Future Ready Youth

City of Ottawa Submission to Infrastructure Canada's Smart Cities Challenge

April 24, 2018

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1.0　SECTION I: APPLICATION INFORMATION

1.1　Question# 1: Community Information

- Name of community: **City of Ottawa**
- Province/Territory: **Ontario**
- Population: **934,243**
- Indigenous community: **No**

1.2　Question# 2: Prize Category

2.0   SECTION II: PRELIMINARY PROPOSAL

2.1   Question# 3: Challenge Statement

Please define your Challenge Statement in a single sentence that guides your preliminary proposal. It should describe the outcome (or outcomes) you hope to achieve. (50 words max)

Ottawa will invest in our youth to create a smarter national capital where young people are safe, active, healthy, and empowered to innovate and co-create our future; we will increase youth employment by 25% and provide them with the skills, experience, and confidence needed to succeed in today's digital economy.

2.2   Question# 4: Outcomes Proposal seeks to achieve by elaborating on your Challenge Statement

Please describe the outcome (or outcomes) your proposal seeks to achieve by elaborating on your Challenge Statement. (2,500 words max)

To secure our future, the City of Ottawa's approach, shaped by resident input and extensive stakeholder engagement, will put youth at the forefront of its smart city ambitions. The City will ensure that our young people are equipped with the skills and resilience to respond to economic, technological and social changes and enable and empower a generation that is active, healthy, safe and engaged in making meaningful contributions to their community.

There is much to address. Ottawa's youth account for 221,495 city residents, representing 22% of the city's population.[1] While the overall unemployment rate is trending downward[2], unemployment rates among youth remained twice that of the rest of the city at 13.8% in 2016. This is almost 10% higher than the national average of 12.6%[3]. Specifically, there are approximately 3,000 unfilled high-tech jobs in North Kanata that youth could be instrumental in filling[4].

Barriers to youth employment can be high and youth face the highest risk of being impacted by future job automation. Per a recent report by the Brookfield Institute for Innovation + Entrepreneurship, "42 percent of the Canadian labour force is at a high risk of being affected by automation in the next 10 to 20 years"[5]. Ottawa is committed to aggressively improving youth employability by 25% through its Smart Cities Challenge proposal, as the City sees the inherent potential to increase income, empowerment, and productivity in youth though upskilling.

Additionally, the City will enable youth to be active, healthy, and safe. Despite being more digitally connected than other demographic groups, many youth also suffer from a sense of disconnectedness and social exclusion. In 2014, Ottawa Public Health reported that 1 in 4 students in grades 7 to 12 visited a mental health professional at least once in the past year; similarly, self-harm related emergency room visits among women ages 15 to 24 increased 50% between 2009 and 2011[6]. There are currently 38,400 families and at-

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[1] https://documents.ottawa.ca/sites/documents.ottawa.ca/files/youth_ss_en.pdf

[2] http://canadianews.org/gatineau/2018/04/11/268404-ottawa-gatineau-unemployment-rate-dips-to-4-8-5.html (4.8%)

[3] Statistics Canada, 2016 Census

[4] http://www.cbc.ca/news/canada/ottawa/ottawa-kanata-thousands-tech-jobs-1.4251048

[5] Lamb, C. (2016). The Talented Mr. Robot: The impact of automation on Canada's workforce. The Brookfield Institute for Innovation + Entrepreneurship. Pp. 8-15

[6] http://www.ottawapublichealth.ca/en/reports-research-and-statistics/resources/Documents/stateofhealth_2014_en.pdf

risk youth that use foodbanks in Ottawa[7]; this must be addressed. Obesity rates among children and youth in Canada has nearly tripled in the last 30 years[8] and 23% of children in grades 7-12 self-report being overweight or obese. Furthermore only 1 in 4 grades 7-12 students meet the Physical Activity Guidelines of 60 minutes per day, and only 19% walk or cycle to school. [9]

Finally, the City will use smart city technologies to reduce youth deaths and injuries as a result of motor vehicle, cyclist and pedestrian accidents. Between 2008 and 2017, the City of Ottawa saw an average of 28 individuals killed and a further 3,500 people injured per year.[10] According to the World Health Organization, road traffic injuries are the leading cause of death among people aged between 15 and 29 years[11]. In 2016 alone, Ottawa youth aged 15 to 29 represented 37% of traffic fatalities.[12]

The City of Ottawa's smart city ambition is *FUTURE READY YOUTH* who will be enabled, supported and empowered through a Smart City 3.0 approach, brought to life by a Civic Innovation Network (CIN). The City will harness their natural and organic creativity, inquisitive nature and limitless potential. This will be accomplished by focusing on digital and smart city skill building and empowerment, immersing youth in Smart City Demonstration Zones and engaging youth in the co-creation and development of civic innovation. Through these efforts, Ottawa will generate 4,870 new jobs for youth, an increase of employment by 25% over three years!

Approach – Grounded in Smart City 3.0 and a Civic Innovation Network

Smart city strategies now go beyond technology and integration; cities who get it right are addressing society's pressing challenges in partnership with their citizenry. The concept of a smart city has evolved from a top-down technologically driven approach (*Smart City 1.0*) and a bottom-up, technology enabled approach (*Smart City 2.0*) to a concept that closely links citizenry and government in the context of innovation and co-creation (*Smart City 3.0*). This emphasises a citizen driven, citizen co-created and a citizen-centred approach. Ottawa's preliminary proposal will move the City beyond its current Smart City 2.0 Strategy to embrace and champion a *Smart City 3.0* approach focused on youth co-creation and empowerment such that youth are at the forefront of both imagining and creating the future of Ottawa!

To enable this approach, a Civic Innovation Network (CIN) will be established to facilitate youth skills development and co-creation. The CIN will enable the City to spark and cultivate new ideas. To effect real change and improve outcomes, Ottawa will bring these ideas to life within and across the city through: 1. a Civic Innovation Accelerator (central location) and Civic Engagement Centres (outreach centres in the community); 2. Demonstration Zones (physical test-bed locations); and 3. a Virtual Innovation Platform utilizing collaboration tools, open government data, and the Internet of Things (IoT).

