HOW TO BE SMARTER in Mid-Sized Cities in Ontario
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Accessibility
The United Nations defines accessibility as the provision of flexibility to accommodate each user’s needs and preferences.

Artificial Intelligence (AI)
The theory and development of computer systems that are able to perform tasks normally requiring human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages.

Blockchain
The decentralized ledger of all transactions across a peer-to-peer network. Blockchain enables cryptocurrencies like Bitcoin.

Broadband
Broadband is wide bandwidth data transmission which transports multiple signals and traffic types to provide internet access.

Civic Tech
The practice of applying the tools and processes of modern digital product development to address civic issues.

Digital Divide
According to the OECD, the digital divide refers to the gap between individuals, households, businesses, and geographic areas at different socioeconomic levels with regard to both their opportunities to access information and communication technologies (ICTs) and to their use of the Internet for a wide variety of activities.

Digital Transformation
The change associated with the application of digital technology to a given context; generally an organization or industry/sector. The transformation is characterized as enabling new approaches and not just enhancing traditional methods.

Geographic Information Systems (GIS)
A system designed to capture, store, manipulate, analyze, manage, and present spatial or geographic data.

Hackathon
A hackathon is a sprint event where people come together around a problem or idea and collaboratively create a unique solution from scratch.

Information and Communications Technology (ICTs)
The infrastructure and components that provide access to information through telecommunication, with a particular focus on unified communications including the Internet, wireless networks, cell phones.

Mid-Sized City (MSC)
In the Canadian context, a mid-sized city is an urban area with a population of 50,000 to 500,000 residents.

Open Data
The Handbook for Open Definition defines open data as data that can be freely used, modified and shared by anyone for any purpose.

Open Source
Open source is a decentralized software development model that makes source code, blueprints, and documentation freely available to the public in order to facilitate collaboration.

Open Government
Open government policies or doctrines support the notion that the public should have access to government-held information and be informed of government proceedings.

Sensors
A sensor is a device, module, or subsystem that detects change in its environment and sends the information to other electronics, usually a computer.

User-Centered Design (UCD)
A design process that focuses on creating highly usable and accessible systems by focusing on user needs and requirements.
It is increasingly clear that data and technology are becoming synonymous with city-building. This movement towards “smart cities” will continue to accelerate in the years to come, presenting a critical opportunity and challenge for leaders in communities of all sizes. This paper discusses the opportunities for data and technology in Canada’s mid-sized cities, defined as urban areas with a population of 50,000 to 500,000 residents, with a particular focus on Ontario. The concentration on mid-sized cities is an effort to bring attention to the unique needs and challenges of this city type, which often get overlooked in mainstream conversations about cities, despite being home to more than a third of the country’s population.

In response to this shift toward smart cities, leadership in mid-sized cities must be prepared to critically evaluate new opportunities, while also integrating approaches and practices that could bring substantial benefit to local communities. In an effort to support mid-sized cities in navigating these complexities, this paper provides a series of recommendations and cases for municipal leaders to consider, tailored to the mid-sized context.

Accompanying global interest in smart cities is growing uncertainty of what exactly constitutes a smart city. Code for Canada and Evergreen examine smart cities by looking at the associated impacts, taking emphasis away from the tools of the delivery, and focusing on benefits to residents and the wider community.

This paper gathers the perspectives of 15 experts alongside leading research to examine the implications of data and technology on mid-sized cities. Drawing from case studies and on-the-ground experience, we identify several insights for municipalities looking to adopt data and technology strategies. While many of the insights are applicable to small and large cities across Canada, the paper aims to offer resources and guidance for decision-makers and leaders in the mid-sized municipal context.

**EXECUTIVE SUMMARY**

1. Identify needs first, technology second. Take the time to define the problem you’re trying to solve. Only with this understanding in place can the right approach to technology be selected.
2. Design for inclusion. Pay special consideration to communities who might get left behind when you adopt new technologies.
3. Let community in. Provide tangible support to unlock the full potential of local residents, then tap into it.
4. Look outside for new solutions. Harness the combined power of public service champions, community-driven networks, and private sector innovations.
5. Think beyond city boundaries. Collaborate and share lessons learned with other cities.
6. Enable and empower public servants. Identify city staff and community members who are pushing an innovative agenda, celebrate them, and provide support in scaling up their work.
7. Invest in the fundamentals. Focus on fundamental service delivery and capacity-building through small-scale projects before taking on ambitious technology projects.
8. Integrate to implement. Integrate technology and data into your planning processes and resource-based decision making to ensure projects move forward.
9. Brand to build buy-in. Invest in the image and communications of the city as a vibrant place for technology-related opportunities with a high quality of living.
SMART CITY

/ˈsmärt ˈsi-tē (noun)

A resilient, inclusive and collaboratively-built city that uses technology and data to better the quality of life for all people.
The overall goal of this paper is to bring attention to the mid-sized urban context and provide useful insights and specific strategies for data and technology adoption at the local, regional and cross-city levels.

**Civic Tech**
The practice of applying the tools and processes of modern digital product development to address civic issues.

**Mid-Sized City (MSC)**
In the Canadian context, a mid-sized city is an urban area with a population of 50,000 to 500,000 residents.
Mid-Sized Cities:

A UNIQUE CONTEXT FOR TECHNOLOGY
Mid-sized cities are home to more than a third of the country’s population and are confronting a unique question of how to leverage all the digital age has to offer within city and service delivery.
At the same time, mid-sized municipalities must also be aware of shifting power and influence, and the consequences this could have on staff and residents. Across all sectors, public, private and civic, there is a significant push to leverage technology and smart solutions in city-building. Enthusiasm alone does not guarantee authentic implementation and impact. There is a requisite need for clear terminology, rigorous indicators, and systemized measurement to ensure that smart cities are value-driven and built with intention in order to meet the needs of the whole community.

In that light, city leadership in mid-sized cities must be prepared to critically evaluate new opportunities, while also integrating new approaches and practices that could bring substantial benefit. In an effort to support mid-sized cities in navigating these complexities, this paper provides a series of recommendations and cases for municipal leaders to consider, tailored to the mid-sized context. While many of the ideas offered are applicable to small and large cities across Canada, this paper aims to bring attention and specificity to the conversation by offering mid-sized decision-makers, staff, and local leaders resources and models to guide future decision-making.

**What is a “smart city”?**

Accompanying global trends towards smart cities is growing uncertainty on what exactly constitutes a smart city. Often times, it becomes a label for city services using technology: smart mobility, smart energy, smart infrastructure, smart data, and the list goes on, with little insight as to how the process or outcome is “smarter.”

One issue with smart city terminology is that imprecise definitions can lead to cities self-promoting as smart, simply because they use technology, without proper consideration of its utility or impact. This risk will intensify as cities race to the “smart finish line.” Research by Spicer, Goldman and Wolfe illustrates that there is a distinct “divergence” between the “smart city services being put in place by municipal administrators and the types of services residents want to use and see in their communities.” The growing emphasis on digital cities and economies can also increase the divide between those with skills and those without, raising concerns of digital exclusion, and highlighting the importance of ensuring technological transitions are supplemented with investments in key supports like accessibility and educational resources.

