self-service initiatives. The up-front costs of any new self-service system can be high. A full, end-to-end cost analysis should be carried out to establish expectations.

Self-service alone is generally not sufficient. Place municipal contact information in an accessible location on the web-site and provide a help tab.

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[26] Anywhere, Anytime, Any Device: Innovations in Public Sector Self Service Delivery, Research Committee of the Public Sector Service Delivery Council and the Public Sector Chief Information Officers Council, October, 2012: http://www.iccs-isac.org/library/2010/09/WEBINAR-SELF-SERVICE-SLIDES-.pdf

3.2.1 Online Forms

Online forms are a self-service tool that replaces legacy paper forms, but can provide better service, much more functionality and increased efficiency.

How can online forms be implemented by municipal government?

Online forms can be accessed through the municipal website, e-mail, social media platforms and mobile apps. There are two options:

• Printable forms which are typically downloaded in .pdf format, filled in and mailed, or scanned and e-mailed.

• Online fillable forms which are submitted online and deliver information to the appropriate department, and can directly feed data and process management systems.

Printable forms essentially replace legacy paper forms. They eliminate the need to distribute the forms manually, but do not change the data management process. Data received, whether by mail or e-mail must be dealt with on a per-form basis or entered into databases manually. Response and tracking processes are not changed.

Online fillable forms enable more data-driven and streamlined processes than do legacy paper forms. Adoption of online fillable forms can form part of a "one-off" process, but really should be done in conjunction with a review of the entire process that the form supports. Fillable forms enable data to be entered into a database and tracking system directly from the client's input. The information management process for this type of form can result in better response rates to individual forms as well as review of aggregated data that will enable analysis of trends and outliers, which can result in better policy. With online fillable forms, text is entirely legible. Legibility and the elimination of transcription, help reduce potentially costly errors.

Risks associated with municipal online forms

Online forms can cause frustration for users if the forms are difficult to find or difficult to fill in correctly. Ensuring that the website is well-structured and searchable, will ensure the forms are easy to locate. Forms can be more user-friendly by providing clear prompts and offering suggestions or examples using pull-down menus. All forms should be rigorously tested before they are published. Help menus and a contact number should be provided.

3.2.2 Mobile Applications

Self-service tools on mobile applications (apps) are provided through software applications designed specifically for mobile devices such as smartphones and tablets.

Why do municipalities use mobile apps?

Mobile apps provide efficient delivery of information to citizens and support community engagement across many areas of municipal responsibility. Canadians spend more time online with their mobile devices than with computers.[27] This preference for mobility supports delivery of municipal information and services on apps. Mobile apps can be inexpensive but effective service delivery tools.

How do municipalities use mobile apps?

Apps can be provided by external service providers, developed in-house, or developed, owned and operated by third parties. Apps may use open data, as described in the Open Data section of this document.

Prescott, Quinte West, Northumberland County and others use e-Solutions' PingStreet app. PingStreet is a suite of municipal apps that provides information related to waste management, news, aquatic and skating schedules as well as opportunities to contact councillors or administrators, report problems, and more.[28] This type of umbrella app addresses multiple municipal service areas and provides a consistent means of interaction with citizens across all departments.
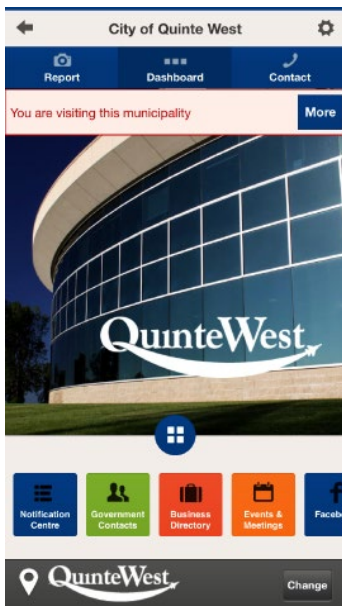
As the PingStreet app works with a smartphone, intelligent tools such as Global Positioning System (GPS) and a camera can aid with communication. If, for example, a Bylaw/Property Standards Issue is the subject of a report, the user can upload a photo, and could share their location based on the GPS data on their mobile device. Alternately, an address can be entered manually without using GPS. Report details are also requested through specified fields including name, email, phone number, and general comments. This provides the municipality with a problem report with a specific format and potentially even a photographic description and GPS location of the problem. Figure 3 illustrates the PingStreet[29] interface.

Figure 3 – Ping Street App for Quinte West

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[27] Michael Oliveira, Canadian Press, Jan 7, 2015, comScore data.
https://www.thestar.com/business/tech_news/2015/01/07/mobile_web_usage_tops_computer_surfing_in_canada_study.html

[28] City of Cornwall, http://www.cornwall.ca/en/webadmin/pingstreet.asp

[29] Pingstreet is a product of the eSolutions Group https://www.esolutionsgroup.ca/en/services/services.aspx

The app also provides data and information management functions that help municipalities better understand the needs of their community and make informed decisions about their service offerings. Apps can provide good quality and timely communication between a municipality and its residents on a platform they are likely to find convenient.

Some municipalities provide open data for app developers to use in creating apps that are useful to citizens. The City of Ottawa ran a contest in 2013 for Canadian app developers to create apps using the city's open data. Over 60 apps were submitted.[30] Some have resulted in apps that are still used by Ottawa residents.

Risks associated with municipal use of mobile apps

Like any software, mobile apps can malfunction. This can result in frustration on the part of users. Ensuring that app developers develop a high-quality app, including a user-friendly interface, can help mitigate this risk.

Municipal apps rely on municipal data. The municipality must ensure that accurate, timely data is available as per the agreement with the app operator.

[30] http://ottawa.ca/en/mobile-apps-and-open-data/apps4ottaw

3.3   Online Recruitment

Online recruitment is now the de facto standard in identifying and hiring new employees and managing the recruiting process. It offers tools including posting positions, pre-employment screening, candidate testing, records management and candidate selection tools. As of July 2016, almost all municipalities in Eastern Ontario use online job postings.[31]

Why do municipal governments use online recruitment?

Online recruiting allows the municipality to reach a large, targeted audience at a low cost. By increasing access to quality candidates and providing support through the selection process, online recruiting tools can lead to better hiring, resulting in improved employee retention. Recruiting costs can be significant. The associated costs of onboarding and training an employee are also considerable. Hiring the best person for the job brings the benefits of having high quality employees and reduces the risk of incurring recruiting costs only to lose an employee early.

How can municipalities implement online recruitment?

All open positions should be posted in a searchable careers section on the municipal website. The careers section should feature a compelling marketing profile of the municipality and a listing of career opportunities sorted by function. An "apply" button should take the user through an application process which normally includes providing a profile, any required information, and a prompt to upload a PDF resume and cover letter.

Using a range of advertising venues, in addition to the municipal website, increases the reach of the positon posting. Postings can be to specific targeted sites according to the audience to be addressed. The following are options for position postings.

• Municipal recruiting sites such as Ontario Municipal Jobs

• General recruiting sites such as Indeed, Glassdoor or Workopolis

• Specific recruiting sites for trades

• Social media including the municipality's LinkedIn page, Facebook and Twitter pages

All of these channels should be managed by human resources or corporate communications staff.

Risks and challenges associated with online recruiting

Online recruiting involves working with personal information. Protection of this information is mandated by the Municipal Freedom of Information and Privacy Protection Act (MFIPPA). Sound data management practices, privacy protection practices and security practices are required to ensure privacy.

FURTHER READING:

Deloitte, Institute for Citizen Centered Service, Innovative Self-Service Practices, 2013:
http://www.iccs-isac.org/library/2011/10/Deloitte_Self_Service_-_Final_Report_-_20130422.pdf

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[31] An EORN Survey conducted in July 2016 indicated that 100% of county level municipal governments and 88% of local level governments use online job postings.

3.4   Electronic Tendering

Electronic tendering (or "e-tendering") is a tendering process fully conducted online[32]. Tendering is the process whereby governments invite bids for large projects that must be submitted by a specified deadline.[33] In a survey conducted by the County of Renfrew in 2016, 79% of respondents indicated that they would consider e-tendering.

E-tendering systems include the ability to send and receive bids electronically, as well as features such as:

• Online pricing tables to eliminate mathematical errors

• Ability to accept digital bonds

• Registration of bidders by commodity

• Emergency supplier lists – suppliers may register as emergency vendors by providing after-hour contact information, and access to vital supplier information in the event of emergencies and disasters

• RFP evaluation software

• Contractor performance evaluation and tracking tools

• Contract tracking including, renewals, insurance tracking etc.

Why do municipalities use e-tendering?

As better broadband access becomes available to municipal governments and their suppliers, e-tendering is enabled. Online transactions have become widely used in commercial and government operations and business partners are looking for this capability from municipal governments.

Federal and provincial legislation is evolving to accommodate electronic transactions, including e-tenders. Legislation such as The Ontario Electronic Commerce Act (s.o.2000 Chapter 17) and the Canada Personal Information Protection Act and Electronic Documents Act include provisions to support a full-scale electronic tendering system. The concepts of electronic signatures and "documents deemed to be originals" in the electronic world are valid, according to the legislation.[34] Trade agreements such as CETA, the Canadian European Trade Agreement will increase the need for electronic bidding. The procurement rules of OQTCA, the Ontario-Quebec Trade and cooperation Agreement have been harmonized, where possible, with those of CETA[35] and also support e-tendering.

E-tendering improves efficiency of the procurement process as paper-based transactions are reduced or eliminated, enabling a faster and better exchange of information.

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[32] WebFinance, Inc.,
http://www.businessdictionary.com/definition/e-tendering.html

[33] Investopedia

[34] Implementing the electronic tendering process would be beneficial to the County of Renfrew
https://www.amcto.com/imis15/Documents/EDMM/L.%20Dennis%20Implementing%20%20the%20electronic%20tendering%20process%20would%20be%20beneficial.pdf

[35] Ontario Ministry of Government and Procurement Services:
https://www.doingbusiness.mgs.gov.on.ca/mbs/psb/psb.nsf/English/procurement.html

Benefits of e-tendering include[36]:

Standardization and efficiency:

• Faster exchange of information

• Improved access to complete bid documents

• Widespread notification of projects to vendors

• Standardization in processing and record keeping

• Reduced staff time spent on verifying and reviewing results

• Fewer clerical errors

• Transparency and fairness resulting from standard bid submissions and evaluations

• Fully legible documents

• Automation of proposal review and evaluation with scoring matrixes built into the process

Compliance and security:

• Secure access to tender information

• Better confidentiality – elimination of hard copies of submissions at multiple locations

• Elimination of non-compliant bids

• Fewer bid submission errors

• Assurance that all required information is submitted

• Audit trail and document tracking

Accessibility:

• Businesses can obtain and submit tender documentation from anywhere

Lower costs and environmentally friendly:

• Less paper

• Reduced use of copy machines

• Reduced distribution by courier and mail

How do municipalities implement e-tendering?

Municipalities typically contract out e-tendering solutions. Canadian suppliers include: eSolutions, who have customized their Bid & Tenders solution for several Eastern Ontario municipalities, Bravo Solutions, the Ontario Tenders Portal, Biddingo, Infinite Source, Bonfire and others. Within Eastern Ontario, 75% of municipalities surveyed on behalf of Renfrew County, distribute tenders electronically, however, only 12.5% of these receive electronic submissions.

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[36] Implementing the electronic tendering process would be beneficial to the County of Renfrew
https://www.amcto.com/imis15/Documents/EDMM/L.%20Dennis%20Implementing%20%20the%20electronic%20tendering%20process%20would%20be%20beneficial.pdf

Implementing an e-tendering system involves translating an established manual process into an electronic one. Particular attention needs to be paid to the bid authentication and validation process and security of information, including electronically sealing bids until the close of the submission period. It is also important to ensure maintenance of the accepted practice of public bid opening.[37] Some municipalities are adopting processes that integrate vendor/contractor performance monitoring with the electronic tendering system. E-bond, a digital bonding process is also being adopted and has been shown to produce huge efficiencies.

