Smart Cities Challenge Submission

Smart Connected Communities

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Name of Community: City of Toronto
Province: Ontario
2016 Statistics Canada Census Population: 2,731,531
Indigenous Community: No
Prize Category: $50 million (all population sizes)

Challenge Statement

We will significantly reduce poverty among children living in older high-rise rental communities by empowering 100% of their families with the digital tools necessary for a more prosperous future: high-speed internet access, the means to increase digital literacy and a smart platform to connect to enhanced economic opportunities.

Outcomes

Over half a million Torontonians live in older high-rise rental communities, made up of nearly 1,200 ageing buildings. These communities were built after the war and have been the core of Toronto's affordable housing stock for a generation. Home to many larger families, they are often the first place of arrival for those new to the country. They are also home to a high number of youth, more than the city average, and therefore represent our future city.

However, these communities are geographically isolated from many services, jobs and opportunities some Torontonians take for granted. Designed as the 'tower in the park,' and for car access, these sites are physically segregated from full city life and almost always devoid of child-care, services, education facilities or programs that link residents to other opportunities and the city at large. As a result, residents of these communities must overcome additional barriers and obstacles to employment, social and cultural activities and even education and training.

In addition to being physically isolated, many residents in these communities are digitally isolated. This is due to the fact that some of these lower income households are unable to afford good quality, high-speed internet access and/or do not know how to make the best use of the world wide web. This further divides these residents from the opportunities that they require in order to fully participate in our rapidly changing, digitally-focused economy.

In short, we are not affording these residents the full set of opportunities Canadians expect and deserve.

Within these communities, approximately 47,000 children under the age of eighteen live in low-income households (2011 Census data analysis). This accounts for 43% of the children who live in these communities and is approximately twice the percentage of children who live in low-income households in the city as a whole. This is tragic.

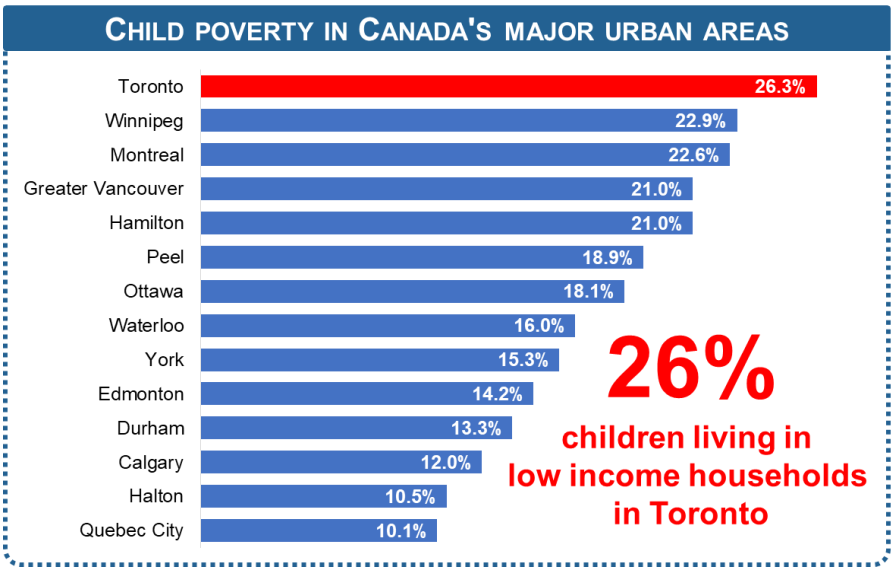
(2016 census data analysis has been requested from Statistics Canada but was not available at this time. Based on related internal data, we believe 2016 data will align closely to 2011 data)

Our proposed project, Smart Connected Communities (SCC), will significantly reduce child poverty within these older high-rise rental communities. This will be achieved through the development of a smart community-focused platform, increased access to high-speed internet and the means to improve digital literacy. We will implement this by creating a broad public, private, NGO and stakeholder-driven platform. Using this platform, we will bolster digital connections with physical interventions and ties, linking Toronto's hundreds of thousands of older high-rise residents to opportunities in the city and region at large.

While we will initially focus on older high-rise rental communities, where rates of child poverty are high, the digital investments and innovations fostered by SCC will allow us to tailor and share the platform with diverse neighbourhoods in the city, the province and across Canada, in a way that our current analog approaches cannot efficiently achieve. We believe that SCC will be a turning point in combatting the digital and economic divide for all Canadians.

<u>Challenges and Opportunities</u>

According to 2016 census data, 26.3% of children under 18 years of age live in low-income households in Toronto. This is the highest rate among large urban areas in Canada. One of the most common barriers to economic opportunity for many of these families is the lack of affordable high-speed Internet at home or on their mobile phones; a basic necessity that people not living in poverty may take for granted.



Digital access and literacy are basic requirements for thriving in today's economy and critical for living and working in the digital age. Among other things, internet access helps residents connect with friends, news and current events, government services, job searches, skill upgrades and for simple tasks like price comparison or planning public transit travel.

In addition, the nature of work has changed and will continue to change rapidly. The Institute for the Future (IFTF) estimates that 85% of the jobs that will exist in 2030 have not been invented. Without technological skills, enabled by high-speed internet access, families living in poverty will keep falling further and further behind.

Our proposed project, Smart Connected Communities, aims to break the cycle of poverty in order to set our children up for future success by addressing this rapidly changing economic reality.

Digital access depends on affordability. A recent report commissioned by the City called Advancing Broadband Infrastructure and Internet Connectivity concluded that "Although the City has good overall access to internet options, there is clearly a digital divide based on affordability." Statistics Canada data shows that slightly more than 60% of Ontario households in the lowest income quartile have "access" to broadband internet at home, meaning that it is available for purchase. In Toronto, nearly 100% of households have "access" but this refers only to the necessary infrastructure being in place.

Internet, at current average prices, is a significant expense for low-income families. For example, a couple with one young child receiving Ontario Works is eligible to receive a maximum of $1,172 for basic needs and shelter costs. One common definition of affordable is, 80% of average market rent, which for Toronto in 2018 is $1,141. This means that for low-income families, almost all of their income is dedicated to paying rent, leaving little for anything else. With a combined average monthly cost of $150 for home internet and one mobile data account, many residents cannot afford it.