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**Accessibility**

The United Nations defines accessibility as the provision of flexibility to accommodate each user’s needs and preferences.
A 2017 discussion paper by the Institute of Electrical and Electronics Engineers (IEEE) identifies technology as only one aspect in the smart city ecosystem alongside human and institutional aspects. Within this framework the following key technologies are suggested as part of a “smart” system:

**NETWORKING AND COMMUNICATIONS**
The underlying infrastructure that connects infrastructure, devices, and people. For example, broadband internet infrastructure that allows residents to connect online or mobile applications that allow users to interact with their government.

**CYBER-PHYSICAL SYSTEMS AND THE INTERNET OF THINGS (IOT)**
The connection of physical devices to the Internet, such as sensors embedded within street lights that can detect anything from movement to open parking spaces.

**CLOUD COMPUTING**
The delivery of computing as a service, often in partnership with the private sector, which allows data to be stored in cloud infrastructure and processed at the edge of the network, facilitating better, more timely measurement and performance and reducing the need for organizations to purchase and maintain their own networking equipment.

**OPEN DATA**
Freely accessible data sets, rooted in trends of open and transparent governments. This data enables both governments and others to develop technologies such as web or mobile applications that use this data. In an effort to support governments, the Open Data Charter, a collaboration between government and experts, has developed six principles for how government should publish information.

**BIG DATA AND DATA ANALYTICS**
The analysis of the significant amounts of data generated by the increases in ICT-infused infrastructure explored above. The insights generated by this data can inform decision-making and enable access to new ways cities can understand and serve their residents.
While technologies are a critical part of the “smart city” ecosystem, they do not encompass a full picture of what digital transformation looks like. As a result, in the context of this paper, Code for Canada and Evergreen examined smart cities by looking at the associated impacts, taking emphasis away from the tools of the delivery, and focusing on benefits to residents and the wider community. Under this pretense, smart cities aim to use technology and data to achieve the above outcomes.

Digital Transformation
The change associated with the application of digital technology to all aspects of society. The transformation is characterized as enabling new approaches and not just enhancing traditional methods.
Why mid-sized cities?

Mid-sized cities are well-positioned to be innovation leaders with technology and data. Described by Bianca Wylie, Head of the Open Data Institute Toronto, as being "structurally set up" for innovation to happen, mid-sized cities currently possess unique characteristics that provide a key opportunity to lead when it comes to using technology to drive better public outcomes:

**Less complexity, higher agility**

Described as “tight”, “nimble”, and “less bureaucratic”, smaller governments can result in public servants and officials having a greater sense of the city and its needs, faster buy-in from community members and fewer bureaucratic hurdles to overcome. This can make the adoption of and adaptation to technology occur more smoothly.

**Fewer eyes, more flexibility**

Mid-sized communities can afford to experiment in ways that larger cities, under the closer scrutiny of higher levels of government, a larger number of residents, and a national or international audience, may find difficult. Mid-sized cities often face less acute pressures, which can lower the risk of testing new innovations.

**Small scale, big impact**

Because mid-sized cities are smaller, technology enhancement can go further and be felt concretely by more residents. One new technology platform or company can have a significant ripple effect on the city’s ecosystem in a way it might not in a bigger city.
CURRENT BARRIERS

Indeed, the future of technology in Canadian mid-sized cities seems bright. However, there remain barriers to both overall prosperity and technology and data adoption. These barriers include, but are not limited to:

- Under-resourced underlying IT infrastructure
- Planning, budgetary and procurement processes that often struggle to integrate and support innovation
- Policies and laws that have not kept up with modern developments
- Limited resources and training for public servants and others
- Embedded culture of risk aversion
- Lack of collaboration across city boundaries

There are also numerous risks that mid-sized cities may encounter without conducting proper due diligence and engagement before making technological investments, including considerations around data ownership and accessibility by design. Some of these risks and challenges are explored throughout this paper with an eye to identifying potential tools for success to help mitigate and overcome these barriers and advance ‘smart’ implementation of technologies, practices, and projects.
INSIGHTS FOR ACTION

Interviews with key stakeholders across mid-sized cities revealed important considerations for anyone exploring how to fully reap the benefits of technology-led innovation while managing the risks and potential drawbacks of joining the smart city ecosystem. This paper offers nine insights to consider for the adoption of technology in mid-sized cities, with case studies to highlight successful approaches in mid-sized cities.
A need-first, technology-second approach allows cities to be intentional about how, when and where “smartness” is integrated into their work.

The context

Understanding real needs and challenges is a prerequisite to selecting technological tools and implementation approach. Interviewees stressed the importance of community-wide problem definition exercises, established by city leadership and affirmed by residents. Similarly, the Infrastructure Canada Smart Cities Challenge encourages cities to begin by “engaging with residents about the most pressing issues their community faces.” Only with this understanding in place can the right approach to technology be selected. A need-first, technology-second approach allows cities to be intentional about how, when and where “smartness” is integrated into their work.

Only once key challenges have been defined can cities identify the most appropriate tools to address them. According to Bill Hutchinson, founding chair of i-Canada and distinguished fellow with the Munk School of Global Affairs’ Innovation Policy Lab, the operative word in understanding how technology can be used towards problem-solving is transformation: “where are you applying this technology and to transform what?” Asking this question can aid cities in both identifying and communicating the utility of the integration. Otherwise, according to Dr. Pamela Robinson, Associate Professor with Ryerson University’s School of Urban and Regional Planning, cities run the risk of not using technology to its full potential.

Interviewees cautioned against viewing problem definition and pathway development as linear processes: cities should be ready to evaluate, redefine, and adapt as a part of iterative city planning. Needs are not stagnant. Informed trial and error processes of experimentation can help cities identify what does and doesn’t work. Interviewees pinpointed built-in feedback loops as an important way to adapt to challenges and improve outcomes in real time. These approaches can also help to build integration among government departments and enable transferability to other communities and stakeholders.
Who’s doing it?

The City of Guelph has been focusing on problem definition and pathway development through customer journey mapping for its service delivery design processes. Customer journey mapping is a common user-centered design (UCD) tool, which incorporates a resident-first point of view into planning. The user-centered perspective considers the experience the customer has interacting with a service and how they feel about it. This tool allows them to identify and define challenges and opportunities within the existing service model, and has led to increased effectiveness of city services to deliver meaningful impact. One of the first things the city journey-mapped was the process of obtaining a marriage license. They began by mapping out the steps of a customer’s experience, from the decision to get married to the actual ceremony. Critical to the success of this tool was incorporating different perspectives: how would a young couple in their mid-twenties experience the process in comparison to a middle-aged couple entering their second marriage? According to Stewart McDonough, Advisor, Strategy and Innovation, Office of the Chief Administrative Officer at the City of Guelph, this tool helped the city identify ways to improve how the city delivers services and the overall customer experience as well as potential ways for digital technology to augment and ease this process for both residents and city staff.

Cities should be ready to evaluate, redefine, and adapt as a part of iterative city planning.
André Côté, a former Senior Policy Advisor in the Office of the Deputy Premier, Minister of Advanced Education, and Minister Responsible for Digital Government for the Government of Ontario, offered the ongoing transformation of the Ontario Student Assistance Program (OSAP) as an example of taking a user-focused, digital lens in service design and redesign. To reach more people and ensure a better user experience with the program, the ministry introduced an easy-to-use online aid calculator and redesigned the online application process, ensuring they were mobile-friendly, accessible and had an improved look and feel. After launching, they used anonymized web analytics data and in-person usability testing to identify barriers preventing users from engaging with the service. Using this information and an iterative approach, they refined the application language and improved accessibility to enhance services and increase access to OSAP.