Pricing models for e-tendering include: vendor pay (through subscription), agency pay, or vendor pay (per document fee). Though vendor pay through subscription is the most common model, with agency pay, the municipality can sometimes cover the cost of tendering, through cost reduction resulting from administrative efficiencies of the electronic bidding process.

In order to support bidders on small projects who do not want to pay to participate in the e-tendering process or who do not have adequate connectivity to submit their bid, some municipalities are considering having a kiosk system at their facilities, for bidders to access and submit their tenders.

A list of e-tendering best practices can be found in Appendix B.

Risks associated with municipal e-tendering

Though the e-tendering process brings strong benefits, there are some challenges with its implementation.

Security is an issue that must be considered in e-tendering. Authentication of participants in the process must be assured. The data security requirements for submission of documents under seal is essential, as is the capacity to submit bid securities. It is important that submitting parties have appropriate measures in place to secure and transmit their bid documents.

Some companies, particularly in rural areas do not have the IT capability or connectivity required for e-tendering.

FURTHER READING:

Implementing the electronic tendering process would be beneficial to the County of Renfrew:
https://www.amcto.com/imis15/Documents/EDMM/L.%20Dennis%20Implementing%20%20the%20electronic%20tendering%20process%20would%20be%20beneficial.pdf

Summit Column, Do you think e-procurement will save money?
http://www.summitconnects.com/Articles_Columns/Summit_Columns/2002/0302/0302_question.htm

Alison Carden, Principal, eSolutionsGroup, Mock Tender to Lead to Real Progress for e Tendering and e-Bonds:
https://www.linkedin.com/pulse/mock-tender-lead-real-progress-e-tendering-e-bonds-alison-carden

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[37] Implementing the electronic tendering process would be beneficial to the County of Renfrew
https://www.amcto.com/imis15/Documents/EDMM/L.%20Dennis%20Implementing%20%20the%20electronic%20tendering%20process%20would%20be%20beneficial.pdf

3.5   Electronic Invoicing and Payment

Most municipal governments use a mix of manual and electronic financial transactions, including cheques, cash, online transfers and credit/debit card payments. Consumer preference and municipal operating cost pressures tend to favour migration from cheques and cash to electronic financial transactions. The financial benefits to municipal governments from moving to electronic financial transactions are substantial.[38]

There are benefits for clients too. Seniors are enjoying the ease of online banking including online payments. Millennials tend to use mobile payments and other online payment methods, but seldom write a cheque or enter a bank. Where municipal clients do not have access to bank accounts, developing a process to help them establish bank accounts or pre-loaded credit cards is helpful to the client and the municipality.

Why are electronic invoicing and payments important for municipalities?

Municipal governments invoice suppliers for goods and services and residents for property taxes, utilities and other services. By delivering invoices electronically and requesting that their suppliers and contractors invoice them electronically, municipalities can benefit from significant operating efficiencies. Electronic invoices can be integrated with the municipality's financial system, eliminating a manual data entry function and facilitating reconciliation. On average, electronic invoicing results in shorter time from invoice to cash flow. Electronic storage of invoices is simpler for the municipality and its clients. Email services are cheaper for municipalities to deliver than using conventional mail.

Electronic payments eliminate many of the inefficiencies associated with cheques and cash, allowing invoices to be processed and paid at less cost and enabling improved service to citizens.[39]

The benefits of electronic payments over cheques include reduced handling costs (printing cheques, postage, sorting, data entry), quicker reconciliation, electronic data archiving, better security and a lower incidence of delays, errors and fraud. As compared to cash, electronic payments also have far lower handling costs and a much lower risk of error and fraud. Customers, who use electronic transactions in other parts of their lives often prefer electronic transactions.

Most, maybe all, Eastern Ontario municipalities support, but do not require, payment of property taxes and utility bills by electronic payment through the major banks. E-payment of fines through third party service providers is also very common.

[38] Going Digital: Transitioning to Digital Payments, Task Force for the Payments System Review
    http://paymentsystemreview.ca/wp-content/themes/psr-esp-hub/documents/r03_eng.pdf

[39] Going Digital: Transitioning to Digital Payments, Task Force for the Payments System Review
    http://paymentsystemreview.ca/wp-content/themes/psr-esp-hub/documents/r03_eng.pdf

How municipalities can implement electronic invoicing and payment

True electronic invoicing involves the seamless exchange of data in structured formats (e.g., EDI, XML) recognized by vendor and purchaser accounting systems. This service is available in La Nation, for residents who sign up for e-billing services. The municipality uses a SaaS product, Asyst OL, a product of United Systems Technology Inc. (USTI). The software integrates with the municipalities general ledger, and posts journal entries to the appropriate billing and payment accounts. This eliminates the requirement for manual entries. USTI acts as a merchant account provider for payment processing. Clients view their bills on a secure web server, accessed with an account number and PIN and can use their preferred electronic payment method. If the customer chooses to pay by credit card, they are responsible for the credit card processing fees. This is a cloud based service, that the municipality pays for on a monthly basis.

Some municipalities use Indexed PDF bills with Canada Post's e-Post service. Other municipalities deliver an un-indexed PDF version of bills via email. These are handled in a similar fashion to a paper invoice and do not necessarily provide the full benefits of e-invoicing, as manual processing is required.

Electronic payments can take several forms. Credit and debit card, electronic funds transfer (direct deposit and pre-authorized debit), and online transfers are the most common types of e-payments in Canada. Online transfers using e-wallets (Apple Pay, Google Wallet) and electronic point to point (P2P)[40] are growing in popularity. Electronic P2P transactions are initiated through online services and providers that are prefunded or linked to deposit accounts at financial institutions (e.g., PayPal). Though these new payment methods make up a small percentage of transactions, they are growing rapidly.[41]

With electronic payments, online banking data is imported in specified file formats to the municipality's accounting system, allowing for automatic account reconciliation.

Steps that municipal governments can take toward full adoption of electronic payments include:

• Default to direct deposit for all new payment recipients unless they do not have access to a bank account

• Transition payments to existing clients and suppliers to direct deposit

• Ensure all municipal services provide an electronic payment option

There are transaction costs to electronic payments. Credit card companies charge a percentage on each transaction. Banks have various plans, and can charge a flat rate for a specific bundle of services including electronic transactions. Electronic P2P transactions usually have both a fixed and variable component to their fee. These are lower than the cost of processing cheques or cash. Some municipalities limit payment methods with high variable fees for large value payments, property taxes, for example, but accept other methods, such as pre-authorized debit or debit cards for those transactions. Others accept these methods of payment for large value items, but charge the fee to the client.

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[40] Canadian Payments Association, Canadian Payment Methods and Trends:2015, https://www.payments.ca/sites/default/files/2015-canadian-payment-methods-trends.pdf

[41] Payments Canada, https://www.payments.ca/about-us/modernization, In 2014, online transfers made up 0.4% of volume and value of Canadian transactions, but have grown by 184% of volume and 228%of value since 2011

Standards

There will most likely be an opportunity for municipalities to realize efficiencies with the upcoming adoption of the international payments messaging standard, ISO 20022. The standard enables efficient payments exchange and clearing among financial institutions through the use of a common set of messages and language.[42] ISO 20022 is expected to be adopted by Canada around 2020. Municipalities that are planning to modernize their automatic funds transfer systems should discuss ISO with their financial institution, as they may be able to realize great efficiencies by including the fields specified in the standard and specified data in their electronic transfer process.

Risks associated with online invoicing and payment

Risks associated with online invoicing and payments are centered around security and privacy. Municipalities must take security precautions when they conduct e-commerce. The Canada Business Network outlines e-business security, privacy, and legal requirements.[43] Most municipalities use payment processors or brokers for e-payment processing. This minimizes the risk of hosting sensitive information including credit card information. Nonetheless, it is wise to verify the security protocols of the payment processor.[44] Municipalities also have a responsibility to protect the privacy of client information collected during financial transactions.

Following privacy procedures established by the municipality will help protect against privacy breaches related to financial transactions. Similarly, the municipality's information security policy will protect against security breaches related to financial transactions. Sections 4.4 and 4.5 provide information on municipal privacy and security policies.

FURTHER READING:

Payments Canada, Canadian Payment Methods and Trends: 2015:
https://www.payments.ca/sites/default/files/2015-canadian-payment-methods-trends.pdf

Canada Business Network – E-business Security, privacy and legal requirements:
http://www.canadabusiness.ca/managing-your-business/e-business-security-privacy-and-legal-requirements/

Canada Business Network, E-business Security, Privacy and Legal Requirements:
http://www.canadabusiness.ca/eng/page/2764/

EORN e-Business Toolkit:
https://www.eorn.ca/en/resources/eBusiness-Tool-Kit/EORN_eBusinessToolKit2016_Web-FINAL.pdf

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[42] Payments Canada, https://www.payments.ca/about-us/modernization

[43] http://www.canadabusiness.ca/eng/page/2764/

[44] http://www.bnasmartpayment.com/blog/bid/366813/Accepting-Credit-Card-Online-How-Secure-Is-Your-Online-Business

3.6   Internet Voting

At the municipal level, Canada is a world leader in internet voting. In the 2014 Ontario municipal election, 97 of 414 municipalities offered internet voting via web self-service.[45] Sixty-one communities offered only internet voting in that election. Internet voting is sometimes offered in conjunction with traditional polling booths with paper ballots or electronic ballot scanners and/or telephone voting. There are no Canadian electronic voting standards.[46]

Internet voting is only part of an overall election modernization process. Electronic election management tools range from pre-election functions such as planning and voter registration to casting votes, vote counting and transmission, to post election reporting and auditing.[47] Use of pre- and post-election electronic tools is broadly accepted, but the act of voting is more sensitive and is being adopted more slowly. As trust in the voting system is essential, tradition, transparency and confidence in new methods are factors that can affect the adoption of electronic voting.

Why do municipal governments use internet voting?

The major reasons for which internet voting is being adopted by Canadian municipalities are:

• To enhance accessibility and increase convenience for citizens

• To increase the level of voter participation

• To reduce costs

Accessibility and Convenience

Internet voting addresses issues of accessibility and convenience for people with disabilities, those suffering from illness, in the military, living abroad, travelling, busy or anyone who might find it difficult to visit a polling station on election day or for advanced polls. Internet voting systems allow voters to cast their ballots from anywhere they can access an internet connection.

Improved accessibility and convenience may not motivate disinterested voters, but will support some who can't make it to the polls on election day.[48] Evidence from the City of Markham supports this, showing that in 2003, when online voting was first made available, 25 per cent of Internet voters had been eligible to vote previously but reported not doing so. In 2006, 21 per cent of those who voted by Internet reported not voting previously, and 9 per cent of those in 2010. Rural voters are more likely to vote by internet, possibly because they are likely to have to travel further to the polls, making internet voting more convenient and more accessible.[49]

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[45] Nicole Goodman, Research Director, Centre for E-democracy and assistant professor, University of Toronto, Munk School of Global Affairs: http://www.cbc.ca/news/technology/why-hi-tech-voting-has-low-priority-for-canadian-elections-1.3218476

[46] Wikipedia, https://en.wikipedia.org/wiki/Electronic_voting_in_Canada#2010_Municipal_Elections

[47] IDC Government Insights" Technology Spotlight: Delivering End-to-End Election Modernization Roadmaps" – https://www.scytl.com/en/attach/idc-government-insights-technology-spotlight-delivering-end-to-end-election-modernization-roadmaps/

[48] The Globe and Mail, Nicole Goodman, http://www.theglobeandmail.com/opinion/will-e-voting-boost-turnout-in-ontarios-municipal-elections/article21188154/

[49] Nicole Goodman, Centre for e-democracy,Internet Voting Project Report, August 2016 http://www.centreforedemocracy.com/wp-content/uploads/2016/08/IVP_Report.pdf

As citizens with limited access to the internet and/or limited experience with computers have expressed interest in internet voting, it is important to provide remote internet access points with training and support. This could be provided at municipal libraries and other municipal facilities. Advertising the availability of these voting facilities is key to ensuring that the digital divide does not hinder voting by certain segments of the population.