Further, limited internet access could cause other costs to be higher. For example, for a lone parent in a low-income household, it could mean higher grocery bills. This is because food prices can be compared online. Without home internet access several hours can be spent travelling from store to store to find the lowest prices. This precious time could be focused on working, improving potential employment skills or spending time with their children.

The City's Poverty Reduction Strategy includes an action to, "expand digital access and literacy to ensure residents can effectively access programs and services online." A survey of Toronto Public Library (TPL) computer users shows that "27% of users do not have regular personal access to a computer connected to the Internet, other than the library and 67% of Wi-Fi users surveyed come to the library to work or study."

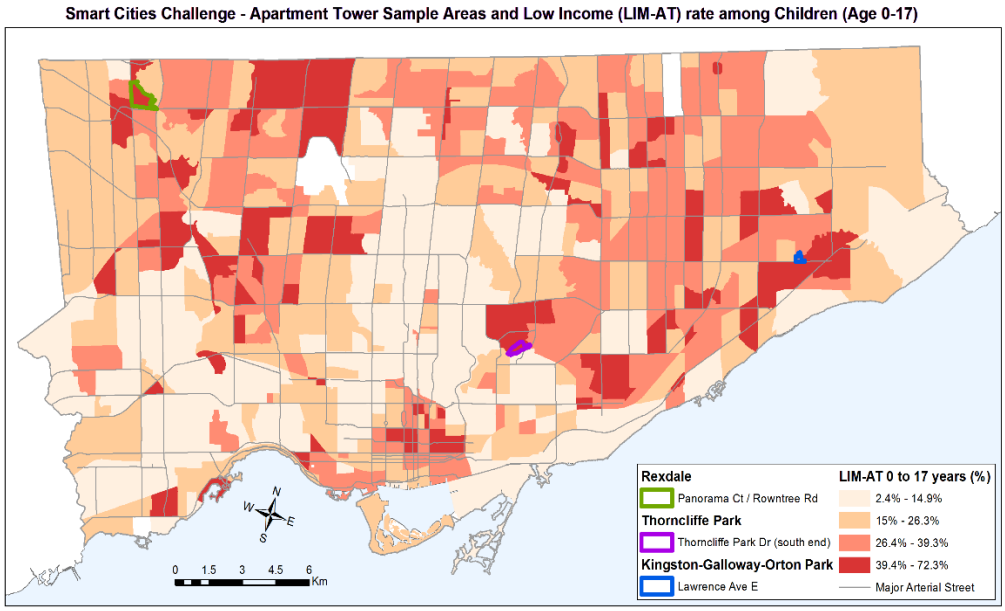
TPL is a crucial resource for residents including children who have limited access to the internet and other technology supports. With 100 branches across the city, libraries are accessible, community hubs where residents can take the advantage of free access to computers, Wi-Fi, and other technology supports. For many in the city, this is the only place where they have access. At closing time, some children sit on the steps of the library to use Wi-Fi, in order to finish their homework.

To illustrate some of the challenges faced by people living in older high-rise rental communities in Toronto, we have sampled three areas using 2016 census data:

- Thorncliffe Park is located in East York – relatively central in the City. In this sample area, 90% of residents are members of a visible minority group and there is a large population of newcomers to Canada (40% of the population immigrated to Canada in the last 10 years). While 57.2% of residents are low-income, this number jumps to 72.4% for children under the age of five. The community has an unemployment rate of 17.7% - more than double the City's rate of 8.2%. All residents are renters.

- Rexdale is located in the city's North West. In this sample area, located to the north of Finch Avenue West and east of Kipling Ave, the residents are 85% visible minority, 30.5% low income and 39% newcomers to Canada. The unemployment rate of 13.9% is still significantly higher than the city average of 8.2% and the number of children living in poverty is high at 43.3%. The percentage of people who do not speak English is much higher in this part of Rexdale (11.6%) is more than double the city as a whole (5.0%).

- Kingston Galloway Orton Park (KGO) is in Scarborough in the city's east end. 81% of residents are visible minorities and 49.6% are low income. While 21% of census families in Toronto are lone parent families, in KGO, lone parent families account for 48% of census families. A large proportion, 60.5% of children under the age of five, live in low-income households.



Child poverty rates are linked to decreased caregiver earnings. Low-income residents experience significant social and economic barriers to a wide variety of opportunities. Moreover, while income levels in the City and across the region have been largely stagnant, housing costs and other costs of living have increased, exacerbating the problem.

A tenant survey conducted by Association of Community Organizations for Reform Now (ACORN) showed that nearly half of these families have difficulty paying rent each month and one-in-four go without necessities in order to pay their rent. These residents face systematic barriers to economic opportunities that are vast and differ by neighbourhood, gender and ethnic background.

As noted in the 2016 paper by Policy Horizons Canada titled, Canada and the Changing Nature of Work, online employment opportunities are increasing. “Online work platforms enable individual workers to advertise their skills and find short-term contracts with employers all over the world – creating a global digital marketplace for labour". An estimated 48 million workers were registered on online work platforms globally in 2013. The market is estimated to be growing at 33% annually.

The influence of online resources, social media and technology are fundamentally changing the way we live, work, learn and play. A digital literacy skillset will continue to be essential to future work and fuel lifelong learning for the purposes of collaboration, advocacy, communication and expression.

The complexity of the social services system makes it difficult to find the right opportunities. Agencies and service providers don’t have the resources to effectively connect hard-to-reach, multi-barrier communities with the services they desperately need.

Because of these resource challenges, services are increasingly being delivered online-first, which can be more efficient, have a wider reach and take advantage of technology

innovations. However, because of the aforementioned barriers in access and digital literacy, the impact of these new innovative services and opportunities are weakened in low-income communities.

There is an urgent need to close these gaps. Providing digital access and literacy, as well as the resources enabling residents to take advantage of social supports and economic opportunities, will lead to improved economic outcomes and ultimately reduce child poverty.

Alignment with Government of Canada Objectives

Smart Connected Communities, closely aligns with the Government of Canada's smart cities approach in the following ways:

Openness

A key dimension of the platform is the sharing of governance among the City, TPL and the communities. This will help ensure that open data principles are maintained and that the public has a direct role in ensuring transparency, privacy and accountability for data stewardship.