**TIPS**

**Experiment with new approaches to needs identification and problem definition.**

Scan for practices in other sectors and connect with other practitioners to learn how to create and implement an iterative process that gathers information in real time.

**Be intentional about understanding your users.**

Gain clarity on who you are aiming to serve and ensure you are providing a service for them. Use tools from user-centered design and other methodologies such as customer journey mapping to gather insights and think through critical needs.

Check out NESTA’s DIY Toolkit (http://diytoolkit.org/) and IDEO’s Human-Centered Design Toolkit (https://www.ideo.com/post/design-kit) for step-by-step instructions on how to use some of these tools.
The context

The use of technology and data can have numerous benefits, including better management of service demands, greater public engagement in the design process, and more efficient allocation of resources at a lower cost. However, cities should pay special consideration to communities who might get left behind in this process and consider how new technologies might serve to exacerbate existing inequities: “We can adopt technology to address problems, but we can also create new ones if we’re not thinking about who is being left out,” warned Zac Spicer, a Visiting Researcher with the Institute on Municipal Finance and Governance at the University of Toronto.

The digital divide is a significant challenge within the Canadian context and has the potential to exacerbate urban social inequities. A 2014 report by the Canadian Internet Registration Authority found that while 95% of Canadians in the highest income quartile are connected to the internet, 48% of Canadians in the lowest income quartile do not have access. According to Geoff Hogan, CEO of the SWIFT Network, even where connectivity does exist, a resident’s socio-economic background determines their ability to buy a computer, pay for an at-home broadband connection, or even obtain the digital literacy required to use the internet to its full potential. According to a study by the Brookfield Institute for Innovation and Entrepreneurship, digital literacy refers to an individual’s ability to use, understand, and create digital technology. In Canada, more research and systematic evaluation of digital literacy is needed to quantify current gaps and ensure that proper measures are being taken to address them. The skills

Digital Divide

According to the OECD, the digital divide refers to the gap between individuals, households, businesses, and geographic areas at different socioeconomic levels with regard to both their opportunities to access information and communication technologies (ICTs) and to their use of the Internet for a wide variety of activities.
required to participate in today’s economy were not imagined 30 years ago. As highlighted by the OECD, both cognitive (numeracy, literacy) and soft (communicating, negotiating) skills are critical to support people in this transition. Governments must be attuned to this reality and put inclusion at the forefront of any smart city initiative.

Who’s doing it?

To fill gaps in connectivity and address affordability issues, the City of Pickering, Ontario deployed over 35 wireless hotspots to public facilities and parks as part of wider efforts to give residents “reliable and robust” broadband services. The city took the project one step further by allowing residents to borrow a portable internet device with unlimited data from the public library for up to two weeks. Funded over two years by the Ontario Libraries Capacity Fund for Research and Innovation, the project allowed residents who were previously disconnected to pick up a device, use it to meet their needs, and return it.

Another example illustrates how mid-sized cities can build in mechanisms to ensure projects are inclusive and accessible as they are rolled out. To augment the public transit system, the Town of Innisfil, Ontario partnered with private ridesharing technology provider Uber to provide subsidized rides to certain destinations. At the outset, the town identified how their new city project could disenfranchise segments of its population by recognizing that Uber depends on users having a smart phone and data access. To address this accessibility challenge, they created twenty-four hour call centers to dispatch rides over the phone. This accessible-by-design approach ensured the transit system could a wider range of residents.

It’s not always the municipal government stepping in, either. The First Mile Connectivity Consortium (FMCC) is a non-profit national association of First Nation technology communities...
service providers who provide and support the delivery of broadband infrastructure and services to support rural, remote, northern, and indigenous communities. The FMCC is involved in a variety of research, public policy and outreach activities to support this work. The First Mile website is a place where community-based and indigenous broadband providers and digital innovators are sharing best practices and lessons learned with others involved in local and regional development and sustainability of broadband systems. In Southwestern Ontario’s Lambton County, two non-profits have targeted digital literacy amongst youth in part of three First Nations communities through a science, technology, engineering, and math education partnership with the University of Waterloo. These examples show that by working together and designing for accessibility from the beginning, cities can ensure that the benefits of technology are felt by all residents.

**TIPS for success**

**Use a mix of consultation tools.**

Municipalities should use digital and non-digital tools in the consultation and engagement process, followed by a transparent and accountable implementation approach. Attention should be given to identifying and evaluating the needs and entry points for different communities and audiences. For example, if running an online survey to gain user feedback, map out who might not be able to contribute and identify alternatives to reach them. Staff can consider providing education and capacity-building that would allow participants to learn new technological skills and position them as stewards for follow-up conversations.

**Lead with accessibility; don’t let it be an afterthought.**

Digital inclusion requires a committed approach at every step of the way. It may also require expertise not currently available among city leadership. Seek out opportunities to learn and test new strategies with strategic partners who can broaden reach and access.
The Context

Individual leaders are not limited to the public service: community innovators are sowing seeds of innovation in their cities through projects and initiatives like local civic technology meetups and hack nights. These community-led spaces are instrumental in bringing together residents and leveraging the hidden talent within mid-sized cities.

Community-led activities provide great benefits for mid-sized cities: they produce a platform to understand the needs of residents and offer a potential resource pool to fill skill and knowledge gaps within the municipal government while also providing adjunct capacity for digital projects.

This approach can also demonstrate a culture of openness, agility, and engagement and provide alternatives to large corporate service providers by supporting the growth of local solutions. While these opportunities often come to fruition as a result of dedicated city residents and organizations (many of which are entirely volunteer-run), the city plays an important role in enabling this work. One key way cities can acknowledge and support the work of community leaders is by demonstrating how the work that’s being done in the community will be used to improve their cities. As Pamela Robinson asked, “how does the municipal government find the genius lurking in someone’s kitchen or basement?” Municipal governments need to enable and connect the “genius” and provide tangible support to unlock their full potential.

One way cities might support community-led technology is through open data initiatives. According to André Côte, “open data is about putting data out into the public domain and seeing what different communities of civic actors decide to do with it.” Open data is a critical component of a smart city strategy, as it supports public participation and application of information to create more livable urban environments, by enabling the development of technological solutions that improve access to information, generate new insights and enhance services. There is also a growing
emphasis on the importance of providing transparent, context-specific information that identifies the data publisher and potential biases, rather than just simply releasing data. Open data initiatives and policies must also take into account the growing issues and concerns related to data privacy and inter-jurisdictional data sharing. The most common example of open data enabling community-led development is the emergence of local transit schedule apps that allow residents to know when the next bus or train is arriving. Many other examples exist, such as ReCollect, a private sector business based in Vancouver that offers a suite of technologies, many of which are based on open data, that improve residents’ experience around waste management while also simplifying it for cities. More than 100 companies across Canada were recently identified as being built on top of open data, with more emerging each year.