Internet voting can enable greater secrecy for voters with visual impairments. If they are able to vote electronically, unassisted, these voters have greater anonymity resulting in a higher quality voting experience.[50]

Voter Participation Rates

Although almost 25% of Ontario municipal election administrators who adopted internet voting did so to improve voter turnout, results around the world have been inconclusive. In the 2010 Ontario municipal elections, there was a 3.5% increase in turnout in municipalities and townships that offered online voting, however there was no increase in turnout among those least likely to vote.[51] In Estonia's 2005 election, 31% of Estonians used online voting, but there was not a noticeable increase in voter participation. Research from Italy, Finland and England concluded that there was no consensus that online voting would increase turnout, even among tech-savvy voters.[52]

Though electronic voting may not increase voter participation, those who do vote, seem to prefer e-voting. In the 2014 Ontario municipal elections, the satisfaction rate was 95% among online voters as compared to 68% for those who voted with paper ballots.[53] In the 2010 Ontario municipal elections, turnout in the 34 municipalities that offered remote internet voting, telephone voting and traditional paper voting, revealed a preference for Internet voting.

The cost of Internet voting

The complexity of municipal voting, where voters elect a councillor, a mayor and school board representatives, results in a lengthy manual vote tabulation process. Electronic voting solutions, including internet voting could address this issue and result in cost savings for the vote counting process.[54]

The City of Markham budgeted $0.81 per internet elector and $5.63 per in-person elector in its 2014 election.[55] In 2012, some Nova Scotia communities successfully offered Internet voting in their municipal elections without increasing budgets from the previous election. However, if internet voting is provided in addition to in-person voting, the savings associated with internet-only voting likely won't occur.

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[50] Nicole Goodman, Internet Voting: The Canadian Municipal Experience http://www.revparl.ca/33/3/33n3_10e_goodman.pdf

[51] Nicole Goodman, sic.

[52] http://genprogress.org/voices/2014/12/10/33647/could-online-voting-increase-turnout/

[53] Nicole Goodman, Centre for e-democracy,Internet Voting Project Report, August 2016
     http://www.centrefordemocracy.com/wp-content/uploads/2016/08/IVP_Report.pdf

[54] The use of optical scanners at polling booths and telephone voting also enable automated vote counting.

[55] Markham Votes 2014- Internet Voting Program
     http://www2.markham.ca/markham/ccbs/indexfile/Agendas/2012/General/gc121113/Internet%20Voting%20Presentation.pdf

How do municipalities implement internet voting?

Implementation of internet voting requires political will in terms of strong support from municipal councils and bureaucratic backing. Both council and administration must be willing to adopt new technology, modernize processes and deal with concerns of the municipality and the public about security and perceived impact on democracy. Financial support for implementation is necessary.[56]

Municipalities work with internet voting service providers for implementation. These providers offer solutions for pre-election, election day and post-election functions. In the 2014 Ontario municipal election, two providers deployed voting systems to 70 of 97 municipalities that offered internet voting.

Risks and Concerns Associated with Internet Voting

Protection against security risks is critical in protecting public confidence in electronic voting. The successful and accurate completion of every voting transaction is critical to public confidence in the integrity of elections, and to the legitimacy of those elected.[57]

Security measures that should be in place include:[58]

• **Vote integrity and authenticity** – The use of digital certificates and strong voter authentication methods can guarantee the authenticity of voters. Personal credentials, which are used to digitally sign the vote, must only be accessible by the voter, to guarantee integrity and authenticity of the vote.

• **Voter privacy** – Certain techniques can be used to ensure information about votes is not connected to the voter.

• **Auditability** – All operations should be registered in encryption-protected logs. It should be verifiable that votes are cast as intended and counted as cast.

• **System security** – Protecting against external tampering, viruses and denial of service attacks is essential. Measures including using firewalls, failover connectivity and server redundancy are used to mitigate these risks.

[56] Nicole Goodman, The Centre for e-Democracy& University of Toronto, Internet Voting Project Report, August 2014
http://www.centreforedemocracy.com/wp-content/uploads/2016/08/IVP_Report.pdf

[57] Elections BC
http://www.elections.bc.ca/docs/Internet-Voting-Discussion-Paper.pdf

[58] IDC Government Insights "Technology Spotlight: Delivering End-to-End Election Modernization Roadmaps"
https://www.scytl.com/en/attach/idc-government-insights-technology-spotlight-delivering-end-to-end-election-modernization-roadmaps/

Some municipalities enable internet voting only during the advance voting period. This provides them with the opportunity to redirect voters to physical polls if the system fails.

Fraud, voter coercion and vote-buying can occur more easily with online voting. Even if the technical aspects of online voting work perfectly, with unsupervised online voting, a person can use another person's access ID to vote, perhaps that of someone in their household who is not interested in voting. Polling stations with voter identification and secret ballot eliminate these opportunities. Education about the importance of integrity of the vote, voters' rights and the law may help mitigate this risk. One possible countermeasure is to allow voters to vote multiple times, such that only the last vote or a vote from a supervised channel is the one that counts.

Some citizens express concern about disintegration of social capital or civic life. They say the proliferation of electronic voting has the power to alter the nature of electoral participation by causing more electors to vote alone instead of as a community, at a polling place.[59] Providing the option of voting at polling stations, perhaps with electronic voting terminals can help address this concern.

FURTHER READING:

Nicole Goodman, The Centre for e-Democracy& University of Toronto, Internet Voting Project Report, August 2014:
http://www.centreforedemocracy.com/wp-content/uploads/2016/08/IVP_Report.pdf

Nicole Goodman, City of Guelph Report on Remote Electronic Voting Options, July 2013:
http://guelph.ca/wp-content/uploads/Report_RemoteElectronicVotingOptions.pdf

IDC Government Insights "Technology Spotlight: Delivering End-to-End Election Modernization Roadmaps":
https://www.scytl.com/en/attach/idc-government-insights-technology-spotlight-delivering-end-to-end-election-modernization-roadmaps
Note that this research is featured on the website of Scytl, a vendor of election management software.

Elections BC
http://www.elections.bc.ca/docs/Internet-Voting-Discussion-Paper.pdf

[59] Nicole Goodman, Internet Voting: The Canadian Municipal Experience http://www.revparl.ca/33/3/33n3_10e_goodman.pdf

3.7   Open Data

Open data has been defined as the release of government datasets in accessible downloadable formats, for use, re-use and re-distribution, by anyone for any purpose.[60] Open data is an emerging area for Ontario's municipalities. Thirty of Ontario's 444 municipal governments make their data sets available through a dedicated open data portal, and the idea is attracting increasing interest. The information most likely to be found on municipal open data portals is related to mapping and boundaries, traffic and transit, and land use and planning, as illustrated in Figure 4.
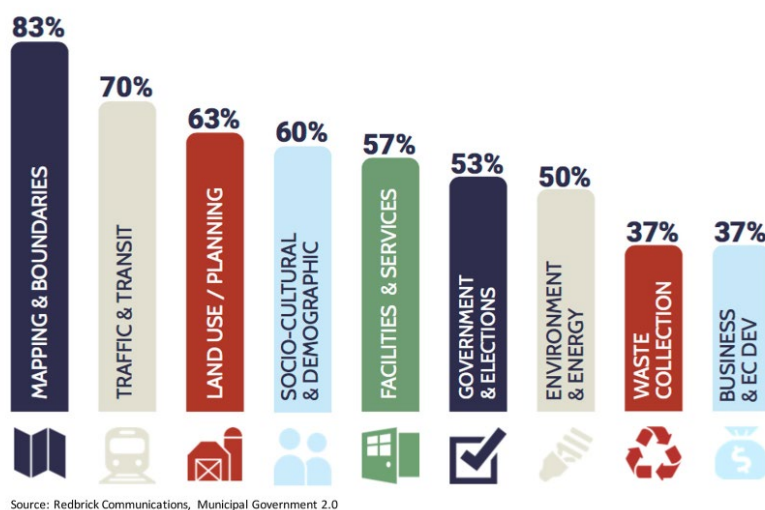

Source: Redbrick Communications, Municipal Government 2.0

Figure 4 – Information most likely found on municipal open data portals[61]

The City of Ottawa MyTransit app provides a good example of citizen use of open data. The City releases real-time GPS data of OC Transpo bus locations and estimated arrival times of the next three buses for any given stop. This data has been integrated into a mobile application, called "MyTransit", to help users plan their transportation means more efficiently.

Ontario's Open Data Directive[62] maximizes access to government data by requiring all provincial government data to be open by default, unless exempted from release in limited and specific circumstances as set out below:

• Data that is subject to statutory confidentiality requirements, (i.e. exempt from publication under the Freedom of Information and Protection of Privacy Act, 1990, the Personal Health Information Protection Act, 2004 and/or other statutes).

• Data that should not be disclosed for legal, security, confidentiality, privacy or commercial sensitivity reasons.

At the municipal level, only a few municipalities have committed to adopting the "open by default" standard.[63]

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[60] Canadian Internet Policy and Public Interest Clinic, https://cippic.ca/en/en/FAQ/Open_Data_and_Privacy#What

[61] http://www.redbrick.ca/assets/file/resource/SMS-Infographic-2015-Full.pdf

[62] The City of Sudbury has committed to the Open by Default standard.

[63] The City of Sudbury has committed to the Open by Default standard.
https://www.greatersudbury.ca/inside-city-hall/open-government/open-data/

Why do municipalities provide open data?

Open data can provide a range of benefits from enhanced democracy to support for innovation, including the following:

- **Citizen engagement** – Open data provides opportunities for citizens to engage with government, helping support activities and inform policy.

- **Advancing the government's transparency, accountability and democracy** – Open data can help the public better understand what the government does and how well it performs.

- **Support for innovation, research and commercial applications** – Access to municipal data supports academic, public sector and commercial organizations in pursuing data for pure research and for commercial purposes. Municipal open data applications make use of real-time GPS transit data feeds, restaurant inspection reports, permit data and more.

- **Better use of existing infrastructure** – Open data on publicly funded infrastructure enhances accessibility. This would include community facilities, community services, telecommunications infrastructure and other municipal infrastructure.

- **Informed decisions by consumers** – Providing access to public sector information supports informed decision making.

- **Proactive disclosure** – Proactively providing data that is relevant to Canadians reduces the number of access to information requests, e-mail campaigns and media inquiries. This reduces the administrative cost and burden associated with responding to such inquiries.

How can municipalities deploy open data?

The City of Prince George, BC followed a process to develop an open data program,[64] which serves as a good model for other communities. They designed their program in the following way:

- Decide what an open data program might look like from a people, process, policy and technology standpoint.

- Understand "who is our audience?" and what data would they consume if it was available.

- Identify internal resources that could support the on-going management of data sets.

- Develop a better understanding of potential positive impacts on internal operations. For example, providing open data can reduce requests for information.

Then they developed the following processes and standards related to Open Data and its release.

- Process and ownership to ensure that data is complete, current and accurate.

- Data should not contravene any requirements defined in the Freedom of Information and Privacy Protection Act (FIPPA), Municipal Freedom of Information and Privacy Protection Act [MFIPPA], Personal Health Information Protection Act, 2004, and should be reviewed and approved by city administration prior to release.

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[64] Bill McCloskey, City of Prince George, Public Sector Digest
https://publicsectordigest.com/article/developing-municipal-open-data-program http://data.cityofpg.opendata.arcgis.com

• Data should not impair or threaten public safety.

• Data should, where possible, include metadata that describes the data source, the data owner and definitions of any unclear or proprietary terms.

• Data should be considered permanent, unless directed otherwise.

Communication of available data is important. Municipalities should ensure awareness among municipal staff and residents of the availability and strategic value of the open data. This normally includes publishing an open data library.