Civic Innovation Accelerator. The City of Ottawa and Invest Ottawa, Ottawa's arms-length economic development agency, working in close consultation with youth and youth organizations as well as organizations like Ottawa Community Housing and the Ottawa Public Library, will establish a central Civic Innovation Accelerator. The Accelerator will provide a permanent platform for civic and other organizations to meet and work with data in a collaborative setting with youth tapping into their imagination to improve and shape the city. It will serve as the main access point to datasets, tools, expertise and other resources. The Accelerator will provide data libraries, data visualization and a notification portal as well as technical support.

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[7] *Maidment, Michael. Executive Director, Ottawa Foodbank. Personal Interview. April 2018.*

[8] *https://www.canada.ca/en/public-health/services/childhood-obesity/childhood-obesity.html ; http://www.cheo.on.ca/en/obesity*

[9] *https://www.ottawapublichealth.ca/en/public-health-services/resources/Documents/oph_strat_plan_2015_en.pdf*

[10] *Wilkinson, Rob. Coordinator, Safer Roads Ottawa. Personal Interview. April 2018*

[11] *http://www.who.int/mediacentre/factsheets/fs358/en*

[12] *Wilkinson, Rob. Coordinator, Safer Roads Ottawa. Personal Interview. April 2018*

Access to entrepreneurial training and mentorship with a formal cohort-based curriculum will also be available.

Civic Engagement Centres: The City will establish several Civic Engagement Centres, leveraging sites that currently exist and can be optimized for community collaboration, including the Ottawa Public Library network, Ottawa Community Housing locations, and community centres. This will be done in an effort to avoid or minimize upfront capital costs. Existing sites will allocate physical space (permanent and/or temporary) to be purposed as "Civic Engagement Centres", allowing for public access to these sites for workshops, collaboration and community ideation. The City will engage youth associations across the city including, for example, the Boys and Girls Club of Ottawa, Manotick Youth Association, Osgoode Youth Association, and the Ottawa Youth Engagement Committee to design the Civic Engagement Centres as well as inform where to deploy them. These youth organizations will also be consulted in the content and curriculum development to be offered at these centres.

Smart City Demonstration Zones: Complementing the Accelerator and Engagement Centres will be Demonstration Zones. These Zones will leverage selected locations and the City's right-of-way to provide places where youth, industry, and academia can test and assess technology. For example, the existing Autonomous Vehicle Test Bed in Kanata provides the ideal location to test sensors and connected technology and the farm site located on National Capital Commission property will provide a site to test technology related to smart agriculture and rural connectivity. Ottawa's ambition is to continue the development of Smart City Demonstration Zones to encourage and support the creation, testing and showcasing of fully integrated solutions.

Virtual Platform: Fueling this network will be the establishment of a Virtual Innovation Platform. The Platform will establish a mechanism for young innovators to collaborate and network in a virtual environment. The Platform will also provide access to relevant data, such as an interactive, map-based platform to explore publicly-available open data sets in an easy-to-use-interface. The Platform will enable the city, residents, businesses and NGOs a better way to interact and collaborate with each other and have access to relevant public data to analyze and solve city problems.

The Smart City 3.0 CIN will be developed initially for the purposes of addressing the youth-centred projects that are described below and further in Question 6 of this application. Although the objective of this application is to focus on youth, it is the City and Invest Ottawa's ambition to continue to leverage and extend this Network into additional communities throughout Ottawa as well as to generate a proven, replicable model that can be leveraged by other cities and communities throughout Canada.

Program Goals and Outcomes

The CIN will be the enabler in support of the City's smart city programs. The City will execute three major programs (as described below) and a number of projects (as described in Question 6) to achieve the Challenge Statement outcomes.

1. Youth skills development to give our city's youth of all ages the opportunity for acquiring and advancing digital capabilities;

2. Youth innovation and co-creation, providing the opportunity to apply digital and technical skills on smart city / civic innovation concepts; and,

3. Safe and healthy lifestyles for youth, providing the opportunity to engage on initiatives and co-create solutions that will have a direct impact on youth lifestyles.

The three major program goals are described below in terms of intent and outcomes:

Program Goal 1 – Youth Skills Development to Enhance Employability

Intent

The youth skills development program will focus on providing training and education to youth in areas spanning digital technology and literacy. Per Actua's 2018 Coding the Future Survey "more than 50 per cent of youth want more opportunities to learn to code but only one third said they have access to that kind of opportunity."[13] Ottawa's Smart Cities Challenge projects will provide youth across the city with the opportunity to develop digital, coding and technology skills. Ottawa has a significant number of job vacancies in the high-tech sector and smart city youth skills development will be used to help youth prepare for employment in this sector.

Outcomes

- Raise the youth employment level by 10% in the first year (1,948 youth jobs), 15% in the second year (2,922 youth jobs), and 25 % in the third year (4,870 youth jobs).[14]

- Measurably increase youth entrepreneurial start-ups: 6 cohorts with up to 20 civic entrepreneurs per cohort over 3 years.

- Provide 5000 students (K-12 Age) over 3 years with coding skills training.

- Provide 1500 unemployed youth in low-skilled jobs the opportunity to upgrade their skills over 3 years by reskilling in high-tech industry, and keying on gender equality.

- Increase enrollment in post-secondary institutions as well as increase STEM disciplines.

- Using Artificial Intelligence (AI) / Machine Learning (ML), create tools for real-time monitoring of job skills and needs.

