
Smart Cities Challenge Proposal



March 5, 2019
Akwesasne Submission

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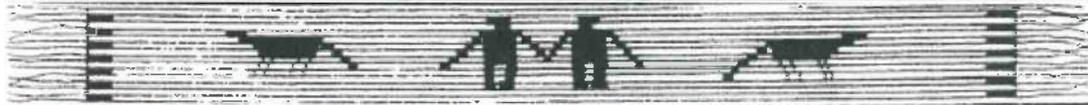
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AKWESASNE MOHAWK COUNCIL RESOLUTION

File Reference: _____

MCR #: 2018/2019 #346



TITLE MOHAWK COUNCIL OF AKWESASNE	THIS MEETING TOOK PLACE IN THE TOWN OF AKWESASNE WITH THE FOLLOWING MEMBERS OF THE AKWESASNE MOHAWK COUNCIL PRESENT:	
AGENCY SOUTHERN ONTARIO DISTRICT		
PROVINCE ONTARIO/QUEBEC	RECORDED VOTE	
PLACE Administration 1 Building	For: <u>9</u>	<input checked="" type="checkbox"/> Carried
DATE <u>4</u> <small>Day</small> <u>March</u> <small>Month</small> <u>2019</u> <small>Year</small>	Against: <u>0</u>	<input type="checkbox"/> Denied
	Abstention: _____	

DO HEREBY RESOLVE: Moved: Tim Thompson
Seconded: Theres Jacobs

WHEREAS, the Mohawks of Akwesasne have the existing and inherent right of self-determination, which includes the inherent jurisdiction over their lands, peoples and territory;

AND WHEREAS, the Mohawks of Akwesasne have the aboriginal and treaty rights, and other rights and freedoms that are recognized and affirmed in the Constitution of Canada, which include the inherent right of self-determination and jurisdiction over their lands, peoples and territory;

AND WHEREAS, the Mohawk Council of Akwesasne is the community government within the territory of Akwesasne and has inherent jurisdiction to make laws, regulations and policies to meet the needs and concerns of the Mohawks of Akwesasne;

AND WHEREAS, the Mohawk Council of Akwesasne intends to preserve the cultural, political and economic integrity of the Mohawk territory and community of Akwesasne;

WHEREAS, Infrastructure Canada announced Canada's Smart Cities Challenge in the fall of 2017, which is a competition open to municipalities, local or regional government, and indigenous communities (First Nations, Inuit and Metis) across Canada; and

WHEREAS, the Mohawk Council of Akwesasne (MCA) staff, leadership and technicians discussed the Smart Cities Challenge and worked with a digital consultant on framing the Challenge Statement for submission; and

WHEREAS, Mohawk Council of Akwesasne submitted the finalized challenge statement was selected as a finalist for the Infrastructure Canada Smart Cities Challenge; and

WHEREAS, The Smart Akwesasne Team worked diligently on collecting community input and formulated the criteria for the compilation of the final proposal submission; and

WHEREAS, The final proposal is now complete and has been prepared for submission;

THEREFORE BE IT RESOLVED THAT, The Mohawk Council of Akwesasne approves the final proposal and supports its submission to Infrastructure Canada for consideration in the Smart Cities Challenge.

CARRIED.

 Adam Cheff <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Ab	 Ed B... <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Ab	 Tim Thompson <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Ab
 J.P. Jacobs <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Ab	 ... <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Ab	 ... <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Ab
 Carolyn Francis <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Ab	 Dal L... <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Ab	 ... <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Ab
 Alex... <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Ab	 Joe Lopez <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Ab	 ... <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Ab

Executive Summary

Our Smart Cities Challenge: To reduce the prevalence of new cases of diabetes at Akwesasne to the rate of the Canadian average. Our goal looks rather humble, to only be as bad off as the rest of the Canadian population. With this statement, however, the people of Akwesasne draw a line in the sand against the existential threat of diabetes. And our work maybe beneficial to others: Recent research reviewing 111 studies worldwide confirmed a disproportionate burden of diabetic disease complications among all Indigenous peoples regardless of their geographic location.

(From: [Global complication rates of type 2 diabetes in Indigenous peoples: A comprehensive review](#))

We recognize that the situation Akwesasne folks now face was ultimately caused by our loss of traditional ways. A steamroller of westernization disrupted our traditional lifestyles, polluted our natural food sources, and dropped on top of the Akwesasne territory three complicating political jurisdictions, not of our making. Our skills and competencies in the old ways lost relevance. Our elders' ability to provide guidance using traditional teachings and ceremonies was derailed. The temptation of western consumptive habits and modern food, that is, frankly disease causing exacerbated our genetic susceptibility for diabetes, as did our now overly sedentary lifestyles. Our traditions sought to preserve our unique relationship with the environment, to make us a sustainable society. This has been replaced by our acceptance of living in a negatively altered

state, and of accepting the need for modern medicine, which does not bring us back to health. It does not cure but keeps us in a state of perpetual decreased vitality.

But how to reverse this trend towards ever worsening health? How can we address this problem in a new way?

We became aware of how organizations and industries were re-inventing themselves and disrupting their existing situation for the better through the use of Design Thinking. With our partners, we learned how to get to the root of our problem, and how to come up with ideas to solve the problem.

We wanted to have all of our community involved. We wanted to make our work transparent so our residents' relationships with our public organizations and with each other would be stronger. We wanted our people involved so the solutions that are



designed will work for our people because they were part of developing where we are going at every step.

We started by looking over everything we had previously studied. We brought together our people singly, in groups, and remotely through surveys and phone calls. We discussed and identified problems. We thought of over 100 causes and solutions and then arrived at key insights regarding our predicament. We determined that the precursors leading to high levels of diabetes are related to these rather straightforward factors:

- Food Accessibility
- Network Accessibility
- Transportation Accessibility
- Westernization
- Checkup Frequency in Health and Dental
- Healthcare System Disconnection
- Loss of target demographic following primary school.

(These will be explained in detail later in our proposal).

We learned that the way forward for the health of Akwesasne must be a multipronged approach, working on many battle fronts at the same time. In our own traditions of health we remember from a Haudenosaunee perspective Goodmindedness, Peacefulness, and Strength are synonymous with a unified mind, body, and spirit concept. Similarly, our ability to achieve a healthy state will

focus on four pillars that summarize our insights: Wellness, Tradition, Access, and Measurement. These Pillars will become themes for our actions in our Smart Cities approach, and take the form of new tools, and a new way of communicating, remembering and teaching. With the help of technology, the way forward is for us to accurately understand our own condition, organize ourselves for change and then make change happen in measurable, adjustable ways.

In the big picture we are where we are because we could not adapt when westernization and industrial technology changed our environment. This is the same story for Indigenous people the world over and is also a story of misused power. While it is regrettable our current environment offers us much less in many ways than it once did, it also has new things in it. Our elders could walk into the bush and point to dozens of things that had nutritional, medicinal or cultural uses. Now our environment has technologies and machines that we need to recognize as useful and use. And not just use, but develop our own skills in their use.

In the years since we were forced to abandon traditional ways and lost our self-sufficiency, the spirit of our community was also damaged. The disruption to Kanikonhriio or Goodmindedness, and Sken:nen or Peacefulness, led to the loss of our strength in looking after ourselves and each other. It weakened our self-worth, our contribution of shared effort, our access to teachings; all were made difficult. Even food in our own territory can no longer be



drawn from the river or grown safely.