Risks associated with open data

Open data provides benefits to municipal governments and its citizens, however, there are risks associated with it. The risks associated with the internet publication of personal information are greater than those from making a paper record available for examination. The degree of accessibility of records published online can go much further than simple access via the municipality's website. Search engines, such as Google, automatically trawl websites and catalogue materials that are found. This makes the contents of individual records that are posted on websites individually searchable.[65]

Open data carries a risk of privacy breaches. To mitigate this risk, municipalities should review Ontario's privacy legislation (FIPPA[66], MFIPPA[67] and PHIPA[68]) to ensure that they know exactly what their obligations are. Designing privacy into an open data system will help protect against privacy breaches. The principles of Privacy by Default, presented in Appendix B, are proactive measures designed into a system, that support privacy and security and form an excellent reference for open data initiatives.

It is possible, with open data, to release incorrect or out-of-date data. To reduce the likelihood of this occurring, it is important to clearly assign responsibility for ongoing management and maintenance of the data released.

With time, resources required to manage and maintain open data will grow, perhaps more quickly than expected. As the amount of open data increases, the resources required to ensure its completeness, timeliness, accuracy and communicability will grow. This should be planned into budgets. Some functions can be automated to control costs.

FURTHER READING:

Ontario's Open Data Directive: https://www.ontario.ca/page/ontarios-open-data-directive#section-4

Canadian Internet Policy and Public Interest Clinic: https://cippic.ca/en/en/FAQ/Open_Data_and_Privacy#What

Government of Canada – Draft New Plan on Open Government 2016-2018: http://open.canada.ca/en/consultations/canadas-new-plan-open-government-2016-2018#toc5-2-1

Ottawa Open Data App Contest: http://www.apps4ottawa.ca

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[65] Transparency, Privacy and the Internet: Municipal Balancing Acts https://www.ipc.on.ca/wp-content/uploads/Resources/2015-municipal%20guide-public%20discl-access.pdf

[66] FIPPA, Freedom of Information and Protection of Privacy Act, https://www.ontario.ca/laws/statute/90f31

[67] MFIPPA, Municipal Freedom of Information and Protection of Privacy Act, R.S.O. https://www.ontario.ca/laws/statute/90m56

[68] PHIPA, Personal Health information Protection Act, 2004,S.O.2004,c. 3, Sched. A https://www.ontario.ca/laws/statute/04p03

3.8   Electronic Information Management

Municipal electronic information management (EIM) refers to the management of, and access to, municipal information including documents, web content and multi-media objects such as sound and video.[69] EIM provides a consistent and systematic approach to managing all content assets of the municipality.

EIM can be used across the municipal government including special services that are very sensitive to security and privacy, such as court systems, social services and law enforcement organizations. EIM also provides value in management of municipal council documents, where public access to certain files is important.

Electronic information management systems can be self-hosted or cloud based. Cloud based systems store documents off-site and play a role in disaster recovery.

Why do municipalities use electronic document sharing and management systems?

The amount of electronic information that municipalities hold is skyrocketing. It is a challenge for municipalities to manage and control all the electronic information that they need.

Municipalities are at different stages of readiness for EIM. Some are migrating paper records to electronic format and storage. Others have already made this transition, and are deciding the best way to store their electronic information.

An electronic information management system helps improve the access to and management of stored electronic information. By storing information electronically according to prescribed conventions and employing strong search engines, municipalities can retrieve information more efficiently and provide more timely customer service. EIM also addresses policies and monitoring of documents for obsolescence and deletion. By avoiding duplication and managing disposal of documents, the amount of required storage is reduced.

Electronic information management systems can help municipalities comply with privacy, security and accountability requirements. EIM addresses the issue of document sharing, (who has access to documents, who has viewed them, who has edited them). It tracks edits and manages version control. Document management systems can be integrated with the municipality's web portal, allowing selected documents to be viewed by external parties.[70]

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[69] EIM, also referred to as Enterprise Content Management (ECM) has evolved from the more specific concepts of Electronic Records Management, Electronic Document Management and Electronic Collaboration. In this document, EIM refers to:
  - office documents, such as reports, letters, presentations, spreadsheets, e- mail messages and attachments, notes and discussions threads, graphical objects and images, often combined with or embedded in documents;
  - multimedia items, e.g. sound and video;
  - web content (both publications and other forms of content); and
  - data in database format.

[70] http://www.businessnewsdaily.com/8026-choosing-a-document-management-system.html

The potential benefits of EIM systems to municipalities include:

• **Searchable files** – allow users to locate relevant, current information faster and more comprehensively than possible in paper format or in a disorganized electronic file system. EIM can help speed up government transactions and reduce manual effort involved in keying data into business systems. This helps municipalities provide high-quality service at lower cost.

• **Accessibility** – Files can be accessed at any time, from anywhere, including from mobile devices, subject to system controls.

• **Collaboration** – Electronic documents, particularly with version control, make it easy for employees to work on a shared document.

• **Security** – The technology provides the ability to meet security classification standards and to track who is viewing and editing each document.

• **Compliance with legislative requirements** – EIM can help meet requirements of the Freedom of Information and Protection of Privacy Act, the Evidence Act, the Archives and Record Keeping Act and other regulatory and legislative requirements.

• **Reduced electronic storage** – Limits on data storage and rules for discarding outdated files reduce the amount of storage required. For example, once Peel Region implemented EIM, their storage requirements were significantly reduced.[71]

• **Saves space** – A paperless environment uses far less storage space.

• **Disaster recovery** – Offsite information storage provides backup for disaster recovery.[72]

How municipalities implement document management and sharing systems

Successfully implementing electronic information management is a complex task. It involves establishing new business practices, changing the way staff work and the way information assets are managed and shared. In the end, it will transform the municipal organization. Change management is a significant factor in the success of implementation. Some municipalities use formal management tools such as Lean Six Sigma for implementation of EIM.

FURTHER READING:

Government of Alberta, Implementing Electronic Information Management (EIM): A Planning Guide:
http://www.im.gov.ab.ca/documents/imtopics/ImplementingEIMguide.pdf

Peel Region, The Municipal Reference Model as an Information Management Framework:
http://www.verney.ca/assets/file/MIPS2010presentations/5A%20[Compatibility%20Mode].pdf

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[71] http://www.verney.ca/assets/file/MIPS2010presentations/5A%20[Compatibility%20Mode].pdf

[72] http://www.businessnewsdaily.com/8026-choosing-a-document-management-system.html

3.9　Video Recording and Live Streaming of Council Meeting Proceedings

Many municipalities provide live or recorded video or audio recordings of council and committee meetings. This can be broadcast to the public over the TV network, or streamed over the internet.

Why do municipalities provide recordings of their council meetings?

Section 239 of the Municipal Act requires that council and committee meetings be open to the public except in very specific circumstances. Municipal councils endeavor to make these meetings and information about them as accessible as is reasonably possible within their budgets. This can be accomplished with coverage by conventional media, social media or with live or recorded audio or video of proceedings.

Live streaming video provides the most complete access to meetings, for viewers who are not present. It allows viewers to see full debates, including non-verbal cues and responses. Archived video of proceedings can be accessed via the internet from the municipal website.

Streaming of council meetings introduces risk for municipal politicians, as they do not have parliamentary privilege. Parliamentary privilege is a legal immunity enjoyed by members of Canada's Senate, House of Commons and provincial legislative assemblies, in which legislators are granted protection against civil or criminal liability for actions done or statements made in the course of their legislative duties.[73] Some councils prohibit live streaming and video capture for this reason.

Nonetheless, video streaming of council meetings is growing in popularity across Canada and in other countries. Though only a small number of citizens are likely to view the full council meeting proceedings, it provides a greater level of accessibility. In a 2013 Environics Survey, 87% of respondents indicated that they never or rarely watch televised meetings of their own or other communities' council meetings.[74] In the Region of York, for each of the municipalities that streamed proceedings, on average, there were between 10 and 20 viewers per month. Whitchurch-Stouffville was an exception to this result, with 170 viewers on their first streamed council meeting in March 2016.

Though streaming of proceedings provides transparency and access to meetings for those who cannot attend, there are still limitations for those who do not have broadband internet at home. Internet access provided in public places is one measure that can address this issue.

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[73] https://en.wikipedia.org/wiki/Parliamentary_privilege

[74] York Region, Report No. 13, Further Considerations of Broadcasting Regional Council and Committee Meetings to the Public, Sept 2, 2016
http://www.york.ca/wps/wcm/connect/yorkpublic/267f755a-270d-4d7e-8c6d-64e4425cb23c/sep+15+broadcasting.pdf?MOD=AJPERES

How can municipalities implement public access to video of council meetings?

Video coverage of council meetings can be provided through streaming video over the internet or broadcasting, normally over local cable channels. Cable companies provide coverage for some larger municipalities, however, most municipalities use streaming technology. By using streaming and making video available on their websites, municipalities maintain total control over the data. They do not need to negotiate with or rely on third parties (such as cable companies) to record and make available their video.

Despite the presence of video recording of proceedings, municipalities typically make note that meeting minutes remain the official record of all meetings.

It is typical for communities to work with a services solution provider to implement their council meeting streaming solution. Often municipalities work with the same service provider they use for automating other council meeting functions such as creation and management of agendas and minutes. By indexing video online, users can select the specific segment of a video that they would like to watch. Figure 5 shows Prince Edward County's council meeting proceedings, which are in an indexed format.

1 Call to Order	🔗	00:06:39
2 Confirmation of Agenda	🔗	00:08:53
▶ 2.1 Motion to Confirm the Agenda	🔗	00:08:55
3 Disclosure of Pecuniary Interest and the General Nature Thereof	🔗	00:09:10
4 Announcements	🔗	00:10:00
5 Adoption of Minutes	🔗	00:10:57
▶ 5.1 Planning Public Council minutes from the meeting held on September 21,...	🔗	00:11:00
▶ 5.2 Council Minutes from the meeting held on September 27, 2016	🔗	00:11:29
6 Deputations - None Listed	🔗	00:11:46

Source for screen capture: Prince Edward County website. http://www.pecounty.on.ca/government/corporate_services/clerk.php

Figure 5 Index of Present Prince Edward County Council Stream

Once the streaming system is in place, it is usually operated by municipal staff.

Streaming video is bandwidth intensive. This has been a barrier to streaming council proceedings in the past. However, fibre and DSL service to municipal council chambers can support sufficient bandwidth for streaming video. If the facilities are served with lower bandwidth service, video streaming might not be feasible due to the capacity of the municipality's internet connection.

Depending on how advanced a municipality's streaming system is, equipment needs will vary. One Eastern Ontario county government deployed a system in 2016 for approximately $10,000. This included one new video camera, set up of a streaming system by a service provider including programming, cabling and routing AV equipment into the council chambers. The operating cost for this system is between $10,000 and $15,000 per year.

3.10   Remote Participation at Council Meetings

Ontario regulations do not allow remote participation at council meetings. However, changes regarding this issue are expected. As of December 2016, Bill 68, the Modernizing Ontario's Municipal Legislation Act passed second reading.

The proposed changes include the following:

26. (1) The definition of "meeting" in subsection 238 (1) of the Act is repealed and the following substituted:
"meeting" means any regular, special or other meeting of a council, of a local board or of a committee of either of them, where,
 (a) a quorum of members is present, and
 (b) members discuss or otherwise deal with any matter in a way that materially advances the business or decision-making of the council, local board or committee. ("réunion")
 (2) Section 238 of the Act is amended by adding the following subsection:
Electronic participation
 (3.1) The applicable procedure by-law may provide that a member of council, of a local board or of a committee of either of them, can participate electronically in a meeting which is open to the public to the extent and in the manner set out in the by-law provided that any such member shall not be counted in determining whether or not a quorum of members is present at any point in time.