Program Goal 2 – Youth Innovation and Co-Creation to Enhance Civic engagement

Intent

The youth co-creation program will focus on providing youth an opportunity to apply digital, technical and social/civic engagement skills. Initiatives will engage and empower youth to co-create Ottawa's future by addressing pressing challenges and exciting opportunities facing the city. Demonstration Zone test-beds to solve for the city's pressing challenges and opportunities currently exist in several locations. In support of skill building and civic ideation and co-creation, Ottawa will start by having youth engaged in Smart City Demonstration Zones that have been identified as priorities. Ottawa will validate and corroborate these priorities through a city-wide citizen survey and community engagement workshops.

Utilizing the CIN, youth will be encouraged to ideate, develop and maintain an inventory of civic engagement challenges and opportunities. Challenge teams will be created through this process and they will have an opportunity to present civic challenges or opportunities each year to be considered for additional Demonstration Zones.

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[13] http://actua.ca/en/blog/actuas-coding-the-future-survey

[14] Statistics Canada, 2016. Unemployment number of 19,480 for age bracket 15 to 29.

Outcomes

- Deliver 15 viable, innovative concepts through youth innovation and co-creation on an annual basis.

- Using Artificial Intelligence (AI) / Machine Learning (ML), create tools to help understand the degree to which youth are involved in civic engagement and discourse. Specific outcome targets over three years are as follows:
    - Engage 500 youth in the development of Community Engagement Centres and Demonstrations Zones.
    - Civically-engage 5,000 youth in solving problems related to transportation, the safe navigation of streets, environmental protection and healthy and active living.
    - Engage youth to develop and deploy technologies that can demonstrate a 4-times improvement in rural internet connectivity which currently average 5Mbps.
    - Inspire and engage 10,000 youth to participate in co-creation hackathons.

Program Goal 3 – Safe and Healthy Lifestyles to Enhance the Mental and Physical Health of Ottawa's Youth

Intent

Create an environment where all youth feel part of the fabric of their communities by having opportunities to thrive, make wise health and lifestyle choices, and explore the community that they call home. Building on skills development and co-creation/innovation, youth will directly participate in solutions to physical and mental health challenges that are present in today's society.

Outcomes

- Using Artificial Intelligence (AI) / Machine Learning (ML), create tools to establish a baseline and monitor youth mental health issues involving self-harm and suicides. The AI/ML can look in any neighbourhoods that have 5,000 people or more and look for signs such as depression and cyberbullying, and the technology can support identification of root causes (e.g. unemployment, social isolation, drug use). Knowing the mental health challenges will allow policymakers to send resources to those neighbourhoods that need it most. This activity will be done at the population level and not at the individual level, so there is no targeting of individuals.

- Contribute to the reduction of teen suicides with a target objective of 12% and reduce self-harm related emergency room visits among youth.

- Provide foodbanks with fresh vegetable year-round through urban gardening, including enclosed hydroponic food production systems. Produce 24,000 lbs of vegetables per year with revenue generating opportunities, making foodbanks more sustainable.

- Reduce food insecurity and improve health outcomes by bringing healthy and affordable food to five at-risk communities over three years.

- Engage 7,500 youth using a gamification platform that applies integrated technologies and teaming / competitiveness solutions (i.e., Pokémon Go) to get youth active, environmentally aware and exploring their communities.

In all cases the City and its partners will comply with Personal Information Protection and Electronic Documents Act (PIPEDA) and all other relevant privacy legislation.

2.3   Question# 5: Stakeholder Engagement

Please describe how your community residents have shaped your Challenge Statement. Describe your plans for continuing to engage and involve them in your final proposal going forward. (1,500 words max)

Developing a successful Smart Cities Challenge application necessitates an intimate understanding of the city and local ecosystem. To help develop a winning Challenge Statement and Outcomes, the City's approach was centered on equitable and inclusive engagement – putting the views, goals, and incentives of a wide array of Ottawa residents at the heart of the process.

The City and Invest Ottawa put together considerable stakeholder engagement, research, and design into developing a forward-looking, politically endorsed Smart Cities Challenge response. This engagement plan included:

1. **Online Citizen Survey**: Deployed a bilingual online citizen survey between February 16 and March 9 and engaged a wide breadth of citizens (approximately 900 responses) who identified priority areas and challenges facing the community. A memo was sent to the Mayor and Members of Council as well as the City's Senior Leadership Team, informing them of the survey and encouraging them to share an advertisement on the Challenge and survey with their resident and stakeholder groups. The survey was also included in a number of City newsletters and updates including the Planning Primer, Rural Affairs Newsletter and a Public Service Announcement. Lastly, the survey was promoted by NGOs representing youth, civic tech, and economic development organizations such as Invest Ottawa and Business Improvement Associations.

2. **Stakeholder Interviews:** Conducted over 35 hours of in-depth discovery and alignment interviews with over 25 community, stakeholders and City leaders. Interviews focused on areas identified through the resident survey and served as a tool to better understand Ottawa's current smart city landscape and what could be done to better align with the views of citizens.

3. **Design Thinking Ideation Workshops**: Co-creation and ideation workshops to design innovative solutions to communities' most pressing problems. This process yielded: 680 community/resident pain-points, 170 concept ideas to address pain-points and 50 initiatives/solutions. Workshops included the following:

    a. Convened over 70 community leaders, key stakeholders and City leaders through 2 separate workshops to ideate on the future of Ottawa as a Smart City. The workshop took a complementary approach to the survey and focused on identifying the major challenges and needs that face the community from a lens of "groups at risk of exclusion". This helped to further uncover potential Challenge Statements that capture Ottawa's smart city ambitions. Through the analysis of survey data, interviews and pain-points the final Challenge Statement was drafted to focus on youth who were identified numerous times as a group at risk and a group who are at the forefront of many of the identified opportunities and challenges. The Challenge Statement was approved by City Council on April 11, 2018.

    b. Conducted a focused workshop with 30 community and City leaders to ideate, iterate and develop projects in support of the Challenge Statement.

    c. Facilitated a project ideation workshop for the Centre for Open Innovation and Networking (COIN) where 50 smart agriculture, precision agriculture and rural tech companies identified initiatives and outcomes.