Integration

The reduction of child poverty is a goal shared by communities, NGOs, municipal, provincial and federal departments and agencies. To facilitate the integration of all stakeholder ideas and goals, we will digitally enable our analog, multi-agency partner approach that addresses specific community needs to be based on engaging local community's feedback.

Transferability

We will deploy solutions on cloud-based, open platforms that ensure data protection and compliance with current and future regulations. By design, the platform will scale from supporting a single community, to all communities within a city and then more broadly to support any community choosing to use it.

Collaboration

We conducted an extensive and inclusive consultation/ideation process with residents, subject-matter-experts, private sector experts and technology start-ups to name a few. We partnered with:

- Tower Renewal Network
- The Toronto Region Board of Trade - Smart Cities Working Group (two roundtables and two workshops)
- Community Groups
- Not-for-profit organizations
- Post-secondary students
- Academia
- City Council & staff
- Private sector C-suite
- Toronto Public Library Youth Advisory Groups
- Indigenous community workshop

The public library hosted a high-profile panel discussion and ideation session at the reference library branch, which was broadcasted over the internet and connected to inner suburban branches through telepresence technology. The library also supported our smart city challenge survey by offering hard copies at branches across the city. And they invited our team to join community meetings with residents including their Youth Advisory Groups in low-income communities such as Thorncliffe Park.

All of these stakeholders expressed strong interest and support for our proposed project and future partnership opportunities. In many cases, these partnerships were already established for related initiatives.

Outcomes and Measurement

We will use technology tools and data in the following ways:

1) Identify the unique and varied needs of residents in specific communities by collecting and analyzing data from all sources.
2) Connect residents to personalized and customized economic opportunities. We will use data analysis, artificial intelligence and machine learning tools.
3) Provide access to online learning tools and classes to support and build digital literacy skills.
4) Use advanced analytics for measuring outcomes to address identified issues and make necessary changes in real-time.

We will use a variety of data sources to measure progress against our desired outcomes, including:

- Platform Analytics: Within the platform, a data/analytics engine will be used to measure usage and progress towards our goals. The design of the engine will be led by experts from Toronto based universities and colleges as well as leading technology companies with world-class expertise in artificial intelligence and predictive analytics.

- Bridge Technology Assessment Toolkit: To track digital access and digital literacy outcomes, we will collaborate with TPL to pilot the newly announced

"Bridge Technology Assessment Toolkit." The toolkit measures primary and secondary outcomes including community, social and civic engagement; creativity and innovation; workforce development; entrepreneurship and business development; and can provide data along geographic and demographic facets. The toolkit also has the ability to benchmark usage and outcomes across library systems in communities large and small, across the country.

- Primary Research: The City of Toronto is home to esteemed higher education institutions with world-renowned researchers and educators who are involved in smart city-related work. The institutions include the University of Toronto, York University, Ryerson University, OCADU and Centennial College, George Brown College, Humber College and Seneca College, through our consultation process, academic leaders and administration provided insight, analysis and an ongoing commitment to collaborate with the City and its partners on its smart city program. Access to this pool of expertise and research capability will be integral to our proposed project.

Engagement

Based on current trends, by 2025 Toronto will be sharply divided between wealthy and poor neighbourhoods (Hulchanski, 2010). Poverty hurts our communities, our economy, our bottom line and our pride in a city where everyone is included and has an opportunity to succeed.

In Nov. 2015, Toronto City Council unanimously adopted the Toronto Poverty Reduction Strategy. The strategy was created using a collaborative, community-driven approach. It included the perspectives of a broad range of groups, including the private sector, non-profit sector, researchers and experts. It also included those who have lived and experience poverty.

The Toronto Poverty Reduction Strategy was developed using a multi-stage engagement model that empowered communities differentially impacted by poverty. This includes newcomers, racialized communities and women to name a few. Engagement also included the private sector, public sector practitioners, policy-makers and community leaders in poverty reduction.

The first phase focused on identifying key themes and developing a vision for poverty reduction in Toronto. Phase two refined these ideas and identified priority actions. A final phase engaged with front-line and senior management staff from across the organization as well as making presentations to all of Toronto's municipal standing committees.

This process created a new and effective community consultation model for the City of Toronto and best practices were used to inform this proposal. We began with a public survey to determine our residents' most pressing issues, available at Toronto.ca/smartcitieschallenge, and distributed hard copy surveys through 100 library branches.

We issued a media release on the launch of our public engagement campaign to encourage resident and stakeholder participation. In total, eight news stories covered the announcement in publications such as The Toronto Star and betakit.com. Coverage spanned major local, community and trade outlets, including print, online and radio. The tone of the coverage was informative and positive.

Key messages were amplified in 100% of the stories and garnered the following results:

- Analysis of social media coverage, including Facebook and Twitter, showed over 2,062,500 impressions and 4,363 URL clicks on toronto.ca/smartcitieschallenge.
- Over the "call for ideas" period there were 8,926 unique visits to our webpage and 12,010 views with an average view time of 267 seconds. Traffic peaked on Jan. 9, after the launch, which coincided with the Toronto Star publication.
- Online ads were placed on CP24, Weather Network, CBC.ca, CTV.ca, Globe and Mail, Rogers and Postmedia between Jan. 8 and Feb. 2. The industry standard for an excellent click-through-rate (CTR) is 0.10%. All advertisements exceeded the standard with an average CTR of 0.21%.

We received over 1,000 online survey responses, 200 hard copies and 137 formal submissions covering a wide range of ideas. The primary data was obtained from an open survey conducted Jan. 8 – Feb. 2 and natural language analysis using Google Cloud Platform, IBM Watson and Aylien showed that affordable housing, mobility and job growth were the issues we should focus on.

The public survey clearly shows a preference for a partnering model. Over 74% of the 1000 respondents agreed with the statement, “The City should partner with a mix of large and smaller, newer companies, community organizations and other groups to solve this issue.”

The City collaborated engaged stakeholders in the following ways:

Public Panel Discussion

We partnered with the TPL, the world’s biggest and busiest, urban, public library system, to engage the through their branches and communications channels, which reaches people throughout the city. Through their 100 branches and innovative digital programs, we established community relationships and trust with the communities we seek to serve with SCC.