The technology that allows remote participation by councillors is well established. As the idea of remote participation becomes more popular, municipalities will have to decide whether they will allow it, and what limits would have to be put in place for it to run smoothly.[75] The Region of York has noted that extensive use of such technology could jeopardize accountability by denying direct access to elected officials. The Region proposed remote participation be allowed in some cases, such as meetings called on short notice.[76] The community of Peachland, British Columbia allows remote participation at council meetings under certain circumstances, and has expressed similar concerns.[77]

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[75] Community of Peachland, BC debates remote participation at council meetings by an elected representative
   http://www.peachlandview.com/2015/07/16/mayors-move-to-restrict-electronic-participation-defeated-3-2/

[76] https://www.york.ca/wps/wcm/connect/yorkpublic/19b1935b-cc49-419c-8fdf-829af7348d3c/oct+8+municipal+ex.pdf?MOD=AJPERES

[77] Community of Peachland, BC debates remote participation at council meetings by an elected representative
   http://www.peachlandview.com/2015/07/16/mayors-move-to-restrict-electronic-participation-defeated-3-2/

4 Municipal Practices and Policies in Support of e-Government

4 Municipal Practices and Policies in Support of e-Government

There are municipal practices and policies that will support implementation and operation of e-government and the deployment of broadband services to citizens ensuring they have access to e-government services.

Support for e-government starts with interest and attitudes that favour modernization, a willingness to allocate budget for e-government initiatives, and policy that supports up-to-date municipal IT infrastructure. Policy and practices must also support expansion and updates to broadband infrastructure that supports access to e-government services by residents and commercial entities.

4.1 Policy Support of e-Government

4.1.1 Ensuring Up-to-date Municipal IT Infrastructure

Most implementations of e-government will require expenditure on new IT services, infrastructure and equipment. New e-services normally require increased IT capacity.

Technology obsolescence in government infrastructure can pose a hurdle to implementation of e-government. To combat obsolescence, municipalities should plan for ongoing assessment and renewal of equipment.

A reliable, fast internet connection is critical to e-government services. Subscribing to adequate broadband service, normally fibre or DSL (if available) will enhance the municipality's ability to provide e-government services. For most e-government applications this will be essential.

Municipalities should aim to set aside funds (potentially through discretionary reserve funds) to dedicate to updating technology. It is important that IT infrastructure is factored into the budget.

4.1.2 Equal Access to Government Services

Municipal governments should ensure that all eligible citizens and businesses have equal access to government services. In migrating to e-services, municipalities must ensure that they continue to address the needs of those without access to self-service channels, including some seniors, some disabled and low-income citizens, as well as those who do not have broadband internet at home. In-person service desks and public access to internet can help ensure equal access. Appropriate training and online help will reduce barriers for those who are not familiar with new municipal service delivery technology.

4.1.3 Shared Services Across Multiple Municipal Government Entities

E-government introduces efficiencies into the municipal government process. The cost of deploying e-government systems can be shared across multiple government entities. Most e-government systems are scalable and definable, such that a single system can support multiple organizations. Data can be aggregated or de-aggregated; for example, common electronic information management systems or financial systems could be used by a county-level government and multiple lower-tier governments, resulting in operational efficiencies. With a shared electronic information management system, a single search can yield results from the various municipal governments that are using the same system. A shared financial system, for example, simplifies financial statement consolidation.

In Eastern Ontario, there is a growing trend toward a collaborative environment. Municipalities are learning from one another and sharing information on e-government policies, practices and solutions. This is proving helpful as municipalities adopt e-government, as the process can be expensive and time consuming.

Standardizing service delivery mechanisms has benefits even if systems are not shared. A common or even similar skill and knowledge base across different government entities enables more mobility of staff and opportunities to share training and skills development. From a user perspective, residents who require some county-level services and some local level services can access a common portal, or at least, use similar interfaces across different portals. This can be achieved by using a service provider who serves multiple municipal governments with the same systems and software. For example, eSolutions and iCompass solutions are widely used by Eastern Ontario municipalities.

The biggest challenge for municipalities when they share their online service portals is often jurisdictional. Responsibility for service rests with one level of government, while another level of government is providing the e-service. Discussion, cooperation, creativity and flexibility on the part of municipalities is required to enable this type of program. In many instances, municipalities implement their own solutions, while looking to others for recommendations or shared experiences.

4.2   Policy Support for Ongoing Development of Broadband Services

Access to broadband connectivity impacts citizen access to e-services at all levels of government. This section addresses ways in which municipal governments can use policy to enhance and support broadband internet access.[78]

Local governments can identify and act to support a community's connectivity needs. To do so, municipalities can choose to work with independent internet service providers (ISPs) or build and/or operate their own network.

Municipalities can take the following steps to modernize broadband infrastructure[79]:

• Ensure policy that supports cooperation with private internet service providers.

• Some municipalities believe that they should develop their own fibre networks. These municipalities should ensure that their municipal policy supports this undertaking.

• Ensure policy that supports public Wi-Fi (provided by the municipality or private entities).

• Mandate broadband infrastructure in new developments.

• Ensure policy that supports access to conduit for the deployment of fibre.

• Ensure policy that supports tower sighting and access to towers in support of ISP deployment of broadband service.

• Ensure policy that supports predictable, timely permitting services that impact the cost and schedule of broadband projects

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FURTHER READING:

York Region Broadband Strategy (including appendices)
http://www.york.ca/wps/wcm/connect/yorkpublic/3995a98f-d1f8-4fe1-b553-ce2651c89f2d/may+1+broadband+ex.pdf?MOD=AJPERES

4.2.1 Municipal Cooperation with Private Internet Service Providers

Working with internet service providers (ISPs) to meet the connectivity requirements of the community is the first step to ensure required broadband access. Meeting with ISPs and communicating broadband requirements, growth projections or particularities of a community can help ensure the ISP offers the right services for deployment. Municipal support for a project through permits, access to fibre conduits, or financial contributions, may help the ISP arrive at a positive business case for the project.

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[78] York Region Report No. 13, Further Considerations of Broadcasting Regional Council and Committee Meetings to the Public, Sept 2, 2016
http://www.york.ca/wps/wcm/connect/yorkpublic/267f755a-270d-4d7e-8c6d-64e4425cb23c/sep+15+broadcasting.pdf?MOD=AJPERES

[79] York Region Broadband Strategy

4.2.2 Developing Municipal Fibre Networks

If the high speed, high-capacity internet services, required by institutions, businesses and residents, are not being provided at an affordable price by the private sector, the municipality may want to develop them. There are many communities across Canada and around the world where municipal governments have built fibre networks. These include regional fibre optic networks, municipal fibre networks, gigabit communities and other models.

Several regional fibre optic networks have been built in Ontario, including the Eastern Ontario Regional Network, the Niagara Region Broadband Network, the Waterloo Region Education and Public Network and the London and Region Global Network.

At the municipal level, Fibre to the Home (FTTH) networks and gigabit communities are options for high speed and ultra-high speed services. With the FTTH model, fibre is delivered to the building of subscribing households and businesses, with varying service options, sometimes starting as low as 10Mpbs, and ranging up to 100Mbps or higher. Gigabit communities provide up to 1Gbps service to subscribers. These municipal services are normally owned and operated by a corporation wholly or partly owned by the municipality. For example, the Olds, Alberta gigabit network is owned by the Olds Institute, a partnership among the town of Olds, Olds College and the Olds Chamber of Commerce. In Fredericton, E-novations, a city owned corporation owns a fibre optic and wireless network that serves businesses, government and academic institutions and provides municipal public Wi-Fi.

Developing a municipal broadband network is a very large, multi-year undertaking, with an ongoing management obligation. If this becomes a goal of the community, ensuring that municipal practice and policy support this objective must be a goal of the municipality. This would include:

• ensuring there is a public and political will for municipal broadband

• ensuring a process is in place to manage the network deployment project

• ensuring operating and management policies for ongoing operation of the network

• ensuring that funding and financial management systems are in place to support the project

A very comprehensive business case of the project must be completed before committing to such a project.

FURTHER READING:

York Region Broadband Strategy, Appendix 7 – Case Studies:
http://www.york.ca/wps/wcm/connect/yorkpublic/3995a98f-d1f8-4fe1-b553-ce2651c89f2d/may+1+broadband+ex.pdf?MOD=AJPERES

The Chronicle of E-Novations and Fred-eZone:
http://www.teamfredericton.com/en/publications/resources/Fred-eChronicles.pdf

First Nations in Ontario Broadband Connectivity Toolkit:
http://health.chiefs-of-ontario.org/node/724

4.2.3 Support for Public Wi-Fi

Municipalities can establish policy to promote the availability of public Wi-Fi. Policy should also include allocating funding for this purpose. If the municipality has access to reasonably priced fibre service, with sufficient capacity, the incremental cost of providing public Wi-Fi is relatively low. In some situations, where traffic is not as high, DSL service is adequate. Almost all Eastern Ontario municipalities provide public Wi-Fi in their libraries. In some municipalities, there is policy to also provide free Wi-Fi in municipal buildings, recreational facilities and other venues.[80] Public Wi-Fi can support economic development in a community, and provide internet access to those who do not have access at home.[81] The municipality can encourage private business to offer public Wi-Fi, in part by ensuring that adequate internet connectivity is available to support the service.

Municipal Wi-Fi has the potential to support e-government internet of things (IoT) undertakings. Though small communities may not need some of these services yet, they could be interested in coming years as technologies evolve.

Municipal IoT can be used to optimize services such as public parking, street lighting and traffic signals, to increase efficiency of waste collection and many other municipal functions. The following are some examples of how municipal IoT can improve service delivery:

- The California City of San Carlos linked parking spot sensors to the internet and a parking app via municipal Wi-Fi to provide drivers with information on available parking spots and to optimize the use of municipal facilities.[82]

- In Stratford, Ontario, municipal Wi-Fi is used to manage street lighting and traffic signals. The Wi-Fi network in Stratford has also made it an ideal test-bed for wireless cars, though technology is still in development stages.

- The City of Barcelona has used their fibre optic network to build out IoT systems across municipal service. In waste management, households deposit waste in municipal smart bins that monitor waste levels and optimize collection routes. Plans have been developed to enhance the sensors to integrate sensing for hazardous or offensive waste material. Smart sensors and IoT technology are being used to manage parking, irrigation of parkland, energy conservation, open government and other initiatives. The municipalities using Wi-Fi for IoT initiatives tend to have municipal Wi-Fi networks that have been built up over a period of several years. Issues of data security, ownership and control are key elements in the evolution of IoT.

FURTHER READING:

EORN, Municipal Public Wi-Fi: A Sound Investment?:
https://www.eorn.ca/en/resources/Municipal-Wi-Fi/EORN_WP_WiFi_FINAL.pdf

CBC News – Driverless cars get potential new test bed in Stratford, On.:
http://www.cbc.ca/news/business/driverless-cars-stratford-1.3390279

Data-Smart City Solutions, How Smart City Barcelona Brought the Internet of Things to Life:
http://datasmart.ash.harvard.edu/news/article/how-smart-city-barcelona-brought-the-internet-of-things-to-life-789

[80] Literature Review: Affordability of Communications Services, Prepared for the CRTC, March 2016, p.15

[81] Municipal Wi-Fi A Sound Investment?: https://www.eorn.ca/en/resources/Municipal-Wi-Fi/EORN_WP_WiFi_FINAL.pdf

[82] GCN, Muni Wi-Fi: This time it's more than public internet access: https://gcn.com/Articles/2013/09/25/municipal-wifi.aspx

4.2.4 Mandating Broadband Infrastructure in New Developments

Through policy, municipalities can mandate broadband infrastructure projects in new community development.

The Region of York Council, as recommended by the York Region Broadband Strategy, has supported broadband infrastructure in new development areas. Council also supported language in local municipal subdivision agreements, that ensures all Canadian Radio-television and Telecommunications Commission (CRTC) registered telecommunications service providers are given an opportunity to locate their infrastructure within proposed municipal rights-of-way, as appropriate.[83]

Policy can ensure that new multi-tenant buildings, both commercial and residential, are broadband-ready. Requiring buildings to have wiring or ducts that facilitate multiple internet service providers, can go a long way toward facilitating more investment in higher quality networks.

These policies will have significant impact on the connectivity of new developments.