Yet the strength of our community can be reinvigorated, especially if we tackle the issue of diabetes. We can make use of new technologies such as mobile communication to help us function like a community again. Systems can be introduced that will make us strong together by keeping us in touch, by responding to each others requests for help or to learn; we can share our learnings and join one another in healthy activities, and get to know one another.

Our health challenges are made harder because we don't know one another. Not in the causal sense of knowing but in the sense that our health services don't have proper information on our individual health. The fracturing of our community across jurisdictions and health districts means we can hardly even know ourselves in the sense of having an accurate medical history, often spread across provinces and countries. So how can we understand the health status of our community or plan to improve it? A mobile application, designed for the purposes of organizing us and our information can give us back this glue that can make us a community again. Modern tools can make our problems understandable, and allow us to find insights into our condition so we can develop ways to reverse our maladaptation to this still relatively newly imposed environment.

Now, in thinking about how technology can help Akwesasne, and what the Smart Cities challenge may permit us to

accomplish, we started with a new way of thinking as a group. Design Thinking helps organizations innovate, which is really just a word for adapting. And this approach allowed us make up time for those years when we weren't adapting; we wanted to move ahead but had trouble deciding what needed to be done. Now we have gone over what we know, focussed on a challenge, engaged our community, developed some momentum and made a plan that uses smart technologies as an antidote for the issues caused by previous modernization.

Akwesasne has recognized the Smart Cities Challenge as an opportunity to face our hardest challenge. It has brought our community together and we have found a way to organize ourselves to move forward. While much of the world's technology had caused problems for us in the past, we will now use technology as a raw material to regain our vitality.

Our plan for adoption of technology will be on our terms. Our project probably does not seem earth shattering, which is a rate of change we find disconcerting, anyway. Through the use of about a dozen electric vehicles, the construction of 3 greenhouses adopted by the school curriculum, and a mobile application we can put in everyone's hand we plan to attack the 4 pillars of our challenge. With this limited investment in machines and software we will address the insights about our predicament.

Key to organizing the strength of our community will be the mobile and administrative coordination tool we are calling the Akwesasne Community



Application. This brings everything together by providing communication amongst our people, coordination of services, access to food and community programs, measurement of service efficiency, and tracking of individual health. With these tools and oversight, we will make progress on our challenge, and reduce the rate of new disease to the rate of other Canadians. It would be nice to target the rate of diabetes in our people of 200 years ago, but for now it will be a major goal to achieve the health of other Canadians.

Our success will represent a watershed in our history. This will be where we began to defeat the most significant health risk for our people. This is where we began to improve the most significant factor for achieving a happy life, that being good health. Our elders knew how to make the most of what the environment offered; we can use that approach again. Tech is like a new herb, we must understand and use it. We will put it to use without obliterating the traditions that are our identity. We will use it while maintaining harmony with the environment.

We can use new things like e-cars and e-buses to get where it is important to go, without adding to the toxic load by burning oil. We can use greenhouses to replace our polluted food sources and gain back a measure of self-sufficiency. Mobile and computer programming can bring back the sharing and helping on which our strength as a nation was based. Digital tools will give us access to our collective memory and to the wisdom of our traditions, from which we regain pride necessary for our

progress as a people. Our traditional teachings shows how strength is based on things working together. We will use that approach to work on many things at once to reverse the main threat to our health.

We believe this solution is extensible. Our package of ideas, with its mobile technology, databases, integration of health devices, location sensing, health diagnostics, statistics, transportation logistics, electric vehicles – these are all details to be adjusted for each case. At the center, however, will be the open-source system that is the hub of the services, and this is a non-proprietary system suitable for hosting anywhere. What we have learned, the approaches we take, the way we integrate the very new with the old will surely be helpful to aboriginal nations across Canada and the world over.

We are not the only people whose nation has been knocked out of harmony with the environment because of colonialism. We are not the only aboriginals whose communities were disfigured by imposed change and 'progress'. Regardless of cause, other indigenous people around the world are vulnerable to developing diabetes at the rates we are. They would surely benefit from our experience with this project. They would be welcome to our technology.



Vision

The goal of our Akwesasne Smart Cities Challenge is to leverage smart technologies to reduce new cases of diabetes in Akwesasne to the Canadian national average. Six months ago our preliminary proposal laid out four pillars of focus, and we hold true to that vision in both our process and outcomes. These four pillars are improving approaches to community wellness, incorporation of holistic Indigenous practices, improved access to community services, and finally, tracking of health diagnostics for a measurable approach.

Community Wellness

The approach to our first pillar, community wellness, calls for making existing opportunities more accessible, increasing the number of people taking advantage of these initiatives, while simultaneously improving the existing systems supporting them. The Mohawk Council of Akwesasne, Community Health and numerous individuals in the community provide a number of opportunities for the improvement of physical, mental, spiritual and emotional wellness in their community. These programs include The Green Food Bag, a service offered by the Department of Health, which provides fresh fruit and vegetables to households at a low cost on a monthly basis; daily yoga, pilates and fitness classes at the recreational center, free cooking, knitting, art, and taekwondo

classes. Also provided is an adventure club that takes groups of individuals outdoors to experience nature through hiking, bike rides, fishing, and other activities. These are just a few of the many programs and opportunities available to the people of Akwesasne. Unfortunately, participation rates are rather low with stagnant growth uptake. Many individuals are restricted to the programs in their own district or are unaware of when and where things are happening. Our proposed solution will address these impediments in a multi-faceted approach, through improved intrinsic motivators of awareness; ease of scheduling and community connection; by improving accessibility via more affordable transportation, and through measuring the effects of our efforts to further improve existing services.

Adding to the lack of community wellness is the barriers to healthy food sources within the community, including long drives to grocery stores, and high levels of mercury in both the Saint Lawrence River and surrounding soil, stealing our traditional practices of gardening. To address the issue of food insecurity and inaccessibility, we will implement three Smart Greenhouses through a phased roll-out approach at each of the Akwesasne Mohawk Board of Education (AMBE) Schools locating one in each district. The intention of this project is to first create a curriculum based on agricultural education teaching years 6 through 13 on how to grow fruits and vegetables with the importance of a healthy diet. The second goal of this project is to help address the transportational barriers by using students as a vehicle to get healthier options onto young families tables. Lastly, gardening promotes physical health, mental health through stress relief, exercise, brain health, nutrition, and healing, which is not only a contributor to reducing pre-diabetes, but also following the teachings of our Indigenous and Mohawk practices.

Our Greenhouse implementation is planned to be fully automated including temperature control, the amount of light saturation, humidity levels, soil moisture as well as other factors. Smart greenhouses can be controlled remotely over the cloud through an application, eliminating the need for a person to be present for most operational needs. By using IoT, sensors and actuators, factors such as temperature and humidity can be monitored remotely,

and changed based on needs to create the most viable growing environment for the products. Although fully automated, connecting children with the natural world and allowing them to explore the outdoors, including our school gardens, will be an integral part of our integrated curriculum. Students work in the garden, weeding, watering and tending to the beds. Classes utilize the space for lessons in science, social studies, math, reading, writing, and painting. A living laboratory, children are growing, experimenting, observing, measuring, comparing, and learning to care for something that is important to the Akwesasne Mohawk Board of Education and to sustainability efforts around the world. A garden is as much a story about the people who create it as it is about the garden itself. School Greenhouse Gardens are spaces for “hands-on” education, incorporating the full cycle of learning associated with healthy food - from growing to nutrition to cooking and eating. This will provide hands-on learning experience and a living classroom for Akwesasne.