In January, 180 members of the public attended a Smart Cities Challenge panel discussion at the Toronto Reference Library with the City's Chief Transformation Officer, Chief Information Officer, General Manager, Transportation Services and the City Librarian.

Telepresence technology was used to provide an interactive connection between the panel and four library branches located in older high-rise communities. The event was live streamed via Facebook and live-tweeted via Twitter.

The panel was followed by professionally facilitated workshops with invited community organizations such as youth groups, newcomer associations and more.

The City of Toronto & its Agencies

All City Councillors members and division heads received a briefing note regarding the campaign launch and engagement process, with an open invitation for one on one consultations with the appropriate City staff.

Picking the Challenge

Through all of the consultations described above, we received hundreds of suggestions on what the City of Toronto's Smart City Challenge should focus on.

To craft an ambitious, measurable and achievable challenge statement, an inter-divisional, executive leadership team participated in a professionally facilitated workshop to select six top ideas. Members of the Smart City Challenge extended working team were invited as subject matter experts to consult on the different ideas generated. Participants included:

Core Team

- Michael Kolm, Chief Transformation Officer & Chair | Transformation Office
- Elliott Cappell, Chief Resilience Officer | Resilience Office
- Mike Williams, General Manager | Economic Development & Culture Division
- Rob Meikle, Chief Information Officer | Information & Technology Division
- Siri Agrell, Director, Strategic Initiatives | Mayor's Office

Extended Working Team

- Barbara Gray, General Manager | Transportation Services Division
- Costanza Allevato, Director, Community Resources | Social Development, Finance & Administration Division
- David Jollimore, Director | Real Estate Services
- Eileen de Villa, Chief Medical Officer | Toronto Public Health
- Janie Romoff, General Manager | Parks, Forestry & Recreation Division
- Michael Mizzi, Director, Zoning and Committee of Adjustment | City Planning
- Omo Akintan, Director | Equity, Diversity and Human Rights Division
- Patricia Walcott, General Manager, Toronto Employment and Social Services
- Paul Raftis, General Manager, Shelter Support and Housing Administration
- Paula Kwan, Director | Civic Innovation Office
- Suzanne Field, Consultant, Policy Planning and Projects | Children Services
- Tracey Cook, Executive Director | Municipal Licencing and Standards Division

In March 2016, the TRBoT and the City formed the Smart Cities Working Group, which consists of 57 members from across numerous sectors including technology, development and business, innovation/incubator, academic, creative and public. The group has collaborated through meetings, workshops and summits to catalyze the vision for a smarter Toronto. Two roundtables and two workshops with the working group generated ideas and support for our proposal and, more importantly, for a city of the future.

We hosted two private sector executive leader roundtables from a wide range of industries including, but not limited to, telecommunication, media, utilities, creative agencies, technology and more. This engaged group provided feedback and discussed collaborative ways of moving forward and sharing resources in addition to investigating the strategic alignments of their business objectives and company values.

The post-secondary community has been enthusiastically engaged throughout the process, with extensive, repeated consultations held with over 60 academic professionals and several student groups from the following institutions:

- Ryerson University
- University of Toronto including Scarborough campus
- OCAD University
- York University
- George Brown College
- Centennial College
- Humber College
- Seneca College

Community groups and NGO's were engaged through facilitated sessions and conference calls, including, but not limited to:

- United Way
- Tower Renewal Partnership
- Centre for Connected Communities
- Toronto Foundation
- Maytree
- Youth Council Cabinet

Modelled by a multi-party community approach, which is used to inform the Tower Renewal Program, Poverty Reduction Strategy and Toronto Strong Neighbourhoods Strategy, we also consulted with a variety of organizations in older high-rise rental communities.

The inclusive, fair and collaborative selection process began with the use of cloud-based decision-making software that enabled the core team to review 137 formal submissions, choose the most promising formal ideas and measure them against the survey results and federal criteria. The team aggregated the ideas and turned them into six tangible solutions and then shared them with all stakeholders and conducted four more facilitated workshops to examine the quantitative and qualitative data.
We extensively workshopped the six solutions to gauge the level of passion, engagement and potential private sector partnerships amongst the stakeholders.

The final decision was made by popular vote with the City's extended working team who supported the stakeholder group's preferred solution. The unanimous vote was to focus on vulnerable residents in older high-rise communities.

To keep the up momentum, we will sustain engagement at the neighbourhood level through local planning tables supported by the Toronto Strong Neighbourhoods Strategy.

We are committed to continuing to foster and sustain strategic partnerships with an enthusiastic pipeline of stakeholders who participated in the engagement process and will continue to:

- Engage residents and local groups in older high-rise tower communities;
- Conduct more public surveys and consultations;
- Ideate with the government technology and start-up communities;
- Formally speak publically regarding our Smart Cities Challenge engagement process and challenge statement;
- Be active participants in the Toronto Region Board of Trade (TRBoT), Smart Cities Working Group;
- Host roundtables with the private sector, academia, student and non-profit organizations; and
- Engage other residents through various forms of public consultation.

We are currently developing the short and long-term roadmap for Toronto to become one of the world's leading smart cities. Strategic partnerships are critical to our success. The relationships stewarded through this process, by connecting stakeholders with a shared interest in addressing a bold goal, is encouraging. We have tapped into energy and resources that will move the city forward.

Activities

In order to connect communities to opportunity, SCC will be built on a foundation of:

- Affordable high-speed Internet access as a community-wide public utility;
- Enhanced digital literacy skills; and
- Privacy-protected community software platform.

To address digital access we must address affordability. The November 2017, a City report title, Advancing Broadband Infrastructure and Internet Connectivity Broadband notes "…that price remains a significant barrier and that a 'digital divide' exists between The City residents with and without access to the Internet. This would require new or redeployed resources and/or the identification of new funding models."

A portion of the $50M will support a proof of concept approach to ubiquitous internet access for low- income families through targeted financial subsidies and augmented by a sustainable and scalable Wi-Fi hotspot lending program through TPL. We will also partner with industry to prioritize deploying 5G wireless broadband technology (the fifth-generation), which provides more speed and coverage than 4G, in priority neighbourhoods. Part of the proof of concept work will be to develop a sustainable approach to funding.