4.2.5 Conduit Policy

Municipalities can develop conduit policy that will help reduce the capital cost of deploying fibre. This helps ensure that conduit and fibre are available for lease by carriers, ISPs and developers on reasonable terms. It also reduces cost of potential future municipal fibre deployment. Sixty to eighty percent of the capital cost of a fibre network is in opening a trench and burying the conduit that will house the fibre optic cable.[84] Municipalities can offset these costs by planning conduit work with other municipal projects, such as sidewalk improvements, development of trails, street light deployment and road construction. These "Dig Once" policies maximize the opportunity for broadband-specific conduit installation, while minimizing cost, community disruption and damage to existing infrastructure.

Dig Once policies typically have the following components:[85]

• All public works or installation of cable or utility infrastructure allows for conduits to be placed on behalf of other levels of government, or any other entities that wish to participate.

• A notice period informing all entities when the trench will be open and available for placement of their conduit and/or fibre facilities.

• Allowance for installation of empty or spare conduit by a public agency when excavations occur in a public right of way, with the local government's cost limited to the incremental cost of the conduit only.

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[83] York Region, Clause 5 in Report No. 9 of Committee as a Whole
https://www.york.ca/wps/wcm/connect/yorkpublic/ac47b9a8-52ee-425c-95dc-88d51623626b/may+12+proposed+ex.pdf?MOD=AJPERES

[84] NeoConnect, Policies and Ordinances That Facilitate Broadband Deployment:
http://neoconnect.us/wp-content/uploads/2016/08/Policies-and-Ordinances-that-are-Broadband-Friendly.pdf

[85] NeoConnect Policies and Ordinances That Facilitate Broadband Deployment:
http://neoconnect.us/wp-content/uploads/2016/08/Policies-and-Ordinances-that-are-Broadband-Friendly.pdf

Along with a Dig Once policy, a standard conduit specification should be developed. Dig Once policies are in place in York Region, Montreal, and many communities in Canada, the United States and elsewhere.

An Abandoned Fiber and Conduit Policy allows a municipality to regain control of abandoned facilities. Any abandoned fiber and/or conduit that is left vacant, and is not claimed by the owner within a designated time period, reverts to the municipality.

There is typically no municipal funding available for conduits on a non-communications project. Municipalities can set aside a discretionary reserve fund for internet, communications and technology (ICT), which, among other uses, could be used to place conduits when certain roads are dug up for other purposes.

FURTHER READING:

Connecting 21st Century Communities: A Policy Agenda for Broadband Stakeholders:
http://nextcenturycities.org/connecting-21st-century-communities-a-policy-agenda-for-broadband-stakeholders/

NeoConnect Policies and Ordinances That Facilitate Broadband Deployment:
http://neoconnect.us/wp-content/uploads/2016/08/Policies-and-Ordinances-that-are-Broadband-Friendly.pdf

4.2.6 Tower Sighting

One of the simplest things a local government can do to lower the cost of deploying a broadband network is to allow access to their vertical assets. This includes developing policy that makes available space on towers or other facilities and allowing attachment of radio equipment. Independent service providers can lease these spaces or facilities from municipalities to offer broadband services.

Municipalities can also support deployment of wireless broadband services by developing a wireless tower protocol focused on increasing wireless connectivity and coordinating private and public sector tower investment. By establishing a fair and reasonable consultation process, and developing policy on the planning and siting of antenna structures, municipalities can facilitate the required Industry Canada consultation process. This will also support their residents as well as ISPs in making decisions to deploy broadband infrastructure.[86] The Industry Canada process states that companies must share towers where possible, consult with the local land-use authority (generally the municipality) and the public as required, and adhere to any local antenna-siting protocol that exists. The Canadian Association of Municipalities and the Canadian Wireless Telecommunications Association have developed a joint antenna system siting protocol template that is consistent with Industry Canada rules on Antenna system consultations.[87] By supporting this process, the municipality can help avoid delays in the deployment of broadband services, while reducing tension during the tower placement process.

[86] CPC-2-0-03 Radiocommunications and Broadcasting Systems- Land Use Authority Consultation:
http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf08777.html#sec4.1 http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf08351.html

[87] Canadian Association of Municipalities, Antenna System Siting Protocol Template:
http://www.fcm.ca/Documents/reports/FCM/Antenna_System_Siting_Protocol_Template_EN.pdf

Municipalities should also ensure that if towers are built, there is open access for public safety equipment, including fire, EMS and potentially public works, whether they are located on municipal or private property, at no cost to the municipality.

4.2.7 Permitting

Municipalities should review permitting requirements to lessen the burden on ISPs building broadband infrastructure. A slow or unpredictable permitting process can add uncertainty to construction timelines and significant cost to a construction project. By streamlining the permitting processes, municipal governments can reduce the cost of a potential broadband deployment and ensure that the ISP can begin collect revenue earlier.

4.3　Financial Reserves for Technology

As municipalities adopt e-government for an increasing range of services and operations, they can expect a growing requirement for capital spending on IT infrastructure and equipment. Furthermore, the ongoing obsolescence of IT equipment means equipment will have to be replaced on a fairly regular basis.

Why do municipalities establish discretionary reserve funds?

In order to maintain a sound financial position and prepare for future municipal expenditures on capital assets to support e-government, municipalities can establish discretionary reserve funds. These are funds set aside by a municipal bylaw or council resolution to meet a future event.

Discretionary reserve funds help to stabilize the general municipal tax levy and reduce the need for debt. As the municipality likely knows in advance about upcoming capital expenditures for e-government, they are in a position to use this tool. Discretionary reserve funds for e-government can be dedicated to the related infrastructure, such as deployment of fibre into municipal buildings, deployment of a municipal fibre network, deployment of an expansive public Wi-Fi network, or deployment and management of municipal conduit. Discretionary reserve funds can also be used to fund capital equipment expenditures. For example, one Eastern Ontario township contributes $25,000 per year to a reserve fund to replace and grow its information technology assets.

How do municipalities establish financial reserves for technology?

Municipal councils may set up reserve funds for any purpose for which they have the authority to spend money.[88] However, reserves must be supported by financial evidence indicating the extent of the reserves required. Cash flow changes, risk management, and other considerations may affect reserve requirements. The assets of the reserve funds can be invested to earn income, thus helping to reduce the amount of money to be set aside. Investments are subject to the Municipal Act and the Investment Policy adopted by Council.[89]

The annual municipal budget must set out the estimated portion of revenues considered necessary to be paid into the discretionary reserve fund. Forecasts should be developed for each discretionary reserve fund and updated at least annually.

What risks are associated with discretionary reserve funds?

Allocations to discretionary reserve funds remain part of the general fund and are easy targets at budget time.[90] With Council's approval, discretionary reserve funds can be diverted to uses other than those for which they were originally established.[91]

FURTHER READING:

The Canadian Tax Journal, Municipal Budgeting: https://www.ctf.ca/ctfweb/Documents/PDF/2002ctj/2002ctj1_tassonyi.pdf

[88] https://www.york.ca/wps/wcm/connect/yorkpublic/ab4ac880-07c7-4876-9957-1a4023843068/Reserve+and+Reserve+Fund.pdf?MOD=AJPERES
[89] http://www.leeds1000islands.ca/en/governing/resources/Documents/2016-Reserve--Policy.pdf
[90] http://www.amcto.com/imis15/Documents/Education%20and%20Professional%20Development/Municipal%20Clerks%20Institute/Budget%20and%20Basic%20Finance%20-%20Rob%20Ford.pdf
[91] The Municipal Councilor's Guide, 2014 http://www.mah.gov.on.ca/AssetFactory.aspx?did=4965

4.4   Protecting Private Information

Privacy is essential to ensuring consumer trust and participation in e-government initiatives. There are also legal obligations that must be met. Privacy requirements are the same, whether government is managed with traditional paper processes or through e-government. With e-government, however, the outcome of privacy breaches can be more harmful. Instead of one person gaining access to a paper document, electronic information can be very widely distributed, instantly.

4.4.1   Legal Obligations

Municipalities are required to adopt and maintain policies to ensure accountability and transparency to the public, according to freedom of information requirements, while fulfilling their legal obligations to provide privacy of personal information held by the government. It is up to municipalities to determine the content of these policies.[92]

There are three pieces of legislation that establish the requirements for privacy protection and freedom of information in Ontario.

The Freedom of Information and Privacy Protection Act (FIPPA)[93] provides the right to access information by certain public sector organizations in Ontario under freedom of information requests. The Municipal Freedom of Information and Privacy Protection Act (MFIPPA)[94] extended this right to apply to municipalities, local boards, agencies and commissions. The Personal Health Information Protection Act, 2004 (PHIPA) provides the laws on protection of privacy of personal health information. Together, these three acts establish rules about how government organizations and health information custodians may collect, use, and disclose personal data. They also establish a right of access that enables individuals to request their own personal information and have it corrected.[95]

4.4.2   Privacy by Design

Privacy by Design is an excellent framework for municipalities to use when designing e-government systems. It is a method of embedding privacy into information technology, business practices and networked infrastructure.[96] Privacy by Design is recognized by regulators around the world as an essential component of fundamental privacy protection.

The Privacy by Design (PbD) framework was developed by Dr. Ann Cavoukian, privacy Commissioner for the Province of Ontario from 1997 to 2014. The philosophy behind PbD is that privacy cannot be assured solely by compliance with legislation and regulation, but that privacy assurance must become an organization's default mode of operation. The approach is characterized by proactive, rather than reactive measures and supports both data privacy and data security. The 7 Foundational Principles of Privacy by Design can be found in Appendix B.

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[92] A guide to Municipal Accountability, Transparency and Confidentiality in Ontario http://www.mah.gov.on.ca/Page14919.aspx
[93] FIPPA https://www.ontario.ca/laws/statute/90f31
[94] MFIPPA https://www.ontario.ca/laws/statute/90m56
[95] Information Privacy Commissioner of Ontario https://www.ipc.on.ca/about-us/role-and-mandate/
[96] https://www.ipc.on.ca/wp-content/uploads/Resources/PbDReport.pdf

How Municipalities establish privacy programs

In a small organization, there is minimal staff and resourcing. Preventing breaches by designing all systems with privacy in mind, is a very good approach. Vigilance regarding data minimization (limiting the amount of personal information collected, used and disclosed, to that which is necessary to achieve the legitimate governmental purpose), an explicit requirement of section 28(2) of MFIPPA, will also help reduce privacy risks.

The most common causes of privacy breaches in Ontario are insecure disposal of records, lost or stolen portable devices and unauthorized access.[97] In order to reduce the risk of privacy breaches, municipalities should establish administrative, technical and physical practices. The administrative measures specifically address privacy. The technical and physical practices are security measures that address access to information systems and access to physical premises respectively. Securing such access is an important component to ensuring privacy.

The administrative safeguards that will reduce the risk of privacy breaches include:

• Privacy and security policies and procedures

• Auditing compliance with privacy protocols

• Privacy and security training

• Data minimization

• Confidentiality agreements (alone or part of broader contracts)

• Other means of communicating privacy messages (privacy notices, warning flags)

• Privacy impact assessments[98]

When considering what safeguards to apply to reduce privacy breaches, it is important to consider:

• The sensitivity and amount of information at stake

• The number and nature of people with access to the information

• The threats and risks associated with the information[99]

The safeguards should be commensurate with the risk.

Some insurance companies provide coverage and risk management solutions to manage impacts of privacy breaches.