The technologies and work happening outside government should not exist in isolation of the city’s strategies; city leaders should build clear channels between these community spaces and the public service, using both short and long duration approaches. One approach is through civic hackathons and challenges. While hackathons may have their limitations as one-off events, they are able to raise the visibility, test methods for engagement, prototype new ideas, and generate enthusiasm for a given topic. Those that take on these approaches should also consider stretching out the collaboration process, by making data available in advance, developing incubation processes of the best ideas, and create direct user interaction to ensure that solutions address real needs. Cities can support community-led organizing of these initiatives through funding, providing challenges, or taking the lead and organizing events. For example, the Ontario Ministry of Advanced Education and Skills Development organized a six-week challenge called the Student Pathways Challenge in late 2017 to enable community members to develop solutions to support high school students in identifying career paths.

Who’s doing it?

Community-led technology initiatives such as the civic tech movement are emerging in cities globally, including mid-sized cities in Canada. In a blog post, Matt Stempech, the Director of Civic Technology at Microsoft, suggests that civic tech is more than its “tech for good” tagline; it’s about the conscious application of “technology’s new potentials toward societal needs.” As Civic Tech Toronto, one of the first civic tech communities in Canada, describes itself: “it’s 90% civic, 10% tech.” Civic tech communities in Canada, including Ontario mid-sized cities London (Civic Tech London) and Waterloo (CivicTechWR), reflect their global counterparts while adapting practices unique to their local context. How can governments get involved? CivicTechWR offers a great example; according to its co-founder Kristina Taylor, the City of Kitchener and Waterloo have both been involved in their
civic tech community from the very beginning. Staff from the City of Kitchener’s new digital innovation lab spoke at their kickoff event in September 2017 and the City of Waterloo’s GIS team spoke at a later event, inviting participants to let them know what needs they have when it comes to open data.

Most civic tech communities are entirely volunteer-run and meet up for regular “hacknights” where diverse members of the public gather to use technology to build solutions to local challenges. No two hacknights are alike, but they are often built of similar components: community residents, a public venue, and local challenges to “hack.” Examples of challenges that Canadian civic tech communities have tackled include refugee settlement (http://welcomehome.to), access to mental health services (http://www.cityofbrainsproject.com/), restaurant inspections (http://eatsure.ca) and the lack of diversity in municipal politics (http://democracykit.org). Cities can support these groups by providing space, challenges, data, case studies, expertise and more. As Taylor advises governments looking to support civic tech: “If there’s a specific challenge that local governments are working on that we in the civic tech community can help with and bring our expertise to, please invite us into the conversation – tell us!”

TIPS

for success

Capacity-building programs.

Code for Canada offers a range of resources to support governments and communities in using technology to tackle local challenges including a Civic Tech Toolkit and online community to support those interested in organizing a local community as well as providing advice and support for implementing events like civic hackathons. Code for Canada also maintains an online directory of Canadian civic tech communities available at http://codefor.ca/community-network.

Support open data and open government initiatives.

Provide access to data and other resources that enable communities to work on solutions to challenges within mid-sized cities. Work with colleagues within the city to identify, clean up and release data sets to the public. The Open Data Charter (https://opendatacharter.net/) provides a resource for governments as they develop open data programs.

Open Government

Open government policies or doctrines support the notion that the public should have access to government-held information and be informed of government proceedings.
CASE STUDY

Code Heroes

In 2015, Ontario-native Kelly Bergeron visited her home town of Cornwall, a waterfront city in Eastern Ontario with a population just shy of 50,000. The city was hit particularly hard by the effects of deindustrialization following the closure of a paper mill that had operated in the city for nearly a century.

Bergeron moved back home after recognizing there was a deficit in digital literacy courses in the area. She worked with national digital literacy organization Canada Learning Code to run workshops before starting nonprofit organization Code Heroes with an Ontario Trillium Foundation grant. Code Heroes promotes digital literacy in Cornwall and surrounding areas through workshops for all ages on coding, graphic design, game design, digital marketing, and more. Bergeron’s initiative is an example of the community-led innovation occurring across mid-sized cities to solve critical issues like digital literacy.

What made Code Heroes work?

A city champion
Bergeron visited Cornwall, identified a need, and found a way to champion its solution in collaboration with local, regional and wider resources.

Public funding
With Support from the Ontario Trillium Foundation, Bergeron was able to take a part-time hobby with Canada Learning Code and build an initiative for her community.

Willingness to adapt
After running the first few workshops, attendance began to plummet. Initially, Bergeron rented a location downtown where she would teach. Eventually, she realized that to sustain interest and engagement, she would have to be mobile. In the year and a half since, she gave up her centrally located space and drove what she estimates is twice the length of Canada to take her workshops to more areas.

Attracting partnerships: Recognizing she needed to find ways to reach residents needing digital literacy training, Bergeron reached out to a superintendent at the Upper Canada District School Board. After presenting to the board’s principals, word spread and soon enough, her workshops were booked solid and when she needed space, she partnered with the city’s library.

Community-building
Bergeron hasn’t stopped with Code Heroes. Recently, she was appointed Executive Director of the Cornwall Innovation Center, an initiative in partnership with Carleton University. Bergeron and others are clearly seeing the value in gathering like-minded individuals to create a community of innovators in Cornwall.
The Context

Where mid-sized cities have constrained capacity, expertise, and budget, they can look outside city hall to seek new solutions and harness the power of public service champions, community-driven networks, and private sector innovations. Cities are in a position to create space and ignite others to innovate. According to Titus Ferguson, Executive Director of UnLondon, their role “is to set the overarching vision, end goal and enable a climate to get there and then let it happen. Let community, private business, industry, all come together around that shared vision.”

Interviews indicated that the public procurement system through which governments traditionally partner with the private sector presents an opportunity for change. According to Stewart McDonough, traditional public procurement processes can make it difficult for governments seeking to innovate their practices. While cities may want to attract innovative early-stage companies, startups often don’t have the resources to complete lengthy Request for Proposals (RFP). As a result, the process tends to be weighted towards large companies with more capital who are seasoned in working with government. Additionally, existing RFP models rarely allow the government to bring forward a problem unless they already have a solution in mind. This presents a barrier to iterative problem-solving for cities wanting to incorporate external input into solution-building.27

While partnership with the private sector can be an important opportunity for mid-sized cities, they need to be aware of its implications on residents’ privacy, as well as data ownership, use, and collection. Some interviewees expressed concern around the control of new initiatives. Teresa Scassa, the Canada Research Chair in Information Law at the University of Law and a founding member of the Centre for Law, Technology, and Society, writes about the potential loss of data ownership by municipal governments to the private sector within ‘smart’ city projects.28 A part of this tension is driven by the issue’s complexity. If technology-driven projects operate in partnership with multiple stakeholders, who has a right to the data? As Scassa indicates, it’s critical to think concretely about issues of data sovereignty and liability.29
Who’s doing it?

One example of an innovative project is the public-private partnership between the Town of Innisfil and Uber to introduce the first-ride sharing transit system in Canada. Increasing urbanization of the once rural area required a new transportation system to service its residents. The cost of traditional transit models limited the city’s options. They were only able to afford one bus and service a small portion of the city, forcing them to think outside the box. The town’s Chief Administrative Officer (CAO), Jason Reynar, recognized an opportunity to leverage the empty cars that were already commuting in and out of the city on a daily basis.