4. **Smart City Summit:** The City and Invest Ottawa conducted a Smart City Summit with 50 individuals from private and public-sector organizations to help shape and provide input into Ottawa's Smart City 2.0 Strategy. Additionally, a number of interviews with City departments were conducted to inform the Strategy.

5. **Website:** One stop page at www.ottawa.ca/smartcity where residents were kept appraised of progress on the Smart Cities Challenge application. The site included a bilingual video outlining the City's objectives in building a Smart City and a call to action for Ottawa residents to support the Smart Cities Challenge bid by completing the online survey and submitting project ideas.

6. **Social Media:** Series of tweets from the City of Ottawa's corporate account as well as tweets from Invest Ottawa, Mayor Watson and the three Smart City Councillor Champions to point residents back to the Smart Cities Challenge project page where residents were invited to engage with staff throughout the process.

While a large number of project ideas and priorities were brought forward spanning a wide variety of subject matter areas, the feedback received can generally be categorized in several broad themes.

1. Barriers to Employment / Digital Divide / Access to Education. One of the most prominent themes indicated by participants during the consultation was equipping Ottawa's residents with the skills and resilience to respond to economic, technological and social changes while simultaneously allowing them to make meaningful contributions in their community.

2. Social Disconnectedness / Social Exclusion. Many expressed the belief that the City can bridge the current gap that exists in terms of social disconnectedness and exclusion. This was a theme across a number of resident groups including newcomers, older adults and youth.

3. Access to Services / Rural Connectedness / Transportation and Mobility. Many of the project ideas centered around traffic management, safer city initiatives, and ensuring that residents were empowered to live a healthy and active life. Ottawa is unique as 82% of the land mass is rural and this creates a rural divide with respect to employment opportunities, mobility opportunities as well as internet connectivity and speed. This rural digital divide was highlighted in all three workshops.

4. The Environment. Many expressed concerns about protecting Ottawa's greenspace, parks, trees, beaches, the city's three major rivers and historic canal as well as the surrounding forests and wilderness areas.

Through this information gathering process, the City and Invest Ottawa were able to paint a picture of community challenges as well as different initiatives, goals, and visions. Participants in the consultation activities demonstrated a high level of understanding of the subject matter and were able to clearly articulate what they see as Ottawa's challenges. Feedback brought forward opportunities ranging from employment and economic growth, to skills training, to mobility, to safety, to healthy and active lifestyles. Ottawa's youth were at the forefront of many of the challenges and opportunities identified through these consultations.

Ottawa has a complex and rich identity – it is not only a capital city, but also has a vibrant and unique heritage that blends together rural, suburban and urban communities. It has a diverse population with diverse needs. As part of the engagement strategy, significant efforts were made to be inclusive and to represent the community's diversity.

Community engagement involved consultation with the following groups:

- **City of Ottawa and City Boards:** Ottawa Police Services, Ottawa Public Library, Transportation Services, Emergency and Protective Services, Public Works and Environmental Services, IT Services, Community and Social Services, Service Innovation and Performance, Accessibility Office, Ottawa Public Health, Recreation and Culture Services, Safer Road Ottawa, Planning, Infrastructure and Economic Services, Hydro Ottawa, and Ottawa Community Housing.

- **Youth Associations**: Boys and Girls Club of Ottawa, United Way Ottawa, Manotick Youth Association, Osgoode Youth Association, and Ottawa Youth Engagement Committee.

- **NGOs and Community Groups:** Impact Hub, Ottawa Civic Tech, Synapcity, Actua, Ottawa Community Foundation, Volunteer Ottawa, Ottawa Food Bank, Just Food, Volunteer Ottawa, and Citizens for Safe Cycling.

- **Academic Institutions & Similar Interest Groups**: Algonquin College, La Cite Collegiale, Carleton University, University of Ottawa, and the Ottawa Network for Education.

- **Federal Government:** National Research Council, Canadian Food Inspection Agency, Agriculture and Agri-food Canada.

- **Provincial Government:** Ontario Ministry of Agriculture, Food and Rural Affairs.

- **Economic Development Groups:** Invest Ottawa, Orleans Chamber of Commerce, Ottawa Chamber of Commerce, West Ottawa Board of Trade, TiE Ottawa, Barrhaven Business Improvement Areas, Kanata Business Improvement Areas, and Ottawa Council of Business Improvement Areas.

- **Environment Groups:** Mississippi Valley Conservation Authority, Rideau Valley Conservation Authority, South Nation Conservation Authority, and Ecology Ottawa.

- **Hospitals:** The Ottawa Hospital, the Queensway Carleton Hospital, and the Royal Ottawa Hospital.

The development and implementation of the final proposal will be done in further collaboration with the above stakeholders, youth and youth service providers, proposal partners, as well as any additional City stakeholders that may be identified. The focus will be on working together to achieve the desired outcomes. In this regard, the City will:

- Engage a firm with expertise in community consultation and facilitation that will conduct further and more extensive discussions with Ottawa's youth and youth service providers.

- Engage youth and key youth service providers through the "*Smart City 2.0 Working Group*", which will have representation from the City's Planning, Infrastructure and Economic Development and Service Innovation and Performance Departments as well as Invest Ottawa, Hydro Ottawa, local business and community leaders from various sectors and areas of the city, entrepreneurs, and Ottawa's post-secondary institutions.

- Use the City's website and social media channels to seek input on the final proposal, including the design of the CIN, proposed projects, partnerships, and an action plan to move Ottawa to a Smart City 3.0 model.

- Ensure appropriate and ongoing consultations are planned with community leaders, City leaders and elected officials to help maintain awareness, support and buy-in where required.