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[97] David Goodis, Assistant Commissioner Information and Privacy Commissioner , IPCO, https://www.ipc.on.ca/wp-content/uploads/2016/07/ID-Theft-and-Data-Breach-Conference.pdf

[98] David Goodis, Assistant Commissioner Information and Privacy Commissioner , IPCO, https://www.ipc.on.ca/wp-content/uploads/2016/07/ID-Theft-and-Data-Breach-Conference.pdf

[99] https://www.ipc.on.ca/wp-content/uploads/2016/07/ID-Theft-and-Data-Breach-Conference.pdf

A privacy breach response plan is also an important component to a municipal privacy program. The Information Privacy Commissioner of Ontario has set out steps to be taken in the case of a privacy breach. The first two steps to be taken are 1) containment of the breach by identifying the scope of the potential breach and taking the steps necessary to contain it, and 2) notification of affected individuals. Once a breach is contained and the affected parties have been notified, an internal investigation must be conducted according to the following steps:

• Review containment measures taken

• Determine if the breach is effectively contained

• Ensure individuals are notified

• Review circumstances of the breach

• Review adequacy of municipal policies and procedures

• Develop recommendations to prevent future breaches

• Implement recommendations[100]

The Information Privacy Commission of Ontario provides information on establishing privacy programs and protocols as well as breach protocols. The following are valuable guidelines for municipalities:

Developing a Privacy Program:
https://www.ipc.on.ca/privacy/protecting-personal-information/

FURTHER READING:

Transparency, Privacy and the Internet: Municipal Balancing Acts:
https://www.ipc.on.ca/wp-content/uploads/Resources/2015-municipal%20guide-public%20discl-access.pdf

Privacy by Design, Ann Cavoukian:
https://www.ipc.on.ca/wp-content/uploads/Resources/pbd-primer.pdf

Privacy Breaches – Causes, Prevention, Response, David Goodis, Assistant Commissioner, Information and Privacy Commissioner of Ontario:
https://www.ipc.on.ca/wp-content/uploads/2016/07/ID-Theft-and-Data-Breach-Conference.pdf

Privacy Breach Protocol – Guidelines for Government Organizations:
https://www.ipc.on.ca/wp-content/uploads/Resources/Privacy-Breach-e.pdf

Thinking about Clouds? Privacy, security and compliance considerations for Ontario public sector institutions, February 2016:
https://www.ipc.on.ca/wp-content/uploads/2016/08/Thinking-About-Clouds-1.pdf

Information and Privacy Commission of Ontario, Guidance Documents:
https://www.ipc.on.ca/about-us/guidance-documents/

[100] IPC.on, Preventing and Managing Breaches: https://www.ipc.on.ca/privacy/preventing-and-managing-breaches/

4.5   Security Policy

To protect the municipality's information assets including information systems and information itself, an information security policy, which outlines security standards, processes and procedures, is required.

A municipal information security policy should ensure that all data stored, sent or received by the municipal government is reasonably safe and protected from events which may impact confidentiality, integrity or access.[101] The security policy should also support the protection of privacy.

Assets are subject to both deliberate and accidental threats while the related processes, systems, networks and people have inherent vulnerabilities. Given the many ways in which threats can take advantage of vulnerabilities, there will always be information security risks. Effective information security reduces these risks by protecting the organization against threats and vulnerabilities, and reducing impacts to its assets.[102]

Information security is achieved by identifying the organization's information security risks and implementing an appropriate set of controls to ensure that the security and business objectives of the organization are both met.

Security achieved through technical and physical means should be supported by appropriate management and procedures. A successful information security policy requires support by, and training of, all employees in the organization and possibly, participation from suppliers or other external parties.

The ISO/IEC 27002[103] standard provides a reference for organizations implementing information security controls. This standard is intended for use in developing organization-specific information security management guidelines, taking into consideration their specific information security risk environment.

Security requirements should be identified, generally, through the following three sources:

• Assessment of risks to the municipality (threats to assets, vulnerability and likelihood of occurrence, potential impact)

• Legal and regulatory and contractual requirements

• Business requirements for information handling, processing, storing, communicating and archiving information (For example the requirement for employees to be able to bring their own device, use of a SaaS email system or public Wi-Fi access to the internet)

The resources used to implement controls must be balanced against the harm likely to result from security issues in the absence of those controls. Municipalities should be implementing both technical and physical controls. These include:

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[101] British Columbia Information Security Policy:
http://www2.gov.bc.ca/gov/content/governments/services-for-government/policies-procedures/information-security-policy

[102] https://www.iso.org/obp/ui/#iso:std:iso-iec:27002:ed-2:v1:en

[103] International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization:
https://www.iso.org/obp/ui/#iso:std:iso-iec:27002:ed-2:v1:en

Technical

- Strong authentication and access controls

- Detailed logging, auditing, monitoring

- Strong passwords and encryption on devices, documents and email

- Patch and change management and software updating

- Firewalls, hardened servers, intrusion detection and prevention, anti-virus, anti-spam, anti-spyware

- Protection against malicious and mobile code

- Threat risk assessments, penetration testing

Physical

Physical controls play a diminishing role in information security as data migrates to the cloud. If the municipality does not operate a server on its premises, limiting physical access will not impact data security and then authentication becomes the critical control. If data is stored on municipal premises, the following physical controls are important:

- controlled access to premises

- controlled access to locations within premises where identifying information is stored

- access cards and keys

- identification, screening, supervision of visitors

Municipal security policies require regular review and updating. New system developments and changes to existing systems present opportunities for municipalities to update and improve security controls. Incident reviews and changes to current and projected risks should inform policy updates.

FURTHER READING:

ISO/IEC 27002 Information technology – Security techniques – Code of practice for information security controls:
https://www.iso.org/obp/ui/#iso:std:iso-iec:27002:ed-2:v1:en

City of Waterloo Information Security Policy:
http://www.waterloo.ca/en/contentresources/resources/government/Corporate_Policies/A-010_Information_Security_Policy.pdf

Bring Your Own Device: Is Your Organization Ready?:
https://www.ipc.on.ca/wp-content/uploads/Resources/pbd-byod.pdf

Protecting Against Ransomware: July 2016:
https://www.ipc.on.ca/wp-content/uploads/2016/08/2016-07-07-1678_Ransomware_fact_sheet.pdf

5 Technology Management Processes

5   Technology Management Processes

The implementation of e-government and its ongoing operation requires structured management processes. This section will review selected processes for managing technology. These supporting processes are useful for all projects, but will be very helpful in deploying e-government tools, as these tend to be complex projects that occur over varying periods of time and involve significant budgets. Management of e-government is, inevitably, a process that involves multiple departments within the municipality. From a managerial perspective, strong, consistent and active leadership commitment is important in pushing e-government projects forward.[104]

5.1   Business Analysis

Business analysis is a structured way to support change in an organization by defining needs and recommending solutions that deliver value to all stakeholders. The process of introducing e-government begins with identification of a problem, and working through an analysis of options, leading to a solution.

Why do municipal government use business analysis for e-government?

Deciding to adopt e-government to solve particular problems and choosing which applications and tools to use, can be complex. The significant expenditures associated with these decisions require strong, structured, fact-based analyses to justify them. A business analysis framework provides this rigour in support of sound decision making. An open, transparent government must be able to demonstrate a sound decision making process. The structure and rigour of a business analysis framework is useful in clearly communicating decisions and the logic behind them.

How can municipal government use business analysis for e-government?

Business analysis can be done using a variety of similar tools, and should include a financial business case analysis. SWOT[105], PEST[106], the 7S model[107] are good business analysis frameworks. One tool that suits government quite well, is PESTLE, a mnemonic for political, economic, social, technical, legal and environmental. This framework provides a bird's eye view of the whole decision making environment from many different angles. It provides a framework for analyzing all variables to be considered in making a decision.[108] A PESTLE analysis of a decision to stream council meetings might look like the following:

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[104] Rose &Grant, 2010, Reddick & Frankm2007, Gagnon, 2001: https://books.google.ca/books?id=sNieBQAAQBAJ&pg=PA148&lpg=PA148&dq=Reffat+2006&source=bl&ots=o1WFunFz2_&sig=Lt3oli_V2OAcsCjs7xX8CjytklA&hl=en&sa=X&ved=0ahUKEwiGnN6D7YzPAhUGLB4KHVZTC34Q6AEIJDAB#v=onepage&q=Reffat%202006&f=false

[105] Strengths, Weaknesses, Opportunities and Threats

[106] Political, Economic, Social and Technological

[107] A McKinsey and Company model for looking inward at your own operation, Strategy, Structure, Systems, Style, Shared Values, Staff and Skills

[108] PESTLE, A Tool for Business Analysis: http://pestleanalysis.com/what-is-pestle-analysis/

Example: A community is indicating that they would like more access to council proceedings. Several options might be evaluated using this framework. The option to stream council meetings is analyzed here.

Political	Will this impact electability of councillors, mayor? Is there a provincial Ministry of Municipal Affairs view? What is the impact on council? What is Council's view?
Economic	Develop a financial business case for each proposed option. As options are narrowed down, the level of detail of the business case should be increased. The business case should include initial cost, operating cost, ongoing revenue or cost avoidance and social benefits. Social benefits may or may not be quantified. Financial tools such as Internal Rate of Return or Net Present Value should be used to compare options.[109]
Social	Develop a financial business case for each proposed option. As options are narrowed down, the level of detail of the business case should be increased. The business case should include initial cost, operating cost, ongoing revenue or cost avoidance and social benefits. Social benefits may or may not be quantified. Financial tools such as Internal Rate of Return or Net Present Value should be used to compare options.
Technical	Technical solutions are described, compared and evaluated.
Legal	The Ontario Municipal Act and other relevant municipal by-laws would be considered.
Environmental	Perhaps fewer people drive cars to council meeting. Other?

Business analysis is not a formula that generates an answer to a problem, but rather a framework for analyzing information that will support a decision. E-government decisions are usually complex and should be viewed using one or more frameworks for analysis.

5.2 Project Management

A project is a temporary endeavor undertaken to develop a product, service or result. Project management consists of a set of principles, tools and processes to manage a project from the initial planning stage to project completion.[110] Project management is a very valuable methodology, whether for a small project, or a large, multi-year municipal e-government undertaking. Though project management has always been practiced informally, it emerged as a distinct profession in the mid 20th century. There are many software based project management tools, often web-based, to facilitate collaboration among project team members. Regardless of the tools used, there are project management principles that will support them.

Why project management is important for municipal e-government

Project management is important for all projects. E-government projects typically involve at least two departments (as IT coordinates implementation of a product or service with another department), have limited budget, limited human resources, may require political support and often require a change in work flow and operating processes. They can be challenging to manage, but structured project management techniques can increase the likelihood of success.

Project management is a structured method of managing change. It focuses on producing a specifically defined output by a certain time, to a defined quality and with a given level of resources so that planned outcomes are achieved. Through project management, the team should establish the objectives, scope, schedule, budget, quality expectations, risk expectation, communication plan, human resource plan, procurement plan and plan for integration with existing operations. The project management process will guide the management of all of these elements to project completion. Project management tools range from a spreadsheet to manage a simple project to collaborative, cloud based software tools that structure all aspects of the project management process.

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[109] Economic and Social Impacts of e-Government, University of Fribourg, Suisse
https://diuf.unifr.ch/main/is/sites/diuf.unifr.ch.main.is/files/documents/student-projects/eGov_2011_Ajilian_Stefanie_%26_Crameri_Claudio.pdf

[110] A project has definite start and end points. Its purpose is to achieve something new. Once the end point is reached, the project is over.

How can municipalities use project management tools for e-government?

Most municipalities follow generally accepted project management practices tailored to suit their needs. Municipal projects must consider specific issues including stakeholder input, access to funding, limited municipal budgets, collective agreements and access to information requirements, among others.

To introduce or upgrade project management skills, there are project management courses designed with municipal government in mind[111]. This type of course is available online and in-person. Project Management Professional (PMP) certification is a valuable asset for employees who will manage projects on a regular basis.

Some larger municipalities operate a Project Management Office,[112] which supports employees through:

• training

• coaching and mentoring

• management processes

• templates to aid in accountability and consistency

• providing stakeholders with an overview of municipal projects by tracking progress and by advising on overall project management matters.

Though a Project Management Office (PMO) is not feasible for smaller municipalities, the functions of a PMO can be delivered through less formal channels within the municipality. Specifically, PMO functions such as training, coaching and mentoring, and templates can be provided through external sources. These resources can be shared across municipalities, perhaps among local governments within a county, or on a larger scale. Municipalities sometimes contract out project management of large projects.