A past survey of library users who borrowed a hotspot found over half had a household annual income of less than $20,000, about 80% said they didn't have home Internet access because they couldn't afford it and nearly two-thirds said the library was their only source of connectivity.

To scale affordable Internet access across the older high-rise towers, we'll partner with telecommunication and the technology industry in addition to older high-rise, community landlords. We'll build upon existing, stakeholder relationships within the Tower Renewal Program to invest in the infrastructure in order to bring 5G networks to these neighbourhoods first.

We will embed high-speed Internet access and digital literacy supports right in the communities by expanding TPL's community librarian program. In addition, we will implement a shared workspace model that doubles as a learning centre on the ground floor of selected towers making our vision of connecting communities to opportunities a reality.

We will partner with TPL to provide the digital literacy supports for residents to participate in the digital economy. Significant services of the of a modern-day library are providing access to current and emerging technologies, providing access to information, teaching digital literacy, bridging the digital divide and providing the connectivity vital to today's social and economic success. No public institution other than TPL has the mandate and reach, physical and technical infrastructure, talent and community presence to support a meaningful digital inclusion and literacy program of this scale and scope. Much of the work will be developing scalable models for Toronto, which would apply to other communities in Canada, irrespective of size and status of their current library systems.

We'll also build on our established networks within older high-rise communities that deliver innovative programs. Multi-national organizations such as Cisco, Siemens, Bell, Rogers, Samsung Canada, Microsoft Canada to name a few, are already engaged in discussions to support the City and, specifically, SCC.

In support of SCC and to raise awareness of the importance of digital literacy, the City of Toronto has announced the launch of Digital Literacy Day on May 31st, 2018. In partnership with the Toronto Public Library, the objective is to inform Torontonians about education and training programs currently available and to encourage use. Throughout the day, private, public and not-for-profit organizations will offer almost 60 digital literacy programs available free to the public at locations across the city. A long-term goal of the initiative is to develop measurements to assess the state of digital literacy in Toronto.

At times, there can be too much information on the internet to navigate. The services delivered online are generally not tailored to specific communities or individual needs. Service providers are not consistently connected with each other or the communities they serve. We will build the SCC platform, which will connect residents to the right information and resources in a much easier way.

In order to address the high needs of low-income residents with varied profiles, and make it easier for service providers to connect with users, we will establish a secure, open platform, jointly governed by the City, TPL and representatives from the older high-rise rental tower community. The SCC will accelerate how we provide opportunities for potential sustainable income in the short term while building an open space and digital skills for the future. By owning the data, the City and our partners will gain insight into the needs and usage in real time so that service providers can adapt to needs.

SCC will serve a wide variety of needs and functions. Some examples are:

1. Helping a working mother who needs to upgrade her skills before seeking employment after being out of the workforce for a number of years. She would be connected with appropriate workforce development support and find childminding in the community, allowing her time to study.

2. Assisting a community services worker who's seeking help with elder care support. They could use SCC to identify and match suitable volunteers.

3. Helping city staff analyze patterns of services to create clear pathways through the system to make it more user-friendly.

4. Assisting an NGO to use the "cross collaboration portal" feature of SCC to share lessons learned from a community group in one part of the city with groups elsewhere in the city.

5. Using machine learning and advanced analytical techniques to ultimately identify and recommend services to users the same way that Amazon recommends products based on previous purchases. For example, if a resident has passed certain online courses and meets some demographic criteria (i.e., language) the platform may recommend job opportunities.

6. A situation where a single mother who is a newcomer, learns that she is eligible for a child care fee subsidy. She also learns that there's a nearby after-school recreation program for her 10-year-old daughter and that a skill-based mentorship program is offered at a local school. However, after having trouble understanding the fee subsidy application form and finding that the mentorship program is only offered during the times that she needs to pick up her children, she provides real-time feedback through SCC, which matches her with a volunteer who can help her complete the application. Her challenges are also compiled into aggregated service access stories that are available to service planners. The service planner uses the findings to improve service delivery and to spark innovative solutions in meeting resident needs.

SCC will follow these guiding principles:

1. Community Content is curated and maintained in the communities, by the communities, for the communities. The City and its partners are enablers not gatekeepers of connected communities.
2. To cross the digital divide, we must go beyond high-speed Internet access and address digital literacy.
3. Open data enables information sharing and collaboration. It belongs to the residents of Toronto who will generate the data – not to a private corporation
4. Open platforms are vital and will foster innovation from Toronto's thriving start-up community
5. Insights from data must be used not only to match producers and consumers but to predict and optimize how residents find and access relevant services.
6. Data privacy and security for our residents will not be compromised.

<u>Application & Technology Strategy:</u>
Our high-level conceptual architecture (see below) will include:

<u>Connectivity Options</u>

- High-speed Internet access in households (facilitated as required for full participation).
- Access to devices in libraries and other community-accessible locations.

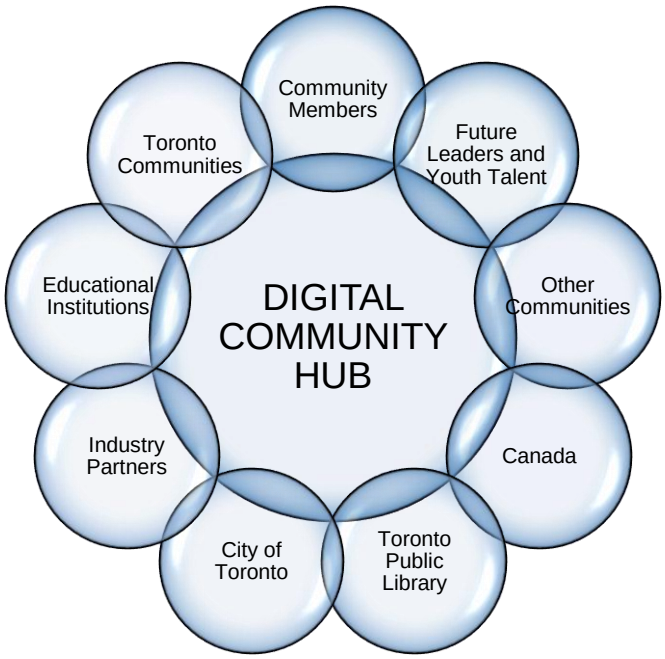
- Mobile access solutions onsite at high-rise rental communities.
- Mobile device access.