Incorporation of Indigenous Community Practices

Many of the issues we face, and particularly the challenge we are experiencing with diabetes, can be attributed to the loss of the traditional ways of diet, activity levels and mindset. To tap into the strength of our traditions we will be integrating these cultural beliefs that served us well for centuries. These practices, even if put to use in combination with modern



technologies, will once again help us regain our vitality.

Our intention to incorporate Indigenous Community Practices means we will approach health and wellbeing from more than just the modern clinical perspective. Akwesasne is part of the Haudenosaunee Confederacy and remains connected to our traditional roots. Holistic Indigenous practices encompass three principles that were introduced to our people as the Peacemaker traveled the land: Kankonhriio or Goodmindedness, Sken:nen or Peacefulness, and Kasastensera or Strength. This teaching became known as the Great Law of Peace. Essentially, what the Peacemaker taught throughout the territory was that the practice of Kanikonhriio or Goodmindedness would bring Peace or Skennenkowa to the people in the land. When the Peacefulness was pervasive through the territory, the people would gain a Strength or Kasastensera that could not be overcome by negative forces. From a Haudenosaunee perspective Goodmindedness, Peacefulness, and Strength are synonymous with the concept of mind, body, and spirit. This holistic approach to wellness has gained significant traction in alternative healing practices. The popularity of respecting the interrelationship of mind, body, and spirit is undoubtedly due to its effectiveness, especially in combination with modern medicine or as an alternate. In the Haudenosaunee Wellness Model, the 'health' of Haudenosaunee individuals, families, clans, communities, nations and overall confederacy can be measured using

indicators strictly from our teachings and cultural mores. Likewise, an individual can receive guidance on a process to return to a state of 'health' using our traditional teachings and ceremonies.

The Haudenosaunee Environmental Task Force has proceeded with a project to develop an environmental protection process based on their Indigenous world view and relationship with the natural world. Such a process enables individual nations and communities of the Haudenosaunee to protect and restore the natural world, while helping to preserve their unique relationship with it, as a sustainable society. The process devised criteria and indicators for health of the natural world including people, which has a foundation in Haudenosaunee culture and traditions.

Through our Smart Cities Challenge proposal we keep these teachings and values at the center of all solutions, smart or otherwise. The Akwesasne Community Application will embrace holistic Indigenous practices through the teachings it contains the insights it provides to users, and the accessibility of these resources. The application will simply provide the means for the people of Akwesasne to achieve and maintain Good Mindedness, Peacefulness and Strength.

Improved Access to Community Services

The geographical footprint of Akwesasne is unique and includes jurisdictions in Ontario, Quebec and the state of New York. For many citizens, significant distances, travel



times and border delays both ways impact accessibility to major services. This limits our access to facilities and infrastructure where physical health, fitness activities and training are provided as well as accessibility to fresh, healthy food.

Without personal vehicles, getting between major public hubs or to a grocery store, fitness and recreation centers, or healthcare providers is unfortunately challenging, and a real impediment to these trips occurring. Right now Akwesasne relies solely on taxi-cab. These companies – based out of surrounding cities Cornwall, Ontario and Massena, New York – charge high rates to travel into the districts of Cornwall Island, St. Regis, and St. Snye. Additional charges accrue due to the extremely sparsely populated community and additional drive time to come into the reservation. Our plan in overcoming this challenge is to bring affordable and accessible public transportation to the community of Akwesasne. To do this we will organize a Mohawk Council of Akwesasne (MCA) subsidized taxi-cab service, as well as designing and beta testing a project for on-demand electric public transit bus services. Through these two transportation initiative we will facilitate the important movement of our citizens between our districts and to needed services including fitness and recreation centers, healthcare providers in various locations and to purchase food at grocery stores. Through a phased roll-out approach we will begin by purchasing an electric vehicle per district in order to gain feedback on the program and truly understand our capacity requirements.

Based on the preliminary research this will lead to four cars per district, a total of twelve cars as allotted in our budget.

Tracking of Health Diagnostics for a Measurable Approach

The prevalence of Diabetes in First Nation communities is disturbing. Diabetes Canada states the rate of diabetes for First Nations individuals living on a reserve is 3-5 times higher than other Canadians. The Canadian national average is 9%. The rate in Akwesasne is 33%. While we plan to include many measurements in the Smart Cities system – to help us understand and influence patterns of behaviour, optimize services and logistics, to provide feedback to help in the iteration of ideas – one measure is preeminent in our challenge: the number of new cases of diabetes in Akwesasne. This one number must be reduced to that of the Canadian national average. This is the goal which all the other pillars and tactics will be organized to achieve.

Consistent with research on diabetes in First Nations populations, the Akwesasne rate is more than three times the Canadian average. Through the aggregated data received from the Akwesasne application, CANRisk surveys completed within the application, individuals referred to the diabetes prevention and management team as well as the number of new cases of diabetes in Akwesasne, we can measure the relation between our efforts and the Smart Cities Challenge initiatives with a real change of diabetes in Akwesasne.



(CANRisk surveys provide questions that help individuals determine if they are at higher risk of having pre-diabetes or type 2 diabetes.)

Apart from the measuring of health outcomes and diagnostics indicative of medical issues, our work with the Mohawk Council of Akwesasne Executive team also narrowed in on Key Performance Indicators that would indicate if our solution was having a positive effect on the factors contributing to health outcomes; for example, were our chosen tactics shown in the behaviors of the community? Were our solutions achieving key objectives? The Akwesasne Community Application and digital ecosystem through which transportation and participation rates can be collected and analyzed is central to the measurement and understanding of these contributing KPI's.

To address this pillar, and the key performance indicators contributing to your Challenge statement we will collect and aggregate all of the data gathered from the application including CANRisk survey results, usage rates of programs and services, and progress of health metrics in aggregated form and display it in a dashboard view for the Mohawk Council of Akwesasne. This will allow us to understand both baseline data within our community and understand how our efforts are relating to decreasing the new cases of diabetes.

With these four pillars – Wellness, Tradition, Access, and Measurement – at the center of our Smart Cities Challenge,

we will improve community wellness by developing better services while creating more affordable access to them. We will incorporate Indigenous Mohawk culture to tap the wisdom held in our traditional teachings and approach all issues with a more holistic mindset respectful of nature. All the while measuring movement towards targets, to show proven results or highlighting a need to adapt to better serve our people.

Reflective of the true needs of the community; as demonstrated through a compelling body of data and evidence and extensive resident engagement. Ambitious, achievable, and meaningful for the community and it's residents.

A human centered-design approach is based on delivering solutions that meet the true needs of the community, that are meaningful, that are aligned through initial and ongoing engagement with the end users. Consequently, our Smart Cities team has kept Community Engagement at the forefront of our Smart Cities Challenge solution. Over the past seven months, we have implemented the Design Thinking methodology in its many forms, facilitating workshops with important user groups, surveying and interviewing internal and external stakeholders. And, as this information provided direction and formed into ideas, prototypes and application interfaces, we gained feedback from Akwesasne community members on our solutions and how they should iterate via rounds of user testing. Our partners,



zu, knows from experience that it is best to “measure twice and cut once” in designing solutions, which means keep users in the loop until things are completed, or one is likely to complete the wrong thing.