FURTHER READING:

Principles of Project Management
http://www.free-management-ebooks.com/dldebk-pdf/fme-project-principles.pdf

Project Management Institute, What is Project Management?:
https://www.pmi.org/about/learn-about-pmi/what-is-project-management

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[111] http://www.humber.ca/continuingeducation/courses/project-management-municipalities-and-public-works

[112] Chatham-Kent Project Management Office
https://www.chatham-kent.ca/MunicipalDepartments/CAOsOffice/Pages/ProjectManagementOffice.aspx

5.3   Lean Six Sigma

Implementation of e-government can involve large, complex projects where structured, strategic management processes are instrumental to success. There are many management systems that can be used for this type of project. Lean Six Sigma is one that has been used globally, including by Ontario municipalities.

Why Lean Six Sigma is valuable for municipal e-government

Lean Six Sigma is a data-driven performance management system that relies on a disciplined project-based approach to improve customer satisfaction while managing cost. The system doesn't specifically address e-government, but can be useful when managing large e-government projects or new initiatives.

Lean Six Sigma relies on techniques from Lean and Six Sigma methodologies. "Lean" is based on a system used at Toyota Motor Company, designed to minimize waste in a manufacturing environment. "Six Sigma" is a management process designed to maximize profits by applying scientific principles to reduce variation and eliminate defects in products and services. It was established at Motorola Corporation in response to product quality challenges. There are several Lean Six Sigma certification levels: Yellow/Green Belt, Brown/Black Belt and Master Belt.

Lean Six Sigma emphasizes reduction of inefficiency and waste within work processes. This is achieved with cross-collaborative work teams, where departments work with one another in order to identify where synergies can be created and defects can be corrected. This can be very helpful in the public sector, where it is possible that organizational silos impede communication or collaboration. Because of the cost and structure of the Lean Six Sigma methodology, it is suitable for challenging, longer term problems. The type of project that lends itself to Lean Six Sigma Management include those where:

• There is no known solution

• The root cause of the problem is not known

• The problem is complex and needs statistical analysis

• The problem is part of a process

• The process is repeatable

• A defect can be defined

• Project will take 3-6 months

• There are data available[113]

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[113] IBM Centre for the Business of Government Improving Service Delivery in Government with Lean Six Sigma: http://www.iccs-isac.org/en/pubs/MaleyeffReport.pdf

How can municipal governments use Lean Six Sigma for e-government?

EORN sponsored an introductory Yellow Belt Lean Six Sigma training program for all counties in Eastern Ontario and a Green Belt program for three interested counties.

Several municipalities who took advantage of this training, including The City of Kawartha Lakes, continue to use Lean Six Sigma. Kawartha Lakes used Lean Six Sigma to improve their electronic document storage systems. They set a goal of reducing electronic document and e-mail storage by 25% each. Supported by the structure of this program, they realized productivity savings of $273,643 and cost avoidance of $510,000.[114] Kawartha Lakes continues to use Lean Six Sigma for implementation of an electronic document management system and other projects.

[114] http://www.amcto.com/imis15/Documents/Conference/2016%20Conference/Presentations/Tammy%20Wolters%20CARRUTHERS%20-%20Six%20Sigma.pdf

6   Conclusion

This e-Government Toolkit is provided as a reference document for municipal governments as they implement e-government.

As Eastern Ontario municipalities have better access to broadband service than they did even a few years ago, their capability to take advantage of the benefits of e-government has grown significantly. Municipalities are adopting e-government in response to financial pressures and to provide better service to their citizens.

Many of the services provided by municipal government can be delivered through e-government, enabling better service delivery, better management of the data municipalities require and more streamlined internal operations.

This document has presented a set of e-government tools that municipalities are likely to adopt over the coming years, if they have not done so already. This document has considered the following:

• Why do municipal governments use this tool?

• How do municipal governments use this tool?

• What are the risks and challenges associated with this tool?

Municipal governments can take steps to create an environment supportive of e-government and protect the privacy and security of their information, by adopting appropriate policies and procedures. Municipal access to broadband service is essential to delivering e-government, and citizen access to adequate internet service is essential for taking advantage of it. Therefore, it is important for municipal government to ensure that broadband service is extended to all citizens and that existing broadband infrastructure is modernized as required. Policies and procedures to support delivery and enhancement of broadband service are presented.

Finally, three management tools are presented to support the complex process required to implement and manage e-government.

7   Glossary of Terms

Traditional Communications:
the sharing of information for any purpose via commonly used traditional tools such as media relations (media releases, advisories, interviews), print (brochures, posters, news-paper advertisements) television or radio.

Streaming audio and video:
an internet data download that allows a multimedia file to be played back without being completely downloaded first. Citizens can watch a video or listen to a sound file while it's being downloaded to their computer. With live streaming, the stream is occurring in real time, as the event is occurring.[115]

Broadcasting audio and video:
one to several transmissions of signal, normally over radio and TV frequencies.

Reserve Fund:
funds that have been set aside either by a bylaw of the municipality or by a requirement of provincial legislation to meet a future event. As a result, reserve funds are either "discretionary" being those set up by Council or "statutory" being those set up by virtue of a requirement of provincial statute. Municipal councils may set up reserve funds for any purpose for which they have the authority to spend money.[116]

8   Additional Resources

https://www.fcm.ca/Documents/tools/International/Local_Government_Participatory_Practices_Manual_EN.pdf

York Region Broadband Strategy (including appendices):
http://www.york.ca/wps/wcm/connect/yorkpublic/3995a98f-d1f8-4fe1-b553-ce2651c89f2d/may+1+broadband+ex.pdf?MOD=AJPERES

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[115] http://techterms.com/definition/streaming

[116] https://www.york.ca/wps/wcm/connect/yorkpublic/ab4ac880-07c7-4876-9957-1a4023843068/Reserve+and+Reserve+Fund.pdf?MOD=AJPERES

Facebook is a social media web page used to present information including photos, videos, surveys and text. Municipalities can easily create customized pages. Those who "like" the page become subscribed to receive new content automatically, viewable when they log into their Facebook account. Subscribers share information such as age, interests, education, job, and gender, which is shown on their profile page. The extent of shared personal information depends on the user's willingness to share it publicly. This information can be used for statistical research purposes.[117]

The "like" and comment options provide good two-way communication and can be tracked to provide metrics that can be used to support municipal decision making.

Twitter is a micro-blogging application. It is an excellent tool to present information and get an immediate response. Though limited to 140 characters, twitter messages (tweets) tend to get right to the point. Tweets are displayed to the accounts of users who have chosen to follow the originator of the tweet. If a viewer likes the tweet, they can retweet the message and all of their followers will see the message in their account. Tweets can feature photos, videos and hashtags (a # placed before a keyword or phrase, allowing users to search other tweets containing the same keyword or phrase). Like Facebook, Twitter's strength comes from the previously built audience ready to receive information. Topics of discussion can be searched and you can also measure how many followers saw your tweet. There is also a poll capability that municipalities may find very useful.

YouTube is a web based video channel. YouTube videos are simple to create and post. They should be reasonably well made and completely focused on the intended message. The municipal YouTube link should be posted on other social media for maximum exposure.

LinkedIn is a social networking site for professionals and organizations. It provides personal or organizational profiles which can serve as introductions (look up person's profile before a meeting) and networking. Users can connect directly to local government workers, councillors and people from economic development teams etc.[118] Organizations have LinkedIn profiles for similar reasons, but also for posting jobs. Ten percent of Eastern Ontario municipalities have LinkedIn profiles.

Custom mobile apps are downloadable software tools for mobile devices, developed by a municipality or by others, sometimes using publicly available municipal data. They are designed to meet very specific needs of the municipality. Ninety Ontario municipalities have mobile apps to help their residents stay informed and engaged. Two examples of custom apps are the City of Kingston's Garbage and Recycling app (it provides residents with information on waste collection schedules) and Ottawa's Rent Compass (an apartment rental search tool).

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[117] http://www.lgma.ca/assets/Misc/Social-Media-Primer.pdf

[118] The Creative Collective, HOW COUNCILS & OTHER LOCAL GOVERNMENT ARE USING LINKEDIN, 2013
http://thecreativecollective.worldsecuresystems.com/blog/how-councils-other-local-government-are-using-linkedin

Appendix B:
E-Tendering Best Practices

Have senior management support	Provide for e-bid irregularities in your bylaw
Create e-bid document templates and use hyperlinks to standard terms – make your document easier to read for bidders	Consider purchasing cyber insurance
Offer a free preview of the bid document and drawings	Use on-line pricing tables and product specification tables – try to stay away from .pdf uploads of this information
For lower value bids (in lieu of bonding) have only the selected contractor provide contract security upon award	Ensure bid system has an audit trail accessible by buyer
Vendor registration: emergency vendor	Submit a question – do not use email
Global System Failure to be stated in Terms of Use and acknowledged by each bidder	E-bid system bidder acceptance terms – keep generic for both Contract A and Non-Contract A Bids
Ensure e-bid setup closing matches your Bid Document i.e. closing time (up to, prior to, no later than, etc.)	Procurement supervisor/manager should perform a quality control check of the bid setup prior to release.
Incorporate contractor performance web based module into e-bidding	E-bid system bidder acceptance terms – keep generic for both Contract A and Non-Contract A Bids

Source: Gord Sears, Procurement Manager, Corporation of the Town of Newmarket, 2015

Appendix B:
The 7 Foundational Principles of Privacy by Design

1. *Proactive* not Reactive; *Preventative* not Remedial

   The *Privacy by Design* approach is characterized by proactive rather than reactive measures. It anticipates and prevents privacy invasive events before they happen. *Privacy by Design* does not wait for privacy risks to materialize, nor does it offer remedies for resolving privacy infractions once they have occurred – it aims to prevent them from occurring. In short, *Privacy by Design* comes before-the-fact, not after.

2. Privacy as **the** *Default Setting*

   We can all be certain of one thing – the default rules! *Privacy by Design* seeks to deliver the maximum degree of privacy by ensuring that personal data are automatically protected in any given IT system or business practice. If an individual does nothing, their privacy still remains intact. No action is required on the part of the individual to protect their privacy – it is built into the system, by default.

3. Privacy **Embedded** into Design

   Privacy by Design is embedded into the design and architecture of IT systems and business practices. It is not bolted on as an add-on, after the fact. The result is that privacy becomes an essential component of the core functionality being delivered. Privacy is integral to the system, without diminishing functionality.

4. Full Functionality – *Positive-Sum*, not Zero-Sum

   Privacy by Design seeks to accommodate all legitimate interests and objectives in a positive-sum win-win manner, not through a dated, zero-sum approach, where unnecessary trade-offs are made. *Privacy by Design* avoids the pretense of false dichotomies, such as privacy vs. security – demonstrating that it is possible to have both

5. End-to-End Security – **Full Lifecycle Protection**

   Privacy by Design, having been embedded into the system prior to the first element of information being collected, extends securely throughout the entire lifecycle of the data involved – strong security measures are essential to privacy, from start to finish. This ensures that all data are securely retained, and then securely destroyed at the end of the process, in a timely fashion. Thus, *Privacy by Design* ensures cradle to grave, secure lifecycle management of information, end-to-end.

6. **Visibility** and **Transparency** – Keep it **Open**

   Privacy by Design seeks to assure all stakeholders that whatever the business practice or technology involved, it is in fact, operating according to the stated promises and objectives, subject to independent verification. Its component parts and operations remain visible and transparent, to users and providers alike. Remember, trust but verify.

7. Respect for User Privacy – Keep it **User-Centric**

   Above all, *Privacy by Design* requires architects and operators to protect the interests of the individual by offering such measures as strong privacy defaults, appropriate notice, and empowering user-friendly options. Keep it user-centric.[119]

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[119] Privacy by Design, Ann Cavoukian, Ph.D. Information and Privacy Commissioner of Ontario
https://www.ipc.on.ca/wp-content/uploads/Resources/pbd-primer.pdf

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