Access Management

- Library cards that will be used for identity and access management, which will build on an existing base of users who trust the TPL. It will create a connection between the library and the platform in the minds of the users. Smart library cards can help deliver customized, personalized and localized services. Using the library card for access makes the solution transferrable since communities large and small across the country have existing library infrastructure that can be leveraged.
- Identity management will ensure that services are being accessed by residents, allow services to be tailored to individuals and enhance our ability to perform analysis about how the platform is used.
- Self-serve identity and access management.
- Anonymous access for certain applications.

Content Management

- The platform will be accessed through multiple channels and provide services in multiple languages.
- A portal for existing services from the City, other service providers and a wide variety of new applications developed by, and for, the community.
- Social media functionality for messaging, sharing community spaces and applications for matching and sharing skills and services.

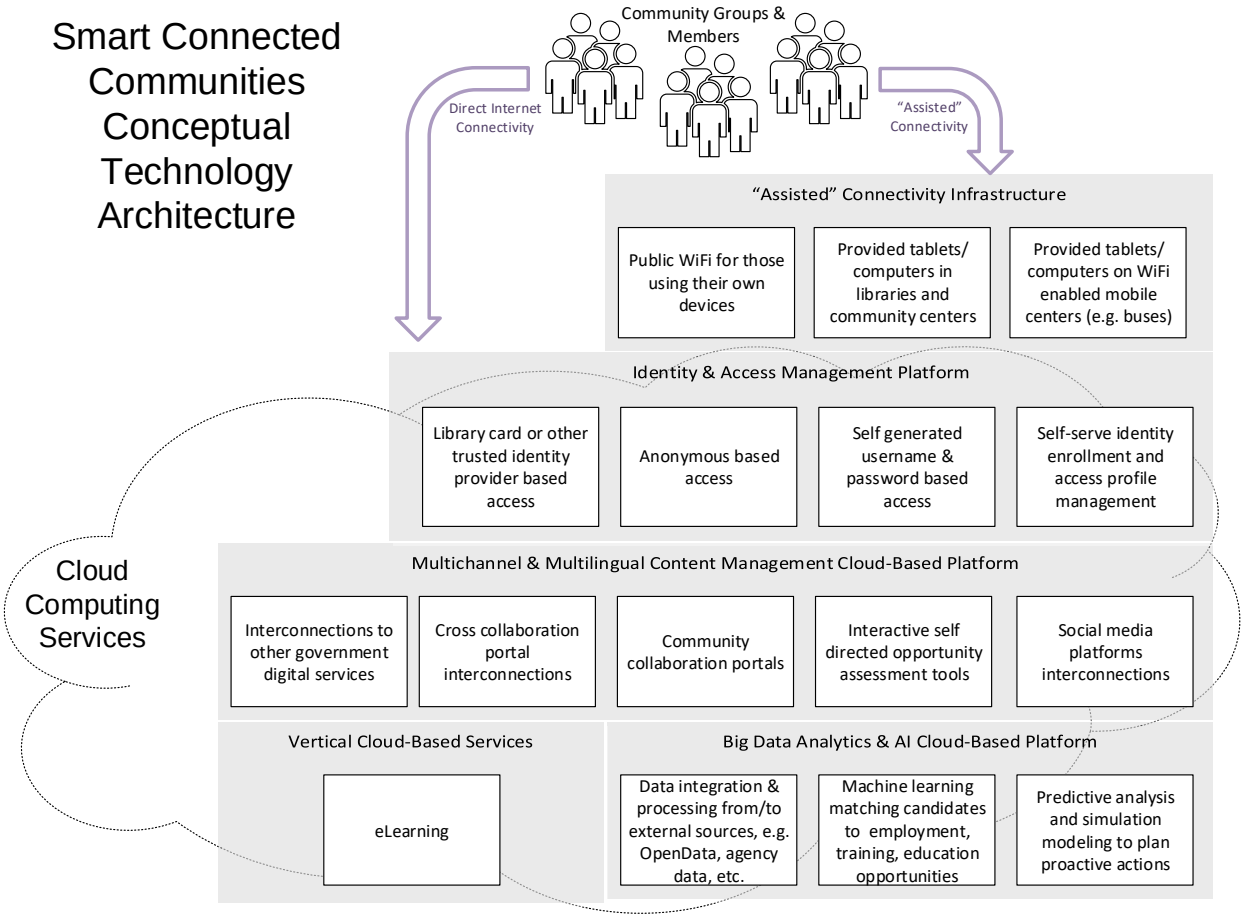


Cloud Platform and AI

- A cloud-based e-learning platform for digital literacy.
- Linkage to the City's Open Data portal to ensure maximum integration with other sources of data.

- Big Data Analytics and an AI Cloud platform will support functionality. These supports will provide data integration to and from external sources. This enables machine learning, based on user patterns and performs predictive analysis and simulation modelling to plan proactive actions.

At this stage, our SCC architecture is conceptual and we envision the delivery will be integrated commercially through available software solutions and run on scalable, highly secure cloud services in Canada. We will make our privacy-protected solution available nationally as part of the federal Smart Cities Challenge vision.



Alignment to Community Goals

Our proposal directly aligns with the following existing City strategies:

<u>SCC will improve Economic Vitality</u>

- People: SCC will provide our workforce with a convenient place to access the skills, education and knowledge demanded by an evolving and competitive economy.
- Generating employment: SCC will help the economy by connecting residents to quality jobs and a range of employment opportunities.
- Dynamic economic base: The city has diverse employment opportunities and is world-renowned for its educational institutions, research, entrepreneurship and innovation. SCC will help people access these opportunities.

- International image: We are internationally recognized as a desirable place to live, work, visit, invest and conduct business.
- SCC will help increase Employment Opportunities for low-income households by:
- Aligning workforce development, strong neighbourhoods & economic growth: We will break down internal silos and strategically mobilize more City divisions to collaborate on initiatives that will help people find quality jobs and help employers find skilled talent.
- Ensuring equitable opportunities for all: Working as One, is a City program that matches employers with employees. It was developed due to the absence of coordinated employment services along with social service programs.