Using the Design Thinking process our outcomes and approach ensures the true needs of the community are served. Community members are the ones who both identified the problems and helped ideate the solutions. They were and are conferred with every step of the way providing feedback on solutions, voting on the best implementation strategies, and user testing our prototypes. In the past consultants sought to implement their own “expert” ideas in prescriptive ways; in Design Thinking, however, users are encouraged to critique things and provide their ideas on what would be a better implementation for the community.

In addressing the question of whether our identified challenge is meaningful to the community, we put forward this data point. During our community engagement events, we surveyed all individuals in attendance and found that 82% of respondents had either suffered from Diabetes themselves or had a family member who did.

Ambitious, achievable and meaningful for the community and its residents

When we look at our Smart Cities Challenge Solution, we believe our challenge statement defines ambition. Despite

advancements in medical treatments and technology, diabetes remains a prevalent chronic disease that afflicts a huge number of Canadians and more specifically, Indigenous people. We recognize that reversing the prevalence of diabetes in Akwesasne requires a strong desire, determination, and hard work. This will mean, first, work to be done by the community and the vendor partners in determining what tools will come into existence, followed by commitment by our community members in engaging in the new systems and supporting these new approaches to health, fitness, and traditional mindsets. It is an ambitious undertaking to address a problem affecting so many individuals in the community, across Canada and around the world. We are excited and driven by the opportunity to create a healthier Akwesasne, as well as creating an approach that is intended to be extensible and actually extended to a much wider population.

Although our challenge is ambitious and potentially far-reaching, we have taken a very practical, grassroots approach to solving it. In looking at the many software project debacles over the past years, we observe the common problem that these systems were designed by experts for the many – but failed for the individual users – and so failed for the many, too. We started with individuals as we believe if our approach can be confirmed to work for one it has a much greater chance of working for the many.

The community is telling us our solution, the one they have helped us to develop is



achievable. While there are more science-fiction oriented tech in existence, our choices, though less appealing, are based on proven technologies with the basic goal of providing our people with better access to the essentials of life.

- Smart Greenhouses Agriculture solutions account for 6% of all IoT projects, giving us confidence in a successful implementation with capable partners in order to cut operating costs and make the most of the available arable land in Akwesasne.
- The use of electric vehicles (EV) continues to grow with nearly 50,000 plug-in vehicles in Canada and the growth of 68% in 2017. Our Smart Cities Challenge will implement this proven technology as an economic and environmentally sustainable approach, which also meets the practical challenges of transportation for people, and the delivery of quality food and services.
- Design Thinking is reshaping service delivery and product design in industries from tech to banking and everything in between. Business consultancies are buying up Design Thinking shops as they have recognized the importance of Design Thinking to organizational strategy and success. We have chosen to use this approach to identify opportunities and problems and to produce solutions always in touch with our citizen users.
- In partnering with zu we are tapping both their expertise in Design Thinking,

but also in their high success rate of creating digital products that centralize an array of components and capabilities. We will create an integrated technological solution that combines mobile applications with an administrative back-end while integrating third-party services and information feeds from other systems associated with services, greenhouse inventories, event scheduling and so forth. Our solution requires us to bring services, educational components, scheduling, information collection, and other capabilities together through a hyper-localized web-application to achieve success through a holistic system of seamlessly flowing parts. The Akwesasne Community Application will be used as an education tool, management software, expediter of services, and a collector of information.

Well-suited to a smart cities approach

Being a Smart City can mean many things. It can look very different depending on where you are and what is your pre-eminent challenge or opportunity. But the objective is always the same – using technology to create a sustainable future and improve the quality of life for people. As we come closer the end of our finalist phase, we are confident our solution takes on both this Smart City approach to technology, but also its approach to openness, integration, transferability, and collaboration.

Openness derives from our commitment to



building this project with the community, and not for the community. Unlike many technology projects, we are not using a team of experts working in secret to produce something without their input, which our citizens will then be trained to use. Openness is embodied in what this is for and how it will work. Openness is also driving our planned collection and sharing of data and results, which are used to motivate improvement at an individual and group level, so progress can be celebrated as we move towards improved health. And openness also requires transparently communicating data collecting, use and disclosure with our users, always respecting privacy best practices.

Integration is embodied in the development of tools that fit into the lifestyles and activities of community members, rather than requiring our folks change to fit the system. Integration is represented in the interaction and interdependence of the capabilities we plan to develop in the Akwesasne Community Application. Each capacity – education, transportation, access to services and better food – enables or relies on the next, supporting our recognition of the interplay of curative and curative elements associated with our challenge. This dependence of factors is supported by our traditions, where mind, body, and spirit are supportive of a combined single strength. Our traditional teachings tell us there is a wholistic state of balance where maximum strength is attained. Our people can receive guidance on a process to return to a state of 'health' using our traditional teachings

and ceremonies. In this case, technology will help us organize and integrate an additional combination of knowledge, tools, accessibility, transportation, measurement, feedback, health services and nutrition. All facets will be integrated in a virtuous circle to achieve more than the sum of the parts.

From the beginning, the approach has been about engaging our community, being open to ideas and feedback, and relying on even the most basic direction of identifying: What do we want this to be about? We believe that a human-centered design and co-design approach consistently produces a collaborative solution for the people and by the people. When one looks at our Smart Cities Challenge integration is a pivotal piece of it, we bring together Healthcare, Education, Public Transportation, Community Initiatives including recreation Integration is a large piece of our project, bringing together many essential services from nutrition, healthcare, education, executive council, public transportation services, data management, traditional practices, and more into one silo and system to provide seamless and high quality service to the community of Akwesasne. This is what integration means to our Smart Cities Proposal, it means bringing people, business and essential community services together to make them more accessible and affordable through collaboration.

Our strategy to solve the challenge that addresses root causes; it targets opportunities for improvement that also exist for many Indigenous communities the world over. As success is realized our

approach should be shared. Our system ideas and components can be reused, whether as open-source software or as open-source ideas, all non-proprietary. The technologies will be able to be redeployed in other jurisdictions, incorporating modifications for changes in detail relating to specific communities, health measures, locations, educational elements, transportation challenges, targeted medical conditions and so forth.

National survey data has consistently shown that the national age-adjusted prevalence of diabetes is 3 to 5 times higher in First Nations than in the general population. Diabetes within Indigenous communities The higher rate of adverse health outcomes in Aboriginal peoples is associated with a number of factors, including lifestyle (diet and physical activity), genetic susceptibility, and historic political and psychosocial factors, stemming from a history of colonization that severely undermined Aboriginal values, culture, and spiritual practices. Barriers to care that are unique to Aboriginal settings also exacerbate the problem with fragmented healthcare, poor chronic disease management, high healthcare staff turnover, and limited or non-existent surveillance. In addition, social determinants of health, including low income, lack of education, high unemployment, poor living conditions, lack of social support, negative stereotyping and stigmatization, and poor access to health services compound the problem. This is common across Indigenous communities, and we believe the barrier facing the

community of Akwesasne is common across all Indigenous communities big and small throughout Canada. We believe our Smart Cities approach, built with open source tools, solving problems people across Canada are facing makes transferability opportunities endless.