THE UBER-INNISFIL STORY

1. First, they put out a request for expressions of interest. Uber caught their attention due to its ability to carpool passengers and the app-based interaction.

2. Together with Uber, the town built a Memorandum of Understanding (MoU), which Reynar credited for building a solid foundation for the partnership. Jumping straight into a legal agreement, he warned, can get too deep into the weeds and kill the initiative before it can get off the ground.

3. The Innisfil Town Council provided $100,000 for the city to attempt to solve the transit problem. According to Reynar, a Council supportive of testing new and innovative approaches is crucial.

4. With the $100,000, the town knew they wouldn’t be able to give all residents rides from door to door. They began consultations with residents to determine key destinations and created a door to destination model, whereby the town would have flat rates – comparable to transit fare – to areas like the public library or town hall.

5. Uber created a customized app for the town, where residents order from their phone, pay a fixed rate of $3 and the town pays the difference.

6. According to Reynar, the town took for granted that not every resident would understand how a ridesharing service worked. Their response has been developing education resources and providing alternative ways to access the service for residents without smart phones.

7. Key to the successful launch of the project was the recognition that it would be an iterative process. It was essential to test it out as a pilot even if it wasn’t perfect. According to Tim Cane, Manager of Land Use Planning, “if we had waited [for it to be perfect], we would still be waiting.”

Cane and Reynar describe the initiative as a success thus far, with a 90% satisfaction rate.
Establish codes of conduct, principles and policies for data and technology tools that include public good considerations from the beginning.

Consider long-term ownership, security, and privacy implications when procuring new services and technologies. Learn from other governments’ best practices and leading experts to ask the right questions before and during engagements with organizations outside government.

Experiment with new models of procurement such as micro-procurement.

Emerging examples like the Government of British Columbia’s BCDevExchange (https://bcdevexchange.org/) and the currently-in-beta Government of Canada DevExchange (https://beta.gcdevexchange.org/) are showing early promise for small-value, rapid procurement that enables access to a wider pool of outside providers.

from residents. Not only are residents getting better service the partnership has saved the town a significant amount of money. Early estimates of the traditional transit system suggested a cost per rider of $33, whereas with Uber, the average cost per use is $5.50. While this approach is one solution to the town’s unique situation, municipalities should examine the implications of replacing traditional transit or other critical public services with third party solutions. The primary takeaway underlying the project is that not all solutions have to be built in-house.

How mid-sized cities partner with the private sector will differ depending on need. One example where the city could outsource to the private sector is when developing a new software solution. According to André Côté, governments have a “painstaking” track record with technology procurement, often opting for customized software that comes at a high cost and with high risk of failure. Modern development models and technologies offer a new path. For instance, cloud-based software-as-service solutions can be more flexibly deployed and limit the need for in-house technical support and maintenance. This can lead to savings and free up city staff to work on more mission-oriented projects.
The Context

While mid-sized cities face similar service requirements as big cities, their capacity to deliver can be strained by small budgets and limited resources. Regional networks and collaboration can overcome challenges of scale. Across the board, interviewees identified the need for sharing lessons learned, particularly detailed breakdowns of innovative approaches and experiments. Comparative research could provide community champions and mid-sized cities with evidence and logical starting points. Interviewees acknowledged that while mechanisms for collaboration are in place, such as the Association of Municipalities of Ontario (AMO) or the Federation of Canadian Municipalities (FCM), they are not always leveraged on a project-to-project basis.

The potential for resource-sharing is one of the benefits of being mid-sized. As André Côté explained; smaller communities are able to “share models and replicate in ways that a big city like Toronto can’t [as easily].” There are far more Guelph-sized cities in Canada than big ones like Toronto or Vancouver. Not all cities have to be the first movers nor do they need to reinvent the wheel when municipalities across the country are working towards similar technology and data solutions. There’s an opportunity for one city to push the envelope and for the city next door to become an adopter.

Mid-sized cities can learn from one another but context matters. Best practices from other jurisdictions provide a strong starting point for consideration, but often require customization in order to have local impact. The most successful initiatives are those selected based on inclusive engagement processes and evidence-based decision making that leverage the unique assets and opportunities in a given community.

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Who’s doing it?

One way to share across municipalities is through open data and open source initiatives. The Open Cities Index (OCI) is a private initiative and partnership between Canada’s Open Data Exchange (ODX) and Public Sector Digest, which serves to audit existing open data initiatives at municipalities. The 2016 edition of the Index includes 68 municipalities and measures the readiness, implementation, and impact of each city’s open data initiatives. While these rankings are useful for basic comparisons, it is important to understand how these cities are being selected and who may be excluded in the process. Oshawa, a mid-sized city on the Lake Ontario shoreline with a population nearing 160,000, has an open data website, which provides data on categories across its city services, including health, housing, and transit. Cities in Canada are also hosting code on GitHub, a free repository of open-source coding with version control and code management.

Networks for resource-sharing and collaboration should not be limited to municipal governments, The Alberta Smart City Alliance is an example of cross-sector collaboration among community leaders, city builders, governments, corporations, entrepreneurs and academic innovators. The only organization of its kind in Alberta, the Alliance came together in 2014 to create knowledge sharing, foster awareness, and accelerate the development of solutions for its cities’ challenges. These types of networks also require data standardization mechanisms to enhance the transfer and usability of information.

Open Source

Open source is a decentralized software development model that makes source code, blueprints, and documentation freely available to the public in order to facilitate collaboration.

TIPS for success

Join existing regional organizations.

Use networks to connect with cities across regions such as AMO and actively discuss opportunities to collaborate and/or share knowledge based on specific projects. Explore the opportunity to develop additional communities of practice on specific topic areas.

Initiate opportunities to collaborate and communicate across sectors,

whether as information sharing calls, topic-specific convenings, or more formalized structures.
In Southwestern Ontario, many residents, including those in mid-sized communities, do not have access to ultra-high speed broadband networks required to take full advantage of the internet. In the face of economic and social challenges, broadband access is an important tool for regional revitalization. Despite this, significant barriers exist to prevent small and mid-sized cities in the region from gaining this much-needed infrastructure. Telecom providers tend to focus on areas with large population densities, often ignoring smaller municipalities.

The SouthWestern Integrated Fibre Technology (SWIFT) Network is addressing these challenges to improve connectivity for 3.5 million residents in the region. A not-for-profit, non-share capital corporation borne out of the Western Ontario Wardens’ Caucus (WOWC), SWIFT developed a long-term infrastructure plan to attract and subsidize service providers to build fibreoptic internet infrastructure. The largest regional publicly funded broadband project in the country to date, SWIFT received a $180 million combined investment from the Governments of Canada and Ontario. Within a year, they prequalified 28 service providers to bid on building the network.

According to Geoff Hogan, SWIFT’s CEO, they faced challenges marrying the provider’s need for return on investment with the municipalities’ obligation to ensure equitable access for its residents. First, they had to get 18 municipal governments to agree on the model. Next, they had to get buy-in from future members, those public institutions and corporations that would be receiving the service. Finally, they had to convince the private sector that what they were doing was a good idea.