<u>SCC helps fulfil the goals of equitable Social Development</u>

- Community capacity: Our proposal will provide a medium that will help individuals and groups have a collective sense of belonging, contributing to the city and be able to participate in the city's social, civic, economic and cultural life.
- Well-being: Our proposal to increase economic opportunities will give individuals access to an adequate standard of living including income, health, nutritious food, housing and clothing.
- Access, equity and diversity: the initiative will provide equitable access to digital technologies and empower residents to effectively participate in digital life.

SCC supports four important initiatives underway at the City:

- Tower Renewal Program: The Tower Renewal Program aims to retrofit and modernize towers in The City. They work collaboratively with owners, residents, and community agencies, internal and external partners. The program supports and implements a number of City strategies and priorities that help diverse communities such as The Strong Neighbourhoods Strategy; Poverty Reduction Strategy; strategies for seniors, youth and newcomers; and affordable housing initiatives.
- Strong Neighbourhoods Strategy 2020: This strategy will support healthy communities across The City by partnering with residents, businesses and agencies to invest in people, services, programs and facilities in specific

neighbourhoods. This will strengthen the social, economic and physical conditions and positively impact city-wide change;
- Poverty Reduction: This includes an action to "expand digital access and literacy to ensure residents can effectively access programs and services online." Our proposal directly supports this strategy. (More details are described later in this submission.)
- Advancing Broadband Infrastructure and Internet Connectivity: This will eliminate the digital divide. This City report concludes that Toronto has relatively good access to wired, wireless and Wi-Fi broadband. However, standard prices are unaffordable for many residents.

Ability to Implement

As the largest city in Canada, Toronto regularly deals with complex, multi-stakeholder, multi-dimensional programs. To do so, we have embarked on a number of initiatives that will augment and support the Smart Connected Communities Program. These include:

The new Transformation Office strategically collaborates with senior leaders across divisions to advance complex projects, such as our supply chain transformation and enables innovation through stakeholder engagement such as our current, city-wide governance modernization strategy.

The Transformation Office is currently developing a senior leader governance structure and will manage the implementation of our Smart Cities Challenge project as well as future multi-divisional, smart cities initiatives. This governance will include but not be limited to:

- The first point of contact for the smart cities challenge engagement;
- Develop and maintain a detailed multi-divisional project and program plan;
- Track and report progress;
- Communicate and facilitate stakeholder information;
- Share local and global best practices between teams;
- Develop and support an internal and external advisory panel;
- Mobilize and coordinate with City divisions;
- Coordinate with key external stakeholders, including but not limited to, academic institutions, not-for-profit organizations, the private sector, federal and provincial representatives; and
- Provide support and guidance for adoption of open data and privacy standards.

The data, community relationships, partnerships and programs will provide the foundation for a rapid launch of our SCC initiative. The key driver of our ability to deliver on the challenge statement is the synergy that exists with the existing services for these older high-rise communities.

The City’s world-class open data program, which has been running for nearly a decade, allows the release of data while incorporating legislative, privacy, security and data quality considerations. Through the Open Data Master Plan, we will continue to create a transparent pipeline that will publish more open datasets and be automated where

possible. Identifying privacy considerations and areas for data quality enhancements will be key features of the new pipeline. With a focus on quality over quantity, and by creating higher data standards and new technical requirements to support a modernized open data pipeline, the City will be better able to address civic issues.

A new open data portal is being built using CKAN, which is a web-based open source management system for the storage and distribution of open data. CKAN's codebase is maintained by Open Knowledge International and is used for international government data catalogues such as the United Kingdom, United States, Australia and the Government of Canada's open data portal. The City will lead by empowering others through effective governance, open source development and co-production. Engaging diverse communities and encouraging them to participate in open platforms is essential for building a foundation to enhance the ability to address civic issues through increased collaboration and partnership.

The newly created Civic Innovation Office focuses on projects, which fit within the mission to help create a more responsive government. Barriers are removed between residents and available resources, especially for those who really need them. One of the outcomes is to encourage positive interactions between residents and their government. A data-driven approach to identify emerging issues and deliver holistic services is used. The office uses a guiding principle of achieving equitable opportunities for residents in regards to service access and, engages with civic issues so that residents feel personally connected to their neighbourhoods and to the city.

Through the City's 20-year poverty reduction strategy, over 18 separate divisions and municipal agencies coordinate and implement initiatives to improve the quality of life for those living in poverty. A dedicated poverty reduction strategy office provides support to the City's collective, impact initiatives and has decades of experience working with the non-profit sector on shared poverty reduction and community wellbeing objectives.

The Toronto Child and Family Network is an established and broad table of senior leaders focused on child and family well-being in Toronto through a collective impact approach. The TCFN could support improvement in families access to a wide array of services through SCC. Raising the Village (RTV) is an initiative of the TCFN. It's a website that provides existing data and research to measure and understand child and family well-being, across 10 population outcomes; one of which is financial security. RTV compares the equity between neighbourhoods by a Child and Family Inequities Score, which is a composite score of weighted variables that are key to income security. It also provides a social identity toolkit, which disaggregates indicators by race and gender.

The Human Services Integration (HSI) project is a multi-year project that is focused on integrating the key income support programs – Ontario Works, child care fee subsidy and rent that's geared to income housing subsidy. It provides one-window for residents to access multiple services as well as valuable learnings on how to integrate service access across city divisions.

Since 2016, Toronto Public Library has successfully established a team of community (or embedded) librarians at agencies serving vulnerable or marginalized persons such

as the Toronto South and Toronto East Detention Centres, Toronto Employment and Social Services (TESS) and The Spot – Jane-Finch Community Family Centre.

Community librarianship is a concept that moves librarians out of their traditional role in library buildings directly into communities where they work alongside agency staff, becoming members of their teams. Computer education is one of the most demanded services they offer. Community librarians working at TESS sites identified as a need amongst clients for assistance accessing online government services. They responded by teaching basic computer and Internet skills to groups and individuals.

They provide demonstrations for the library's online resources that address different needs, including employment and education. This service, in combination with expanded mobile service delivery with sprinter vans, will provide digital access and digital literacy. From a smart cities perspective, libraries are uniquely positioned as they provide local communities with personalized access to support, which will help deliver the smart city agenda.