The Mohawk Council of Akwesasne and our digital consultancy zu have come together to build something greater than the sum of its parts. We at MCA bring a wealth of knowledge to the table about the barriers our people face, but also about the capabilities we have, and the strength of our teachings rooted in our culture. zu brings an ability to plan and deploy digital strategy, to build digital tools, and a proven knack for driving digital transformation at municipal, provincial, and federal levels. In combination, we bring an incredible amount of insight and opportunity identification to the Akwesasne Smart Cities Challenge. Our partnership to date has resulted in highly satisfying progress. Because this will be an ongoing battle against the challenge of diabetes and for the pillars of health, and given that technology is a rapidly adapting toolset, we expect this collaboration will span more than the timeline of this Challenge. Together, and with other partners, Akwesasne will foster a sustainable future for our people. And if we are successful, we will seek to share our learnings to improve the quality of life of other aboriginal communities, and others, across Canada and beyond.



Performance Measurement

Using the tools and approaches developed by our solution will enable us to coordinate and collaborate on the necessary changes we need to reverse this plague of diabetes. We bring our sense of community and friendly competition to the table to challenge one another to be our best. The Smart Cities technology we have prototyped will tie in actual results on the behaviours we seek to modify, showing us where to go to next, and transparently reveal whether we are elevating ourselves into a new era of health, or further deteriorating. Our traditional ways will give this new technological approach the heart that it needs in order for it to be relevant to us. The outcome is admittedly ambitious, but it is achievable and so important to achieve.

The outcomes of the success of the implementation of our Smart Cities proposal are measurable first in the principle goal figure of reducing new cases of diabetes, and secondly, in the lifestyle measures that reduce the risk of diabetes. All measures are available to be measured by our application through unlinked aggregation. These specific measures include.

- The capacity of public transportation
- An individual's distance to programs and services
- Citizen awareness of available programs and services
- Number of people attending public programs and services or using videos within the app.

- Number of people completing in-app challenges or Competitions
- CANRisk surveys completed in-person, and through the Akwesasne Community Application.

Avoidance of diabetes going forward would indicate a major overall improvement in health and well-being for this community, and provide a way forward for other communities that adopt the protocol we will model.

In combining the new digital tools and medical knowledge the modern world provides with our traditional approaches that protected our health and environment in the past, our community will build a modern foundation of health to move forward, as with health, all things are possible.



Project timelines, deliverables, and milestones that are ambitious yet attainable

Our project timeline spans a total of 24 months with notable milestones throughout that frame. Implementation of the application, dashboard, greenhouses and electric transportation system will all fall under this 2-year approach. Broken into a 4 phases, like many software projects, the creation of our application and dashboard will entail the strategy and validation of our findings to date as well as design and development. Working in tandem, the implementation phase of the Greenhouses and Transportation System will be completed with the same time constraints due to feature reliance on application qualities.

• [SEE TIMELINE ON PAGE 20](#)

• [SEE MILESTONES ON PAGES 22 – 24](#)

Our planned health and wellness initiatives contained in our solution are intended to reduce the prevalence of new cases of diabetes. Measurement is critical to monitoring the impact of these initiatives on stemming new cases of diabetes. In a workshop format organized by our consultants at zu, our Directors of the Mohawk Council of Akwesasne identified key performance indicators believed to capture the essence of our planned approaches. Working collaboratively, we developed 3 core metrics to measure

the effectiveness of our initiatives health and with each metric, we ask 5 critical questions. Our 3 core metric categories are Access, Participation, and Screenings. Our 5 critical questions regarding each KPI are: Why does it matter? What affects it? What can we control? What are the measurables? What are the targets?

Key Performance Indicator #1: Accessibility

The Access KPI is defined as a measure of accessibility by community members to public health and wellness programs. For example, individuals seeking opportunities for active living, seeking health care, or at-risk individuals meeting medical program requirements. Measurable factors include the capacity of public transportation, an individual's distance to programs and services, and citizen awareness of available programs and services.

Why does Access matter? Transportation, location and awareness of opportunities all impact the community's and at-risk individuals' ability to live active lifestyles, obtain healthy food options and take advantage of any services not in their home location.

What affects Access? Home location, income, access to public transportation, access to an automobile, distance to the desired service, location of healthy food options.

What can we control about Access? Transportation options, scheduling, and coordination of transportation options, the



Project

Timeline



■ Digital Ecosystem - App
 ■ Digital Ecosystem - Dashboard
 ■ Greenhouse
 ■ Electric Cars & Bus

location of activities, location of healthy food options, delivery options.

Access Measurables - Program and services enrollment numbers, program and services communication engagement (social media engagement, application analytics, communication reach). Public transit capacity and utilization (seats available, usage). Greenhouse Food Box delivered/picked up.

Access Targets - Increase in program and services enrollment, increase in public awareness of Akwesasne programs and services, increase public transportation capacity, increase in public transportation usage, increase in the number of locations for healthy food options, increase in healthy food options used.

Key Performance Indicator #2: Participation

The Participation KPI is defined as the number of community members and at-risk individuals making use of public programs, services and completing app challenges. This includes the number of people attending public programs and services and the number of people completing in-app challenges.

Why does Participation matter?

Participation levels indicate the uptake of these programs, services, and app challenge uptake, and are a precursor to them having positive effects. Tracking will inform future programming by indicating that oversubscribed programs should be scaled, and less popular ones should be

re-examined. Initial participation levels for community activity will establish a baseline, so that modifications can be shown to improve or reduce participation levels.

What affects Participation levels? Location of opportunity, distance, accessibility, weather, quality of offering, ties to Akwesasne heritage, the motivation of the individual, awareness of opportunity.

What can we control about Participation levels? Access to transportation, the location of opportunity, cost, awareness, motivation, quality, association with Akwesasne heritage.

Participation Measurables - Number of attendees for programs and services, number of completed in-app challenges, feedback on the experience.

Participation Targets - Increase participation number for programs, services and app challenges. Increase participation numbers in targeted age groups: youth, family, and senior.

Key Performance Indicator #3: Screenings

The Screenings KPI is defined as the number of CANRisk surveys completed by undiagnosed community members. This includes both CANRisk surveys completed in-person, and through the Akwesasne Community Application.

Why does Screening matter? Early intervention in diabetes risk factors can prevent long-term illness; broader



Application & Dashboard

MILESTONES	ZU	DELIVERABLE
Phase 1: Validation Stage	<ul style="list-style-type: none"> • Project Discovery • Project Kickoff & Planning • Feature Prioritization • Technical Discovery 	<ul style="list-style-type: none"> • Presentation on approach and plan.
Phase 2: Design	<ul style="list-style-type: none"> • Brand Sprint • Finalization of Branding • Production Design • Task & Work Flow Design • Development Consultation 	<ul style="list-style-type: none"> • Summary Report and Style Guide from Brand Sprint • Design Strategy Report • Sitemap diagram outlining project architecture.
Phase 3: Application Development	<ul style="list-style-type: none"> • Development Setup • Core Workflow & Functionality Development • Development of Key Screens • Feature Development 	<ul style="list-style-type: none"> • Application page templates • Application building completed • Testing, Quality Assurance, and Revisions Completed
Phase 4: Dashboard Development	<ul style="list-style-type: none"> • Development Setup • Core Workflow & Functionality Development • Data Collection and Parsing • Chart Styling 	<ul style="list-style-type: none"> • Dashboard building completed • Integration with application completed • Testing, Quality Assurance, and Revisions Completed