SWIFT recognized and leveraged a key opportunity facing mid-sized cities. By operating as a collective, municipalities increased their influence and buying power. The bottom line: SWIFT’s approach makes it easier, faster, and cheaper for service providers to deliver services to consumers everywhere in Southwestern Ontario.

What made SWIFT work?

Pre-existing Structure for Collaboration
The purpose of WOWC is to encourage collaboration across municipalities.

Common Goal
SWIFT identified a need that was shared across municipalities. The issue of broadband access was important to residents, while politicians saw this as an initiative people could rally around.

Cross-sector Engagement
The private sector was invited to be part of a collaborative development process.

Multi-stakeholder Buy-in
Through a membership structure, SWIFT brought in schools, hospitals, and businesses to be part of their initiative, giving them choice and buying power.

Metrics
SWIFT identified that a challenge with similar projects was a lack of measurement. To avoid this, they hired the University of Guelph for a five-year research project to monitor and evaluate their impact.
The smaller municipal government structure of mid-sized cities is a unique advantage as it can make it easier for fewer people to ignite significant changes. As André Côté noted, “in mid-sized cities, all you need is a few people in key positions to move the needle. In a large city you might need to create a 45-person steering committee.” Technology champions within government who understand the bigger vision and opportunity for digital transformation within mid-sized cities are key to moving these projects forward and securing budget to implement them. In equipping the public service to respond to new trends and tools, it is important to actively recognize and acknowledge the work of deeply committed public servants doing their best with limited resources. Leaders in mid-sized cities need to identify city staff and community members who are pushing an innovative agenda, celebrate them, and provide support in scaling up their work.
These innovators require resources and tools to equip them for success. Unfortunately, the same qualities that position mid-sized cities to experiment with technology can also serve to limit their capacity. Small teams can champion big ideas, but they will hit a wall if there are no resources to carry them to the next step. Currently, IT departments in municipal settings are often only resourced to carry out internal responsibilities. As Sean Galloway explained, mid-sized cities require capacity building for adoption of outward-facing technologies, while also receiving resources required to fulfill back-end responsibilities. Enabling additional capacity means allocating budget for new training and staff, which alone might not be enough. Interviewees highlighted the necessity for cities to build bridges between the technologists who understand technical operations and the strategists who see the big picture on how technology can be used to accomplish a wide range of city functions. Only then can a cohesive, integrated strategy be developed to deploy technology as a tool across mid-sized cities.

Who’s doing it?

Kris Longston, Manager of Community & Strategic Planning at The City of Greater Sudbury in northern Ontario said that his department was able to hire co-op students from the University of Waterloo to support the development of their Geographic Information System (GIS) municipal asset models. Working with students has been successful because they bring knowledge of modern technologies, require little training, and can share learnings with city staff. Since GIS technology advances so rapidly and professional development budgets in cities are often strained, the City of Greater Sudbury, like many mid-sized cities, has had challenges keeping staff trained on the latest technologies. Longston suggested that one way for municipalities to overcome this challenge is through co-op placements that would allow students to bring leading-edge academic knowledge and gain relevant experience in return. While the short term nature of students does raise some challenge with turnover and knowledge loss, placement organizations should consider long term strategies for hiring graduating students. This approach would also address the broader challenge of youth retention often faced by many mid-sized cities.

Interviewees highlighted the necessity for cities to build bridges between the technologists who understand technical operations and the strategists who see the big picture of how technology can be used to accomplish a wide range of city functions.
Capacity-building and training doesn’t always have to be government-led. Code for Canada runs a fellowship program to embed teams of professionals from outside government with development, design, and data skills into government departments to work on specific projects with an eye to raising the overall digital capacity within the host organization. They also have a suite of education and training offerings, including professional development courses for public servants and custom workshops for public sector teams, to equip governments with an expanded toolkit for integrating technology into their work.34

**TIPS for success**

**Connect with other leaders.**

It can be challenging to drive change within a bureaucratic organization. Finding opportunities to meet, connect with and learn from other like-minded individuals can address concerns of isolation and provide access to insights on how to support transformation more effectively.

**Build relationships with postsecondary institutions.**

Universities and colleges often seek opportunities to provide students with real-world experiences. Students are often well positioned to learn, test, and share knowledge about new technologies, which can lower barriers to adoption among municipal staff.
The context

It’s often easy to generate enthusiasm for technology projects when conversations concentrate on the “next big development” like artificial intelligence or blockchain. Interviewees noted that mid-sized cities should first focus on core “bread and butter” services, such as app-supported parking payment, before getting caught up in the hype of “shiny things.” As André Côté explained there’s a need to focus on the “simple stuff that is being done inconsistently across municipalities.” Starting with small, iterative, low-cost technology-driven improvements to programs can build capacity within local governments while building confidence for more intensive, large-scale transformation. Localized and neighbourhood-level projects can present a model for integration that enables cities to learn and iterate before making a potentially higher risk city-wide commitment. Piloting a project in one neighbourhood can build a case for expansion and budget allocation. Focusing on fundamental service delivery and capacity-building through small-scale projects doesn’t mean mid-sized cities should restrict themselves when it comes to thinking big about future plans. Instead, it’s about ensuring ambitious technology projects don’t come at the expense of a city’s basic services.

Artificial Intelligence (AI)
The theory and development of computer systems that are able to perform tasks normally requiring human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages.

Blockchain
The decentralized ledger of all transactions across a peer-to-peer network. Blockchain enables cryptocurrencies like Bitcoin.

Focusing on fundamental service delivery and capacity-building through small-scale projects doesn’t mean mid-sized cities should restrict themselves when it comes to thinking big about future plans. Instead, it’s about ensuring ambitious technology projects don’t come at the expense of a city’s basic services.
Who’s doing it?

Some mid-sized cities are using the return on investment from smaller scale projects as capital to invest in larger initiatives with higher risk and longer-term gain. In 2017, Kitchener, a city in southeastern Ontario with a population of almost 200,000, invested $5 million to install more than 16,000 energy-efficient, smart street lights. The energy savings of the lights, which are anticipated to last up to 20 years, will pay for the project within seven years. What makes the street lights “smart” is their network of small sensors, which build a network across the city and can be used for anything from tracking available parking spaces to alerting city staff when city garbage bins are full. The city has earmarked nearly a third of the energy savings from the first year of the project (approximately $300,000) to fund a new Civic Innovation Lab. The Civic Innovation Lab will bring startups, large organizations and the city together to develop tech solutions for city services such as monitoring water mains, traffic conditions, streetlights, waste containers and more.36

Mid-sized cities should not shy away from pursuing ambitious projects. When the City of Cornwall decided to throw its hat in the ring for Amazon’s HQ2, there was a healthy dose of skepticism.37 What was the likelihood the tech giant would choose an Eastern Ontario city with a population of just 50,000 as its new home? According to Kelly Bergeron, a Cornwall resident and the founder of digital literacy organization Code Heroes, that question didn’t drive the application. Rather, it was about the city exercising its ability to pitch and position itself as a place for future investment, whether by Amazon or others. It was a low-risk way to test out what its future ambitions could look like.

TIPS for success

Scan for low-hanging fruit.

Identify opportunities to improve basic services using technology and plan to integrate revenue generation and/or cost savings to support investment in future projects.

Learn from others.