$250,000 Spending Breakdown

The following outlines the key steps involved in developing a much more fulsome and technically sound proposal. The budget column refers to the preparation work and would be directed to outside resources. We are certain that a significant amount of staff time and partner time, whose value has not been determined yet, would also be devoted to these tasks.

1. Planning & Analysis
    - Work plan, communications
    - Identify communities for pilot
    - Learning strategy
    - Capability assessment
    - Risk analysis
    - Select and develop collaboration agreements with partners
    - Budget: $20,000
    - Period: Sept. – Oct. 2018

2. Baseline Data
    - Define "digital literacy" baseline
    - Define "affordable digital access" baseline & targets
    - Define information repositories needed
    - Budget: $50,000
    - Period: Oct. – Dec. 2018

3. Prepare & Initiate Pilot
    - Community consultation
    - Confirm local baseline and set targets
    - Select pilot area(s)
    - Budget: $50,000
    - Period: Jan. – Feb. 2019

4. Refine Solution for Community Hub
    - Gather requirements
    - Refine solution architecture for the smart connected communities' platform
    - Define open data governance & privacy
    - Plan "apps challenge"
    - Design and build prototype (with industry in-kind contribution)
    - Budget: $75,000
    - Period: Nov. – Dec. 2018

5. Proposal Finalization
    - Capture lessons learned
    - Draft proposal and supporting documentation
    - Budget: $55,000
    - Period: Dec. 2018 – March 2019

Total Budget: $250,000
Total Period: Sept. 2018 – March 2019

To support the three dimensions of the plan (access, literacy, platform) we will co-create solutions with our stakeholders, including the residents of the older high-rise communities through various engagement tactics such as public consultations, a hack-a-thon series and an application challenge, to name a few. At a high level, the plans include:

- Access: Working with landlords and telecommunication companies, we'll establish short and medium-term plans to address the affordability of high-speed Internet. We'll focus on shared workspaces in high-rise apartment buildings with low-income families. We'll collaborate with carriers to assess how 5G networks will address the digital divide in these communities.

- Literacy: In partnership with the Toronto Public Library we'll expand and enhance current digital literacy programs with "sprinter vans" (mobile libraries that will provide computer lessons) and community librarians. The private sector will enhance the literacy program by adding learning content and insight.

- Platform: SCC will be co-created by the City and TPL on behalf of, by, and for, the community using a collaborative approach already proven in these communities.

Partnerships

Our partnerships approach, much like our approach to tackling the digital divide, is the mindset that no one will be left behind. Our inclusive process will identify the interest and resources of category/industry partners specific to our proposal and initiate ongoing development towards an excellence in execution approach.

We have developed and engaged an extensive network of stakeholders in preparation of our Smart Cities Challenge proposal including:

- Public & Community groups
- Academia
- Private sector
- The City and its Agencies

Public & Community Groups include but are not limited to:

- Centre for Connected Communities
- Centre for Social Innovation
- Civic Action
- Civic Tech Toronto
- East Scarborough StoreFront
- MaRS
- Maytree
- Tech Toronto
- TEDxToronto
- Toronto Community Foundation
- Toronto Public Library
- Toronto Youth Council
- United Way
- Waterfront Toronto
- YMCA

Academia

We envision that the academic community will play an important role in setting direction, establishing baseline data and putting measurement systems in place that align with research priorities. These include:

- Ryerson University
- University of Toronto (St. George and Scarborough campuses)
- York University
- OCAD University
- Centennial College
- George Brown College
- Humber College
- Seneca College of Applied Arts & Technology

Private Sector include but are not limited to (sample list):

- Toronto Regional Board of Trade, Smart Cities Working Group
- Accenture
- Arup
- Bell Mobility
- CGI
- Cisco
- Cole Engineering Group
- Deloitte
- Environics
- Ernst & Young LLP
- FIBOS
- Fujitsu
- Global Affairs Canada
- Great Gulf
- Hatch
- HeroEngine
- Huawei Canada
- IBI Group
- IBM
- i-CANADA Alliance
- Interac Association
- Interbrand
- KPMG
- •• Ministry of International Trade (Ontario)
- Multi Touch Digital Inc.
- Nieuport Aviation Infrastructure Partners
- Nordicity
- OCADU
- Ontario Centers of Excellence
- Oracle
- Philips Lighting
- PricewaterhouseCoopers
- ReMap
- Siemens
- TELUS
- Toronto Association of Business Improvement Areas (TABIA)
- Toronto Real Estate Board
- Waterfront Toronto
- Wavefront

Private Sector roundtables

- Autodesk
- Bell
- Canadian Council of Aboriginal Business
- Cisco
- Enwave
- EY
- Microsoft Canada

- Rogers
- Samsung Canada

Selection of Future Partners

At this stage, no commercial partnerships have been formed. The selection of these partners will be subject to the City's policies. We've received multiple letters of support from stakeholders.

We have had an overwhelming level of interest from virtually all of the organizations listed above. Many of these organizations already partner with the City in a wide range of domains. SCC will be an opportunity to enhance current partnerships, develop new partnership models and encourage new partners to form and grow.

As a result of the growth of smart cities opportunities globally, there is a burgeoning incubator/accelerator/entrepreneur sector forming. Toronto is at the heart of this growth, due to the large tech sector already formed. This government technology or "Govtech" sector is rapidly developing the capability of all levels of government in solving public challenges. Many of these organizations have approached us to partner on this initiative and we look forward to ushering in a new era of government collaboration.

Thank you to all the Torontonians who participated and contributed to the City of Toronto's submission to the first round of the Government of Canada's Smart Cities Challenge engagement. A special thanks to all City Council and staff, academia, Toronto Board of Trade – Smart Cities Working Group, Tower Renewal Partnership, academia, private sector contributors and community partners whose enthusiasm is palpable.

We look forward to working with you in the design of an implementation plan in making Toronto a smart city.

Thank you kindly for your participation and collaboration,

The City of Toronto's Smart Cities Challenge Core Working Team

- Michael Kolm, Chief Transformation Officer & Chair | Transformation Office
- Elliott Cappell, Chief Resilience Officer | Resilience Office
- Mike Williams, General Manager | Economic Development & Culture Division
- Rob Meikle, Chief Information Officer | Information & Technology Division
- Siri Agrell, Director, Strategic Initiatives | Mayor's Office