Smart Greenhouse Implementation

MILESTONES	MCA TASKS	DELIVERABLE
Phase 1: Project Planning	<ul style="list-style-type: none"> • Environmental Impact Assessment • Resource and Location Planning 	<ul style="list-style-type: none"> • Environmental Impact Assessment Document
Phase 2: Curriculum Development	<ul style="list-style-type: none"> • Hiring of Specialist • Collaboration with AMBE 	<ul style="list-style-type: none"> • Curriculum Implementation Plan & Rollout .
Phase 3: Request for Proposal and Vendor Selection	<ul style="list-style-type: none"> • RFP Development, Analysis, and Selection 	<ul style="list-style-type: none"> • Selection of successful vendor.
Phase 4: Implementation	<ul style="list-style-type: none"> • Overseeing and management of vendor implementation • Integration with application 	<ul style="list-style-type: none"> • Greenhouse Implementation Completed

Electric Public Transportation System

MILESTONES	MCA TASKS	DELIVERABLE
Phase 1: Project Planning	<ul style="list-style-type: none"> • Resource and Project Planning • Vehicle research and selection 	<ul style="list-style-type: none"> • Environmental Impact Assessment Document
Phase 2: Request for Proposal and Vendor Selection	<ul style="list-style-type: none"> • RFP Development, Analysis, and Selection 	<ul style="list-style-type: none"> • Selection of successful vendor
Phase 3: Pilot Implementation	<ul style="list-style-type: none"> • Purchasing and Implementation of 1 Electric Car / District. • Integration with application • Evaluation of pilot project success 	<ul style="list-style-type: none"> • Determine next steps based on pilot evaluation

community CANRisk screening results establish a baseline from which our challenge can measure its overall effectiveness; a CANRisk baseline allows comparison of community rates to national standards; a CANRisk baseline provides a clear picture of those at-risk in Akwesasne.

What affects Screening participation rates? Education about diabetes and health risks; awareness of what the survey results mean; public perception, access to survey.

What can we control about Screening participation rates? Increase the availability of survey; increase education and awareness of what individuals should do given the results of their survey; facilitating streaming of at-risk individuals to clinics for preparation of personal plans for diabetes prevention.

Screening Measurables - Number of CANRisk surveys completed; the number of individuals recommended to health professionals.

Screening Targets - Increase in the number of CANRisk survey completions; increase streaming of at-risk individuals to clinics for personal prevention plans.



Payment Schedules

WEBSYSTEM PAYMENT SCHEDULE	DATE	AMOUNT
Phase 1: Validation Stage	July 1, 2019	\$212,212.50 + tax
Phase 2: Design	September 1, 2019	\$319,050.00 + tax
Phase 3: Application Development	January 1, 2020	\$578,925.00 + tax
Phase 4: Dashboard Development	July 1, 2020	\$295,950.00 + tax

SMART GREENHOUSE PAYMENT SCHEDULE	DATE	AMOUNT
Phase 1: Greenhouse Engineering, Resource Planning and Design & Curriculum Development	July 1, 2019	\$590,000.00 + tax
Phase 2: Tsi Snaihne School Community Outreach Greenhouse Implementation	April 1st, 2021	\$500,000.00 + tax
Phase 3: Kana:takon School Greenhouse Implementation	July 1, 2020	\$350,000.00 + tax
Phase 4: Ahkwesahsne Mohawk School Greenhouse Implementation	October 1st, 2021	\$350,000.00 + tax

ELECTRIC PUBLIC TRANSPORTATION PAYMENT SCHEDULE	DATE	AMOUNT
Phase 1: Project, Resource & Location Planning	June 1, 2019	\$150,000.00 + tax
Phase 2: Piloting and Evaluation of Smart Taxi and Electric Bus Implementation	November 1, 2020	\$535,000.00 + tax
Phase 3: Extended Implementation	October 1st, 2021	\$480,000.00 + tax

** Project Coordinator and Project Assistant Coordinator are allocated throughout the Smart Greenhouse Payment and Electric Public Transportation Schedules.*



Project Management

HUMAN RESOURCES

The Smart Cities project will provide many benefits towards new skill development, as well as full and part time labour opportunities. Part of the value of these employment opportunities will be knowing that the work directly benefits our community and has the higher purpose of improving health outcomes and quality of life at Akwesasne. There are many specific roles to fill, which we are confident we can recruit – or train and recruit – from our own community.

- For overall project oversight, A Project Manager position and an Assistant Project Manager will be secured to oversee the components of the Akwesasne Smart Cities project.
- To prepare the team for the Smart Greenhouse System, Economic Development will organize and familiarize an agritech course so that the community will have a trained workforce from which to choose the actual employee team for the greenhouse implementations.
- Electric Public Transportation System drivers for the three small electrical vehicle programs – the Smart Taxi Service, the Smart Health & Social

Programs Delivery, and Food Delivery Services (all for people), as well as drivers for them – will be secured through a job opportunities program drawing from our local employment resources. This will provide our programs with a pool of applicants from which we can select the best team members.

- To facilitate our community member end-users' use of the new technology, we will recruit Akwesasne high school students who will be put to work through a Best Matches program within our community centers in order to offer assistance to the elderly and other technology challenged community members. Here the young will mentor those who would like to learn how to better utilize their smartphones so as to make full use of the Akwesasne Community Application System, and all its various capabilities.
- In addition, our Mohawk Council of Akwesasne Information Services technical team will be trained by our technology partners (zu) to support the technical requirements of the Community Application System Administrative functionality, which is to be housed within our territory. This is

the back-end to the mobile Akwesasne Community Application System and is responsible for organizing and supplying the mobile app with much of the information it presents. The training will ensure the Akwesasne Information Services technical team can maintain and administer the system, publish to it, update the app with information, news, educational elements, food inventories, maintain interactions with third party payment systems, make use of the information it aggregates, and so forth.

- **Electric Public Transportation System under-use may impact its viability**

As the planned Electric Public Transportation System – consisting of the Smart Taxi Service, the Smart Health & Social Programs Delivery, the Smart Delivery Service and Electric Bus Services – is planned to collect minimal fees, there is a risk to the financial viability if there is underutilization of the capacity. This could create an unsupportable cost burden. While there is a possibility that the smart taxi service may not be utilized, this risk seems rather small given the enthusiastic reactions noted at the community engagements. All have been strongly supported with “Can’t wait!” attitudes toward a local taxi service at affordable rates.

- Mitigating the case of low ridership for the electric vehicles, a fall back deployment is that the bus will still be utilized for the planned weekly runs our college students make to the Iohahio facility.

- Mitigating the case the case that the smart taxi and delivery services are not utilized, these vehicles will be re-allocated for use with the health and social programs.

- **Greenhouses in particular locations are underutilized**

The activities associated with management of the greenhouses in the Smart Greenhouse System will be incorporated into the Akwesasne student curriculum. A greenhouse will be located at the Akwesasne Mohawk School with the purpose of learning and food production. If this greenhouse is not used to minimum required levels the AMS School’s greenhouse there is a risk to the viability of the greenhouse system.

- Mitigating the case of underutilization of the AMS school greenhouse container, that unit will be moved to closer to the Environments Offices and utilized within the agriculture sector for food production. Alternately, it can be relocated to the Iohahio Education facility and be utilized for future adult courses on Innovative Growing Techniques.

- This risk is highly un-anticipated as all greenhouses will be worked into the curriculum of the school.