2.4 Question# 6: Preliminary Proposal and Activities/Projects

Please describe your preliminary proposal and its activities or projects. (2,000 words max)

Ottawa's preliminary proposal will embrace and champion a Smart City 3.0 approach of youth co-creation and empowerment such that youth are at the forefront of both imagining and creating the future. Ottawa will create a Civic Innovation Network that will enable, facilitate and inspire youth to be active, healthy, innovative and civically engaged to lead Ottawa into the future with confidence. This will be the backbone framework to enable Ottawa to achieve the outcomes in the Challenge Statement in an impactful and measurable way, beginning with immediate goal of raising youth employment by 25%. It is Ottawa's longer-term ambition that the CIN be extended and expanded to support other communities and demographic cohorts both in Ottawa and throughout the country.

Ottawa's Civic Innovation Network

The CIN, as described in Question 4, will be the "glue" that binds projects together with alignment of all stakeholders across the city working to support youth. The network will provide:

- Networking and communications. The underlying framework that connects infrastructure, devices, and people, including fiber and the latest wireless technologies, including 5G.

- Cyber-physical systems and the Internet of Things. The connection of physical devices to the Internet, such as sensors will be utilized in projects. Cybersecurity will be at the forefront of projects, including one of the greatest cyber challenges – securing IoT devices.

- 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 to purchase and maintain separate 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. Open data from enterprises and open sources will be included in the projects.

- Big data and data analytics including AI/ML. The analysis of the significant amounts of data generated by increases in IoT-infused infrastructure will be explored. The insights generated by this data can inform decision-making and enable access to new ways the City can understand and serve its youth and all residents.

Program Outcomes with Associated Projects

Program 1 – Youth skills development to enhance employability. To succeed in our rapidly transforming digital economy, youth will need to be dynamic, resilient, and equipped with a broad suite of skills. Training, learning and upskilling for youth, catered to neighbourhoods in need, resident groups and youth age specific cohorts will be key to enhancing existing skill-building programs and improving the digital skill pipeline to support the city's economic growth.

> **Project – Youth Entrepreneurial Grant and Training**
>
> - **Description and Scope:** Entrepreneurship programming with specialized education, mentorship, networks, and access to customers and investors in order to accelerate the growth of youth-based business. Young entrepreneurs will be given the opportunity to apply for project-based grants of up to $10,000, which will be augmented with in-kind services, live events and workshops. Applications accepted into the program will be required to be viable smart city technology or data-based projects.
>
> - **Impact:** Incentivize and encourage innovative thinking among youth while supporting entrepreneurs to grow their business.
>
> - **Measurability:** Number of unique grant recipients; percentage of entrepreneurs matched with key community/business influencers.
>
> **Project – Coding and Tech Skills (K-12)**
>
> - **Description and Scope:** Engage youth in K-12 in schools and the broader community to develop digital literacy by exposing them to coding, programming skills and emerging technologies. Offer year-round boot camps, virtual/remote learning sessions, and workshops. Develop relationships with community based organizations such as Ottawa Network for Education (ONFE) who partner

with industries and the K-12 school boards to bring experiential learning and STEM career awareness to teachers and high school students.

- **Impact:** Develop early interest in education and careers that involve using, understanding and producing digital technologies; help bridge the employment gap (e.g.3,000 unfilled jobs in Kanata North).

- **Measurability:** Number of activities offered throughout the year; geographic area covered by programming; attendance at coding and skills sessions.

Project – Tech SkillSET (18yrs to 29 yrs)

- **Description and Scope:** Work with partners on reskilling youth with a primary purpose to help unemployed youth or youth in low-skilled jobs upgrade their skills. Content will be developed jointly with post-secondary institutions and local industry partners, providing company specific and generic training materials to offer free skills-based training and education to prepare youth for an increasingly digital workplace. The project will be linked to the World Economic Forum's IT SkillSET initiative.

- **Impact:** Development of a workforce that has market relevant digital skillsets; facilitates quicker matching of jobs requiring tech skillsets with job seekers.

- **Measurability:** Matching of "digital jobs" to job seekers; percentage change in salary after completion of program.

Program 2 – Youth Innovation and Co-Creation. Empower and inspire youth to co-create our future by tackling pressing challenges and opportunities that face our community. Enable and encourage major stakeholders in the public, private, and non-profit sectors to focus, prioritize, and coordinate co-creation projects with students. Establish an integrated CIN that incorporates open standards and is interoperable with existing infrastructure.

Project – Smart City Demonstration Zones

- **Description and Scope:** The UK Smart City Challenge resulted in Demonstrator Cities such as Glasgow's Future City Demonstrator and Manchester's CityVerve IoT and Smart City Demonstrator. These demonstrators have sparked innovation and a showcase for smart city solutions. Ottawa has recently seen the emergence and development of Demonstration Zones and has an ambition to continue to develop these initiatives as a Nation's Capital showcase. With government agencies and industry engaged in these Zones, Ottawa's objective is to incorporate youth into the ecosystem to collaborate and engage in the development of existing Zones and to ideate on the development of additional concepts. Ottawa is currently gaining momentum on the following Demonstration Zones where youth will play an instrumental role:

  - *Rural Smart/Precision Agriculture*. Rural agriculture testbed to support the development of solutions – technology and business models – that can help to deliver agriculture ecosystem solutions and further develop rural connectivity in Ottawa. This will address technologies such as autonomous tractors, sensors and farmland drones; providing digital innovations and robust connectivity for businesses within the ecosystem. A Youth in Food and Farming program will develop an integrated demonstration and education program for city-wide youth (with emphasis on schools in lower-income neighbourhoods) to engage actively in food and farm technologies, focused on entrepreneurship.

  - *Environmental.* Connecting Ottawa's students to real time environmental data to see Ottawa's ecosystem health. This will include installing sensors on trees and educational field trips which will give students an understanding of the functioning and differences

between trees in a forest versus trees in an urban environment.[15] The City will work with partners[16] to support programming, sensors and cameras installed in specific areas to collect data related to air and water quality and provide insights into the wildlife habitat; data will be available to schools, libraries and the community. Hackathons will be used to help conservation authorities address priority environmental issues.