Replicate where it makes strategic sense; not every city has to be the first mover. Building on someone else’s proof of concept is a great way to sell an idea. Successful implementation of a tried-and-true project can position mid-sized cities well for future larger scale investments.

Prototype and pilot wherever possible, using actual data to justify future investment and scaling.

Leading thinkers are looking to apply “data-driven” over “data-informed” strategies towards city-level decision-making. In data-driven approaches, data is collected and analyzed to determine a strategic direction, as opposed to using data to validate or confirm a hypothesis. Use a piloting approach to test key findings and assumptions in a fast, inexpensive way to build confidence in future iterations.
The Context

According to interviews, cities that integrate technology and data into their planning and budgeting processes have an easier time championing digital adoption. When “smart city” concepts are part of official plans and by-laws, data and technology become a recurring consideration, rather than an afterthought. According to Dr. Pamela Robinson, “if you institutionalize these tools in a legally binding practice, it’s a great sign that change is actually happening.” Interviewees stressed the importance of establishing strong back-end components and processes, such as data collection policies, privacy and security strategies and other foundational practices as cornerstones of successful long-term data and technology integration.

At the same time, interviewees noted the importance of being purposeful with the integration of technology into official city planning. Given the widespread influence of digital, deploying technology and data solutions requires a “system-of-systems” approach that incorporates all of a city’s subsystems, including transportation, health, and energy. “Smart city” plans should consider the full range of city services and divisions, and specific strategies should integrate smart principles.

“Smart city” plans should consider the full range of city services and divisions, and specific strategies should integrate smart principles.
Who’s doing it?

Many mid-sized cities are moving towards “smart” community plans. In January 2014, Sean Galloway, former Manager of Urban Design and Geographic Information Systems (GIS) with the City of London, a mid-sized community in southwestern Ontario, was asked to write the smart cities chapter of the City’s Official Plan. Now he’s leading their Smart Cities Strategy. The strategy, which is anticipated for release in March 2018, has four pillars: smart living, smart infrastructure, smart economy, and smart governance and decisions. In its 2015-2019 strategic plan, London identifies its Smart Cities Strategy as a key ingredient in achieving local, regional, and global innovation as well as excellent service delivery.

Similarly, St. Albert, Alberta, a city on the Sturgeon River northwest of Edmonton, has made strides in its development and implementation of a Smart City Master Plan. Developed by a Steering Committee of local elected officials and residents, the objective of the plan is to improve program and service delivery, support economic development and identify opportunities for greater organizational efficiencies. The 150-page document includes an action plan, performance indicators, and a strategy prioritization methodology.

TIPS

Work across organizational and sectoral silos.

Take a collaborative approach to data and technology by engaging a range of internal and external stakeholders in the development of plans, policies and programs, whether directly related to technology or not.

Develop digital capacity across the organization and wider community of stakeholders, including elected officials and public servants.

A shared understanding of the types of challenges that can be addressed by technology as well as its limitations can enable the development of shared solutions and stronger support for implementation.
CASE STUDY

Guelph Civic Accelerator

Guelph’s Civic Accelerator is a pilot project co-developed by the City of Guelph’s innovation team and the Guelph Lab that connects the municipal government with entrepreneurs, startups, students and companies to develop innovative solutions for challenges facing the mid-sized city. According to Stewart McDonough, Advisor, Strategy and Innovation at the City of Guelph, the accelerator grew out of the recognition that “innovators are trying to innovate and are bumping into procurement when they know the problem but not necessarily the solution. Current procurement works great when you know exactly what you need, like more buses.” Getting the Guelph Civic Accelerator off the ground required champions within the municipal government and the city’s wider innovation ecosystem, including working alongside the private sector to develop the project.

The Civic Accelerator works to eliminate some of the barriers early stage companies deal with when trying to work with government -- in four key phases: discovery, identification, bidding, and implementation. In the discovery phase, the city department works to scope out the challenge. In the identification stage, the innovation team within the Office of the Chief Administrative Officer works with the Guelph Lab and department staff to define the challenge they are facing. In the bidding stage, the Request For Proposals is released, which provides an overview of the challenge and allows businesses to pitch potential solutions. Up to one company per challenge is then invited to embed within the government for four months to work on the solution, where they have access to funding opportunities, mentorship, and government resources. At the final implementation stage, the government has three options on how to move forward: commit to purchase the solution, extend the period the company was embedded, or decide not to purchase. While the Guelph Accelerator has yet to undertake a rigorous evaluation process, conversations with city staff demonstrate that its solutions are more customized and specific than those of a traditional process. At the same time, the solutions provider also gains from the opportunity to learn and develop more accurate and effective products.

Defining the problem and adapting existing models

By identifying what wasn’t working within the traditional procurement model, the Civic Accelerator was able to adapt to design and deliver better outcomes.

Engaging companies in the process

The private sector was engaged in building the process from the get-go and promoting the Civic Accelerator, leveraging its networks and bringing insight forward on how to better engage, work with and leverage innovation from early-stage companies.

Choosing existing challenges

The easiest way to gain city staff buy-in was to find the problems they were already eager to solve that would also have an impact on the public.

Being cautious of resources

In the early stages the Civic Accelerator was cautious of managing its resources by not taking on too many challenges and building “off-ramps” to exit the process if it wasn’t going in the right direction. The team constantly worked to be agile, build trust, listen and respond to stakeholders while leveraging and building networks within a broader innovation ecosystem.
The Context

Attracting and retaining talent, particularly those with digital skills, are consistently cited as challenges for mid-sized cities. Many interviewees suggested highlighting current efforts to advance technology as part of a brand awareness tactic for mid-sized cities to attract both investment and immigration.

Part of the difficulty mid-sized cities face in attracting new residents or investments is they are often out of the public eye and are rarely showcased on a regional, national or international level. Sean Galloway contextualized this problem, explaining that London has “hundreds of tech jobs that they can’t fill.” Part of their solution is to invest in the image and communications of the city as a vibrant place for technology-related opportunities with a high quality of living.

Well marketed opportunities for technology and innovation coupled with the characteristics that make a mid-sized city an attractive place to live can position these communities as competitors to their larger counterparts, communities that often feature higher costs of living and more competition for tech talent. Incorporating local businesses and post-secondary institutions within brand building was also identified by interviewees as a powerful tactic for long-term attraction and retention of both talent and investment.
How to Be Smarter in Mid-Sized Cities in Ontario

London, Ontario, identifies its Smart Cities Strategy as a key ingredient in achieving local, regional, and global innovation as well as excellent service delivery in its 2015-2019 strategic plan.

**TIPS for success**

**Leverage high profile moments.**

Consider how public engagement opportunities like the federal Smart Cities Challenge can provide an opportunity to kickstart and enable the development of a narrative and brand around your city. Work with the community to build a collective identity that reflects local perspectives and values.

**Conduct user research to understand how your community is currently perceived by both residents and non-residents.**

Identify baseline measures around perception, talent attraction and retention, and other key metrics to enable identification of the impact branding and story has in your community.