Procurement, including alignment with technology and partnership requirements

MOHAWK COUNCIL OF AKWESASNE PROCUREMENT STRATEGY

Our procurement strategy prescribes that when making purchases our council reaches out to at least three vendors through an RFP Process. For this purpose a purchase team is formed generally involving a finance department representative, a project manager and a manager representing the department impacted by the proposed purchase. This team then oversees the RFP process and reviews the incoming responses.

The Purchase of the Electric Bus for the Electric Public Transportation System will be administered through the Mohawk Council's Department of Community and Social Services along with the Board of Education's Transportation Supervisor. This person is key to the team as all further bus maintenance and bus scheduling decisions will be the responsibility of the transportation supervisor's position.

The intention of the Smart Taxi Service, the Smart Health & Social Programs Delivery, and the Smart Delivery Service is to create increased access of our social clients to have the means to obtain healthier foods, as well as to transport community members to medical appointments. ("Social clients" are individuals getting assistance from Community and Social Services.) These vehicle purchases and services, as well as the Smart Taxi Service Pilot Project will be organized through a team consisting

of the Smart Akwesasne Team and the Social and Health Departments.

The Smart Greenhouses system purchases will be reviewed by a team comprised of the Akwesasne Mohawk Board of Education, and representatives from the Department of Tehotienawakon Economic Development program.

And, the most important precursors to desired change may not be what we are originally focusing on so our analysis of impact and influence should be somewhat adaptable.

Stakeholders, including analysis of impact and influence

ANALYZING IMPACT OF PROGRAMS

For each of our Smart Cities project initiative categories, we will put in place oversight teams best representing stakeholders of the area we wish to affect. These stakeholder teams will assist in the identification of success and performance factors, as well as contribute to the ongoing adaptation of measurements to best represent goals and progress attainment. Too many measurements, for instance, will likely be distracting from the most important factors. And, the most important precursors to desired change may not be what we are originally focusing on so our analysis of impact and influence should be somewhat adaptable.

For each of our Smart Cities project initiative categories, we will put in place



oversight teams best representing stakeholders of the area we wish to affect. These stakeholder teams will assist in the identification of success and performance factors, as well as contribute to the ongoing adaptation of measurements to best represent goals and progress attainment. Too many measurements, for instance, will likely be distracting from the most important factors. And, the most important precursors to desired change may not be what we are originally focusing on so our analysis of impact and influence should be somewhat adaptable.

AKWESASNE COMMUNITY APPLICATION SYSTEM

A key stakeholder — especially in relation to the central challenge regarding the prevalence of new cases of diabetes — is the Mohawk Council of Akwesasne Health Department. This department will be instrumental in delineating the types of data most important to measure to both be effective in affecting the health precursors associated with our Smart cities Challenge, but also for tweaking our approaches to increase the program's effectiveness over the longer run. Targets of change may shift focus with the maturity of our program. For instance, initial goals may be about engagement and usage rates, which later give way to focus on improving service delivery and costs, which give way to focus on renewal and expansion of educational components, cultural curriculums and even recipes. So measurement must be flexible to take into account learnings and overall maturation of the program.

A stakeholder in all data collection, especially that flowing through the Community Application and Community Application Administrative system, is the Akwesasne Information Services technical team. This team is key to the always necessary step of information aggregation, organization and preparation for analysis by the more specific department stakeholder. The Technical Team will be included for both their technical support and technical knowledge. They will help clarify other team members understanding of the information, and so positively influence decision outcomes.

The Mohawk Council of Akwesasne Health Department will be primary users of the statistics and interpretation of data directly affecting health measurements and behaviours affecting health outcomes. For instance, screening numbers, service engagement and usage numbers, activity levels, food distribution measures, attendance to health services, missed appointments and so forth.

The Mohawk Council of Akwesasne Social Services Department will be keenly interested in the performance of the Electric Public Transportation System. These statistics are key to success factors in their area of responsibility. Central is the measure of (ideally) increasing transportation usage, which when higher is strongly suspected to better the quality of the lives of the social clients.

Our Smart Akwesasne Team and the Mohawk Council of Akwesasne Health Department will be eager for statistics the



system produces regarding healthy food delivery, number of users obtaining rides to grocery stores and medical destinations, and increases in trip numbers for personal health care evaluations or screenings. Devising methods to capture behaviours of their individual clients in accessing and making use of transportation to increase wellness is tricky. Defining the base case is also challenging as the base case for the new situation does not currently exist. Therefore, much of the initial information will be used to establish a base case from which these departments will try to build performance.

The Akwesasne Mohawk Board of Education, Department of Tehotienawakon, including the Economic Development and Environment Program will all be paying close attention to the performance of the Smart Greenhouse system. This has an educational component and associated measures of success, as students are both involved in staffing a greenhouse, but also in engaging in learning their operation, and so graduating from the course. Economic Development is seeking to create economic value from the Smart Greenhouses, in the way of jobs, job skill development, food production and food cost savings. Economic Development will also be following the measures around the development of job skills and expansion of roles in technical areas to do with the Akwesasne Community Application and Administrative Web System, as there are many associated skills to do with populating the system with information, writing, video production for traditional

cultural teaching dissemination, mentoring new users of mobile tech, system programming and maintenance, social tool use and many additional skills associated with maintaining the vitality Internet based systems. Economic Development may also monitor the economic impacts of new services from both a cost and revenue outlook, as well as on the value of keeping money associated with transportation in the community, rather than that money flowing to external transportation options. The Environment Division will be able to calculate the savings in CO2 production enabled by the switch of thousands of travel miles to electric from gas powered vehicles.

Communications strategies for community involvement, training, and feedback

Following the Design Thinking processes that have gotten us this far, we are eager to continue regular community engagements through quick surveys to gain feedback and ideas, so that we can continue to improve the system. With the core of the system based on the Akwesasne Community Application, which is a mobile hub in each community member's pocket, we have an immediate tool through which we can share information, news, questions, and new capabilities.

This is highly advantageous to the rapid evolution of our services. We can both listen directly to feedback and observe behaviour. Through questionnaires, polls,



message boards and so forth, and we can observe behaviour, measure usage stats and so gain objective data. This may be an important balance as requests for feedback are likely to be weighted towards the opinions of more active or prolific online personalities in the community, with the new users less comfortable with writing essays on their new smartphone.

Additionally, because the Akwesasne Community Application is Internet-based, additional functionality to do with surveying, for example, is only a click away. There is no value to creating our own functionality in most cases, such as for polling – that is already available for free or very low cost online. We will simply use our in app capabilities to post updates that link to surveys, or to video resources, third party educational elements and so forth.

We expect that to best increase engagement with the new Smart City tools of our diverse end users, especially with social clients, that this may best be undertaken in a combination session of in-person instruction with also the online system in hand. Education sessions and review sessions are likely to occur in this way for clients involved in the services of specific departments, to learn how this department's services are now offered via the app. For example, our social clients can be introduced to Smart Taxi, Electric Bus pickup request, and so forth –when they are meeting with case managers. Groups feeling a need for the extra nudge of in-person training can also attend organized evening community engagement sessions, where everyone brings their phone and

learns about a newly released function.