– *Traffic*. Utilize proven technologies to improve urban and rural roadways with the goal of reducing injuries and deaths to youth resulting from collisions. There will be a focus on connectivity, electronic barriers and data with online and interactive maps. Technologies will include AI-based adaptive traffic light management, automated enforcement, HD cameras, speed radar boards, pedestrian and cycling counters, and advanced pedestrian and bike signals, and a multifunctional App warning system.

- **Impact:** Development of a youth-generated workforce that has market relevant digital skillset. Youth will benefit from engagement in these Demonstration Zones to facilitate technical skills and job matching into Ottawa's high-tech industry.

- **Measurability**: Matching of "digital jobs" to job seekers; percentage change in salary after completion of program; increase/generation of Demonstrator concepts.

Project – Civic Engagement Centres

- **Description and Scope:** With the intent of leveraging existing infrastructure such as libraries, recreation centres and other venues; youth and youth organizations will be instrumental in working to establish a footprint of where to establish the centres, beginning in communities most in need such as Vanier and Heatherington, as identified in the City's Building Better Revitalized Neighbourhoods Project.

- **Impact:** Shaped by our youth, enabled through our virtual platform, these collaborative engagement centres will serve as community focal points to engage and inspire youth by delivering learning and skills required to thrive in the digital economy.

- **Measurability:** Number of centres established, activities and programs delivered and the throughput of youth; framework will be developed to analyze and gain the insight required to understand and enable the training and activities that translate to increasing youth employment.

Project – Youth Application League

- **Description and Scope:** Develop a civic hackathon application, available on the virtual platform, that facilitates the coordination of youth to solve city problems. The project will focus on creativity through coding and competition, and provide a mentoring model where the business and high-tech community will be engaged. City representatives will support the project and oversee hackathons and will funnel solutions through to City Hall, where they can be leveraged and scaled.

- **I**mpact: Engage, energize, and inspire youth to work together to solve urban problems. This will provide access and insight into city data, exposure to mentors, and a taste of problem-solving for the betterment of one's own city.

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[15] (https://www.opentreemap.org/ecologyottawa/map/).

[16] *Rideau Valley Conservation Authority Ecology Lab*

- **Measurability**: The number of hackathons, groups that form, and viable data-based (analytics, visualizations) solutions.

Program 3 – Safe, Active and Healthy Youth. Create an environment where all youth feel part of the fabric of their communities; have opportunities to thrive, make wise health and lifestyle choices and explore the community that they call home.

Project – Artificial Intelligence / Machine Learning Tool

- **Description and Scope:** Use artificial intelligence to identify and engage with youth at risk of self-harm and/or suicide. The tool will leverage algorithms to analyze factors such as age, socio-economic status, physical health, mental health, and other information to identify people that are at risk. Strategies and training programs will be developed that can be used to identify and educate youth on how to recognize the signs of mental health struggle.

- **Impact**: Proactive identification and prevention of self-harm among youth.

- **Measurability**: User adoption; contribute to the reduction of teen suicides with a target objective of 12% and reduce self-harm related emergency room visits among youth.

Project – Smart Food Solutions

- **Description and Scope**: Utilizing emerging modular food solutions, farming, and hydroponic technologies to bring healthy and affordable food to communities around the city. Develop relationships with social enterprises and focus on at-risk neighbourhoods in partnership with the local foodbanks. Initial pilots to be in the two neighbourhoods of Vanier and Heatherington, as identified in the City's Building Better Revitalized Neighbourhood program.

- **Impact:** Reduce food insecurity; empower individuals, families, communities, and organizations with the ability to control what they want to grow and eat, regardless of their location and environment. Provide technology to grow fresh food all year-round through a fully automated hydroponic system built within retrofitted shipping containers.

- **Measurability:** Number of families per month receiving fresh food; number of successful pilots; contribution to the reduction of obesity, adoption of initiatives by NGOs with shared mission.

Project – Environmental Stewardship and Community Exploration

- **Description and Scope**: Implement a youth co-developed mobile application to gamify experiences (similar to Pokémon Go) where youth are incentivized to get outdoors and interact with their physical environment utilizing Augmented Reality / Virtual Reality. Students will have the digital tools to help naturalists, scientists and provincial and federal departments to identify and map invasive species and other environmental concerns. Engage elementary and high school students in experiential learning partnerships with Just Food, Ecology Ottawa, conservation authorities, and other NGOs.

- **Impact:** Support environmental organizations by geo-locating potential invasive species and other environmental concerns while also addressing youth skill development (building the app) and environmental stewardship.

- **Measurability:** Level of engagement/adoption by students; the number of invasive species identified.

2.5 Question# 7: Alignment to Community Goals

Please describe the ways in which your preliminary proposal supports your community's medium and long-term goals, strategies, and plans. (500 words max)

The preliminary proposal is well-aligned to the City of Ottawa's Council approved Smart City Strategy, Smart City 2.0, which focuses on the three goals of a Connected City, a Smart Economy and an Innovative Government.

In particular, Ottawa's proposal supports and significantly expands upon initiatives within the strategy that centre on building a skilled and smart workforce, improving digital literacy and the digital divide, expanding connectivity, advancing the City's open-data program, and enabling continuous community engagement in Ottawa as a smart city.

The proposal does so by incorporating a strong youth focus in these initiatives while most importantly placing youth at the forefront of Ottawa's smart future. As explained throughout the application, this will be done through an ambitious co-creation model that provides youth the opportunity to participate in unparalleled hands-on civic engagement all while maintaining healthy and active lives and gaining the skills, experience, and confidence to succeed today and in the future.

Additionally, Ottawa's preliminary proposal strongly reiterates and demonstrates the importance of Ottawa's broader smart city eco-system as outlined in Smart City 2.0. The successful implementation and delivery of smart city initiatives is driven by a city's eco-system and the value derived when all stakeholders work collaboratively together as catalysts for economic growth and a prosperous future. Ottawa's proposal demonstrates that the City and its partners and stakeholders, such as post-secondary and educational institutions and businesses, will work together in supporting youth in defining their future.