**Who’s doing it?**

The region of Waterloo, Kitchener, and Cambridge is a success story when it comes to city branding. Initially known as the home of Research in Motion (RIM) and BlackBerry, the area has quickly become a tech hub in North America. In 2017, it was classified as Canada’s fastest growing tech talent market. According to Geoff Hogan, the region is an example of “an ecosystem where you would want to be” due to its similarity to the early days of Silicon Valley. This sentiment is reflected in the area’s high growth rate. From 2010 to 2015, the region has increased its talent pool by more than 100 per cent, according to Canada-based research company CRBE. At the center of one of Canada’s biggest tech hubs is Communitech, a community organization funded by all three levels of government that supports companies in the region at all stages of growth with investment, business support, space to work, and more. The organization also simultaneously operates as an economic development agency and marketing board. According to a 2015 *Globe and Mail* article, Communitech was characterized as “leading the rebirth” of the Kitchener and Waterloo region.
In Kitchener, local leaders from both the public and private sector have driven a start-up boom in the city. Working with senior levels of government, these leaders have helped foster an exciting and dynamic local technology economy. At the centre of this economic revitalization are the Tannery and the Communitech Hub.

Once the largest tannery in the British Commonwealth, the Lang Tannery is a 450,000 sq.ft. facility that has been transformed through redevelopment into a multi-use business, tech and commercial space. The Tannery is home to the Communitech Hub, which offers office space, programs and services to tech startups and growing mid-sized companies, and houses a number of corporate innovation partner labs for large enterprises. In housing a large number of entrepreneurs in the same space, Communitech is able to provide them with not only the spaces they need to succeed, but also the opportunity to meet and work with one another.

The impact of the Tannery and Communitech has been profound on the local economy, which is continuing to draw a number of tech businesses to the city. In just the past five years, 1,845 new technology start-ups have formed in the area raising at least $650 million in investment. The Communitech 2016 Annual Report estimates a private and public sector client economic impact of $1.7 billion. Deloitte Consulting estimates that each dollar of public investment into the Communitech Hub strategy has generated $13 in economic activity. Through sector diversification, local innovation and entrepreneurship, the Tannery, Communitech, and the surrounding Innovation District have turned Kitchener into a tech city. It has even become a destination for leaders from other cities looking to understand how a tech ecosystem works, with approximately 15,000 people visiting the Tannery each year.

**What made the Communitech Hub work?**

**Fostering strong community relationships**

Local leaders leading the development of the Tannery placed a strong emphasis on building relationships with the community. From the redevelopment of the site in 2009 to today, fostering community outreach and creating community awareness around the Hub has been a priority.

**Establishing partnerships early on**

Building partnerships with multiple stakeholders, especially upper levels of government and the private sector, and being ready for the compromise that came with them was key to Communitech’s success.

**Meeting a demand**

It is essential that a business and market demand exist for what you are trying to build. The various leaders behind the Hub made a point of reaching out to the tech community to find out what they wanted to see in a new facility. This outreach also means flexibility, as the programming has changed over time to reflect the needs of the tenants and community.
Data and technology are changing our world at a rapid pace. These technological advancements present intense pressures as well as exciting opportunities for those working to improve their communities. To ensure residents are able to access and benefit from a more technological future, governments at all levels are responsible for undertaking appropriate investments in consultation, planning, infrastructure, resources, and training to address these pressures.

As this paper argues, mid-sized cities are well-positioned to be leaders in this space. Their size positions them to be test-beds of innovative approaches that also integrate values of inclusivity and accessibility. Championing new approaches can lead to local and regional impact far beyond their own borders. Conversations with experts from across Ontario reveal certain practices and principles are key ingredients in enabling the full benefit of technology in mid-sized communities. Through conversations with some of the leading thinkers and practitioners working in and around technology in mid-sized cities, we identified 9 insights for leaders to consider.

1. Identify needs first, technology second. Take the time to define the problem you’re trying to solve. Only with this understanding in place can the right approach to technology be selected.

2. Design for inclusion. Pay special consideration to communities who might get left behind when you adopt new technologies.

3. Let community in. Provide tangible support to unlock the full potential of local residents, then tap into it.

4. Look outside for new solutions. Harness the combined power of public service champions, community-driven networks, and private sector innovations.

5. Think beyond city boundaries. Collaborate and share lessons learned with other cities.

6. Enable and empower public servants. Identify city staff and community members who are pushing an innovative agenda, celebrate them, and provide support in scaling up their work.

7. Invest in the fundamentals. Focus on fundamental service delivery and capacity-building through small-scale projects before taking on ambitious technology projects.

8. Integrate to implement. Integrate technology and data into your planning processes and resource-based decision making to ensure projects move forward.

9. Brand to build buy-in. Invest in the image and communications of the city as a vibrant place for technology-related opportunities with a high quality of living.

While this paper provides a jumping-off point for exploring technology in Ontario’s MSCs, there are still clear gaps in need of further investigation, including:

- Understanding and mitigating privacy and data sovereignty issues
- Unlocking the full potential of open data and open government
- Addressing technical skill and capacity gaps
- Coordinating and implementing province- and nation-wide strategies
- Documenting and evaluating mid-sized cities’ progress
Even with these gaps in understanding, examples like the Guelph Civic Accelerator, the SWIFT Network, Code Heroes and Innisfil’s partnership with Uber show that mid-sized cities are already meeting the challenges and opportunities that technology and data present head-on. Sharing the successes and challenges of these strategies, while also providing education and insight on areas of caution, can enable government, civic and private sector innovators to build flourishing mid-sized cities. Learning from experience and building a culture that challenges the status quo can point to a bright future for mid-sized cities in Ontario – and across Canada – when it comes to technology-driven innovation.

Where to from here?

Readers may wonder what next steps they can take to put the findings of this report to work in their communities.

CONTACT US

Not sure how to bring these practices to life in your community? Talk to Code for Canada and Evergreen – we’re here to help. National non-profit Code for Canada, which offers a range of resources for changemakers working in communities of all sizes across the country, can be contacted through our website at http://codefor.ca. Evergreen is dedicated to making cities flourish. Through our award-winning suite of programs, we have actively engaged Canadians in creating and sustaining healthy and dynamic urban environments in our schools, public spaces, housing and transit systems, and communities at large. We can be contacted through our website at evergreen.ca.

KEEP LEARNING

Technology changes fast, so it’s important to adopt a stance of continuous learning to stay up-to-date. Many organizations offer free learning events that are often broadcast online through webinars. Attend conferences and other gatherings that are relevant to this work. Host a consultation with local community members to learn more about their needs and enable knowledge exchange. Support or conduct additional research to adapt the findings of this paper to your local context.

START OR JOIN COMMUNITIES

Want to connect with other people working to bring the best of technology to their communities? Join existing communities of practice like the Municipal Information Systems Association (MISA - http://www.misa-asim.ca/) or the Association of Municipalities of Ontario (AMO - https://www.amo.on.ca/). Get involved in your local civic tech group or start one if it doesn’t yet exist in your community (see http://codefor.ca for further guidance on finding and starting civic tech communities). Connect with others in your community, region and beyond to organize and advocate for the supports you need to make your “smart” city even smarter.

PROTOTYPE AND PILOT INITIATIVES

Whether it’s taking something successful from another community, like the case studies highlighted in this paper, or trying out something new, there’s no better way to learn than by trying. Many of the new ways and methods involved in “smart” cities can be tested in a small-scale way with minimal resources and time.
REFERENCES


22 Landry, Jean-Noé. Executive Director, Open North. December 2017 conversation.


REFERENCES