Beyond Smart City 2.0, Ottawa's preliminary proposal and its focus on youth also solidly aligns to the City's 2017 Updated Economic Development Strategy by further advancing Ottawa's knowledge-based economy and encouraging and supporting entrepreneurship. Expressly, the proposal supports and enhances Invest Ottawa, Ottawa's arms-length economic development agency, in its strategic plan and vision to "enable Ottawa to achieve its full potential as a globally recognized, innovative and future-ready city". It also builds upon the youth entrepreneurship programs offered by Invest Ottawa.

Lastly, the preliminary proposal and its associated outcome also advance and support the City's 2017-2018 Strategic Plan, Ottawa's Youth Action Plan 2015-2018 and the Youth Equity and Inclusion Snapshot, the Building Better Revitalized Neighbourhoods Strategy, the Ottawa Public Library Strategic Directions and Priorities 2015-2018, the Ottawa Public Health Strategic Plan, and Ottawa's Safer Roads Program by respectively:

- Contributing to City-building efforts and Ottawa's Digital Service Strategy;

- Empowering youth civic engagement, increasing opportunities for youth employment, providing safe places, improving communication with youth, and addressing the affordability of transportation and recreation;

- Contributing to the youth employment strategy, supporting increased programming for youth and closing the digital divide;

- Building on the mission of inspiring learning, sparking curiosity and connecting people;

- Inspiring and supporting healthy eating and active living and fostering mental health; and

- Providing a safe environment to get to and from school, employment, social engagements, city services and other destinations.

If selected to advance to the next phase, Ottawa's proposal and projects would be formally embodied in Ottawa's broader smart city agenda and strategy, Smart City 2.0.

2.6   Question# 8: Demonstrated Readiness

Please describe your community's readiness and ability to successfully implement your proposal. (1,000 words max)

The City of Ottawa is well positioned to advance its preliminary proposal, having clear lines of accountability to manage projects that span multiple departments and external stakeholders as well as a defined process for reporting to elected officials.

As it relates to smart cities, the City formally selected one of its Standing Committees to have governing authority over smart city initiatives and programs. This approach provides for a centralized approval process of smart city initiatives that would otherwise extend across the purview of multiple City departments and committees.

Specifically, in June 2016, Ottawa City Council approved the Finance and Economic Development Committee (FEDCO) as the Standing Committee responsible for approvals on the City's smart city direction and all associated projects and initiatives. At the same time, Council appointed three City Councillors as Smart City Champions. These Councillors provide political leadership and support to staff in developing and implementing smart city activities.

Following this, in November 2017, FEDCO and City Council approved Smart City 2.0, Ottawa's Smart City Strategy. It was developed jointly between the City's Planning, Infrastructure and Economic Department, the Service Innovation and Performance Department, Invest Ottawa and Hydro Ottawa.

The strategy identified three overall objectives that would guide Smart City investments: a Connected City, a Smart Economy and an Innovative Municipal Government. Initiatives within the Connected City and Smart Economy are the responsibility of Planning, Infrastructure and Economic Development, Invest Ottawa, and Hydro Ottawa, while the Innovative Government is the responsibility of Service Innovation and Performance who focus largely on the implementation of the City's Digital Service Strategy. This strategy is a multi-departmental review of priorities and projects with key departmental leads established and included a broad engagement of external stakeholders from industry, education and social impact sectors. The strategy will be advanced and implemented not only by the City, Invest Ottawa, and Hydro Ottawa but also with other key partners like the Ottawa Public Library and Ottawa Community Housing, who both are also identified as partners in Ottawa's preliminary proposal as well.

Ottawa's Smart Cities Challenge proposal aligns with the objectives laid out in the strategy, in particular in how it supports skills development, co-creation and promoting connectivity across geographic and socio-economic communities.

The development of a formal governance structure, including the documentation of clear roles and responsibilities for City departments, Invest Ottawa and Hydro Ottawa is currently underway in an effort to ensure the successful implementation of Smart 2.0.

Having recently launched a number of smart city initiatives, the City of Ottawa has substantial experience delivering complex and innovative projects. Mobility related smart city projects include Canada's first autonomous vehicle test area in mixed traffic on City streets in Kanata and the implementation of an AI-controlled traffic light test bed in the city's east end. The City has successfully leveraged local technology firms to test and validate a variety of innovative approaches for emergency services, including smart "Mobile First" solutions responders to receive critical information en-route to an emergency as well as smart asset monitoring solutions to ensure effective control over sensitive materials such as narcotics pouches. Other initiatives include the development of a precision agriculture test bed in the City's south end, connected, smart LED lighting deployment, real-time OC Transpo service updates and many other projects involving a complex mix of stakeholders, jurisdictions and technical requirements.

Beyond smart city initiatives, the City also has extensive experience implementing significant and complex projects and initiatives. Two recent, noteworthy and relevant examples include the development of Ottawa's Light Rail Transit (LRT) system and the creation of Ottawa 2017.

The first phase of Ottawa's LRT, the Confederation Line, is currently underway and close to completion. This multi-year, $2.3 billion project, which is being delivered by the City and a consortium of companies selected through a competitive, public private partnership process, has required major planning and coordination among City departments and other levels of governments. It has included multi-stakeholder consultations with a variety of organizations and groups over a period of years. This is the largest infrastructure the City of Ottawa has ever undertaken.

Through a series of year- long, large-scale initiatives and community-based activities delivered by Ottawa 2017, Ottawa recently celebrated Canada's sesquicentennial. The City, working together with Ottawa Tourism, established Ottawa 2017; a term limited arms-length entity, governed by a board of directors, that operated with City funding and other sources of funding, to develop programming and initiatives specific to Ottawa for Canada 150. Ottawa 2017 reported quarterly to FEDCO and City Council, through the City's Economic Development Branch, on its progress and use of City funding.

A similar body could be established jointly with Invest Ottawa to oversee the implementation of Ottawa's Smart Cities Challenge proposal. This would provide a platform to integrate industry, education, youth and social impact partners directly into all elements of the proposal and would allow for a governance structure that is nimble and efficient. This could prove particularly important given the two to three-year project timeframe and the need to employ a specific skill-set and leadership expertise that could be outside that of the current capacity of the City of Ottawa.

The optimal governance structure for Ottawa's proposal will be fully examined and recommended in detailed project planning phase of the Challenge, should Ottawa be selected to advance. At this stage, the City would explore the benefits and risks of a number of possible models and decide on the one deemed to be most advantageous to the execution of the proposal and the city's youth.

2.7   *Question# 9: Grant – Spending Categories*

Describe your plan for using the $250,000 grant, should you be selected as a finalist. Provide a high-level breakdown of spending categories and an accompanying rationale. (500 words max)

If selected, the City and Invest Ottawa will continue to work in partnership to develop the proposal's design, planning, and project management components. In addition, an extensive business case that outlines milestones, measurable outcomes, a governance structure, and data and reporting strategy will be created. This would be achieved by using the $250,000 of grant money through an approach that sensibly balances the use of outside expertise with internal skills and organizational capacity.

The following is an overview of how the grant money will be spent.

- **Project Management and Business Case Professional Services ($120,000)**
  Procure one or more professional services companies with the necessary expertise to develop the proposal's business case and measurable outcomes as well as a detailed project plan that would outline major project components, key milestones, timelines, proposed staffing, risk analysis and mitigation as well as the proposal's associated budget and financial plan.

- **Community Engagement ($20,000)**
  Engage a firm with expertise in community consultation and facilitation that would conduct further and more extensive discussions with Ottawa's youth and youth service providers to solicit direct feedback and input into the development of the proposal's co-creation model, youth engagement strategies, and program development.

- **Civic Innovation Network Development ($70,000)**
  Map out Ottawa's civic innovation landscape and data ecosystem. This will be followed by the initial design of the Virtual Platform which will be modeled on open standards to enable youth to interact with the ecosystem. Tying this together would be the establishment of the Civic Innovation Accelerator that would provide a permanent location for youth to work in a collaborative setting with civic and other organizations.

- **Program Development ($40,000)**
  To develop the most impactful and relevant programming for youth, engage a firm with expertise in this field. This firm would work with Ottawa's post-secondary institutions and school boards to develop outside programming that complements and builds upon institutional education and programming. They would also research global best practices in this field and propose how best to implement them relevant to Ottawa's context and youth.

In addition, the following is an overview of how the City and Invest Ottawa will develop their final proposal.

- **Governance Structure**
  Develop the proposal's governance structure taking into account the professional services work undertaken to develop the project plan, business case, risk analysis, and budget. The governance structure will also be based on input received from youth engagement activities as described above.

- **Partnership Formalization**
  Formalize all partnerships identified in the preliminary proposal. This will be done through extensive collaboration and negotiations with potential partners who, once deemed suitable and feasible, will be conditionally on-boarded through a partnership agreement, funding agreement, or a service level agreement approved by the City's legal department.

- **Internal Collaboration, Approvals and Council Direction**
  Collaboration between internal City departments is essential to the proposal's implementation. The City will be responsible for liaising and working with its departments on various components of the project plan. It will also be responsible adhering to any legislative and approval requirements.

2.8   Question# 10: Partnership

Describe the partners that are or will be involved in your proposal. Where partners are not yet determined, describe the process for selecting them. (500 words max)

The City of Ottawa and Invest Ottawa will engage several partners in the implementation of Ottawa's proposal. These partners will range from the private sector, to not-for-profit and academia. Given the ambitious size of the proposal as well as the variety of expertise required for implementation and on-going project management, partnerships will be critical to the success of the proposal.

As part of the preliminary proposal, the City of Ottawa and Invest Ottawa have explored initial partnerships with the following community partners to deliver proposed projects and advance outcomes:

- Program Goal 1 – Youth Skills Development to Enhance Employability – Initial partnerships have been explored with Ottawa Network for Education, Ottawa Impact Hub and Ottawa Civic Tech.

- Program Goal 2 – Youth Innovation and Co-Creation to Advance Civic Engagement – Initial partnerships have been explored with the Ottawa Public Library, Ottawa business associations, post- secondary institutions, Ottawa Network for Education, Ottawa Impact Hub and Ottawa Civic Tech.

- Program Goal 3 – Safe and Healthy Lifestyles – Initial partnerships have been explored with the Ottawa Food Bank, Just Food, Ecology Ottawa and Ottawa's Conservation Authorities.

The City of Ottawa, in collaboration with Invest Ottawa, will engage private sector partners and those not yet identified through a Request for Proposals (RFP) or through Request for Information (RFI) followed by an RFP. Specifically, an RFI will invite interested partners to express their interest in Ottawa's proposal and outline proposed solutions if contracted. This will provide the City and Invest Ottawa the opportunity to more broadly define proposal needs, determine budgets and explore of a variety of potential solutions to ultimately inform the RFP. The RFP will provide the formal contracting mechanism to competitively and transparently solicit partner's solutions.

Private sectors partners and industry will be sought to provide skills training, infrastructure for the CIN, Community Engagement Centres and the Virtual Platform. They will also be sought help develop apps and Artificial Intelligence and Machine Learning tools identified in the proposal.

Partners will have a diverse range of skills and will be expected to have extensive expertise and the ability to deliver significant public value. In addition, Invest Ottawa will be tasked with seeking funds from private partner sector partners to multiply the effects of the federal government's investment and promote the long-term sustainability of the programming.

Ottawa's partnership approach is one that will be highly vetted to ensure that the right partners have the right level of commitment and ability to deliver. In the case that gaps are noticed in partnerships, back-up partners will be determined as part of the project planning phase.