Monitoring, controlling and reporting strategies and checkpoints for contingencies and course corrections, if necessary

Following the Design Thinking approach, we will use the app to gather reviews on components, experiences with the services, ideas for improvement, and suggestions on how to make things more efficient. While Design Thinking helps with direction, we use the Agile Method for digital product delivery. The idea with Agile is that via frequent meetings with the client, (the Akwesasne Smart Team) progress on the functionality is reviewed and tweaked very regularly, as the application moves from minimum viable product to fully featured one. This emphasizes actual experience with the tool over documentation, and is proven as the best way to deliver software products. The whole approach is about course correction, about feedback from users.

This also provides a built in approach to managing scope while optimizing end result. We've used Design Thinking to collaborate with our community to get a very strong idea of what we need; BUT, until it is in the user's hands, and they are standing and waiting for pick-up from an Electric Bus, we can expect unforeseen problems to crop up, or cool new ideas for enhancement to emerge. It may be that, at this early stage of testing, that a scheduling

idea for the Electric Bus is decided to be more important than some already planned feature of the Smart Greenhouse ordering, and since the greenhouse will not reach full production for another year that programming resources will be used by diverting them to the bus scheduling enhancement. So the scope is rebalanced in collaborative agreement between us and zu. Our Project Manager and their Product Owner notes this change of resource use and we move promptly on with development, without the overhead of massive documentation and change orders. When you are inventing new things this is the way to be. (If we are ordering a new community centre and it already has a complete blueprint, then the more formal change order approach is necessary.)

In regards to the purchasing of electric vehicles and greenhouses, a more detailed process of estimates, associated charges and fees, delivery and set-up, even total cost of ownership will be adhered to. Traditional cost controls are more appropriate to capital purchases. Purchasing bespoke software must also fit timelines and deliver certain features, it's just that what's in the final product will be impacted by ideas, epiphanies, and feedback and should be encouraged. Like a cook tasting their cooking along the way.

That being said, zu is well practiced in building digital products and services, including monitoring burn rates and being totally transparent with their clients as their software development project progresses. With their total team recording to time sheets, tracking progress in Jira, tracking

our requests in Zendesk, all bolstered by regular weekly meetings with our Project Manager, and not even including the ongoing email, messaging and phone calls between our PM and their PO, there is little room for things to go off the rails without being immediately noticed. More formal reports are generated with every meeting and supplied to Smart Coordinator for review and action when required.

Weekly reviews of zu's Replicon time tracking system, where tasks are assigned a budget aligned to the statement of work, provides our Product Owner with real-time visibility on project health, task churn and slow down caused by blockers or delays. This information is then documented in the weekly Project Status Report provided from zu to MCA and any necessary steps to remove blockers or flag risks are discussed in weekly production meetings with the us.

There is a sweet spot between rigid timelines and development targets, and the serendipity of discovering new methods or better functionality changed by user testing along the way. zu explains they are well practiced at respecting the organizational necessity of steady progress towards agreed upon projects with the idea that we are in fact inventing the future, and the path towards invention may have a few unexpected twists and turns. Through our Production Road Map, several stage gates are implemented as a monitoring and course corrections strategy. Stage Gates are a project management technique in which an initiative or project is divided into distinct stages or phases, separated by decision points. At each of these phases,

we will revisit scope, timeline, and budget, making any appropriate adaptations where necessary.

Approach to sustaining projects beyond the lifecycle of the challenge, if appropriate

Our vendor partners will be resources to assist us in our plans to gain a maximum lifespan from our Smart Cities Project. While we intend to be self-sufficient in the longer-term continuation of the Smart Cities systems, we also recognize that there is a need to renew and adapt the system with more modern versions of itself. At the very least there will be ongoing maintenance and enhancement of systems, with which the original vendors are expert, and can assist us in becoming expert, as well. This necessity to keep working to improve the system is to both preserve the functionality of things as they will be at the end of the first phase, but also to adapt to new technologies of our modern environment, and to take advantage of the emerging technologies, as we are doing at this point in time.

The Akwesasne Community Application (Mobile and Administrative) will be

supported and maintained by the Mohawk Council of Akwesasne Information Services Program. zu may be called upon for more ambitious functional additions from time to time, though this is not currently part of the scope of the plan.

Smart Greenhouses will be sustained in conjunction with the Akwesasne Mohawk Board of Education (AMBE) and the Department of Tehotienawakon Environment Program, for the Akwesasne Mohawk School (AMS) and Tsisnaihne schools. The AMBE, Tehotienawakon Economic Development Programs will jointly utilize and maintain the St. Regis Smart Greenhouse location as it will be used for the school and as a special needs work experience location. We anticipate that this location has the potential to provide economic contribution to sustain the special needs program.

The Electric Bus will be fully sustainable through the budget of the Social Services Department. The Electric Bus expenditure simply represents a redeployment of a portion of an existing budget already dedicated to assisting their clients with transportation.

Technology

DETAILS ABOUT THE TECHNOLOGIES INCLUDING RELEVANT APPLICATIONS ELSEWHERE AND RESULTS OF TESTING AND/OR PILOTING IN THE FINALIST PHASE.

In looking at the iPhone as a breakthrough event, it wasn't so much about inventing any of the capabilities it provided as it was wrapping them into one package. Similarly, our Smart Cities Challenge project is about combining the capabilities we know will address our Challenge into an integrated mobile system.

Our Digital Ecosystem encompasses both the Akwesasne Community Application, as well as the infrastructure elements of our plan. Included are native mobile application and web application development, multiple greenhouse implementations, and Akwesasne's first ever public transportation system. Greenhouses and a Smart Taxi service may not be viewed as groundbreaking or emerging technology, but to the Akwesasne community, they most definitely are. Our solution reflects the true needs of the community and will create improved health outcomes, new ways to address our challenges, and opportunities to develop expertise with new technology all through coordinated improvements in infrastructure, information, and accessibility. Akwesasne services will be enhanced with the support and integration of our mobile and web applications, both

in what community members receive and in the ability of our public service workers to deliver them. Below we break down the details of the technologies involved, including examining relevant applications used in other jurisdictions, a look at case studies our partner zu has successfully completed and some of the results of testing carried out in this finalist phase.

Mobile application development is the set of processes and procedures involved in writing software for small, wireless computing devices such as smartphones or tablets. Each day thousands of mobile apps are published to the Google Play and Apple App Stores. Some of these mobile apps are games, others are social networks, and many are e-commerce apps. All of these apps, if professionally built, follow a similar mobile app development process.



Dating back to the early adoption of responsive web design in 2011/2012, our partners, zu, have accumulated extensive experience developing responsive mobile websites and native applications, including the use of front-end frameworks such as Bootstrap and Foundation, as well as custom implementations using CSS3, CSS Grid, and Flexbox. zu's team has developed native iOS applications targeting phones and tablets going back to 2009/10 and iOS version 4. This includes both line-of-business applications based on standard UIKit components, along with richer experiences involving animation and physics frameworks such as Box2D and SpriteKit. They have continued to build responsive and native mobile projects since the availability of these devices and their tech stack continues to evolve.

zu develops widely-used native Android applications targeting phones and tablets for high profile clients, with projects dating back to version 4.0 in 2012. They develop for the core Android framework as well as with Google's trusted third party community partner libraries such as Retrofit, OkHttp, and Glide. zu's team has mature knowledge surrounding automated testing strategies for Android including both unit testing and instrumented testing user workflow. This past winter, a zu designer was selected as one of only 20 people worldwide to participate in a prestigious Android design workshop hosted by the Android Development team at the Google offices in San Francisco.

zu employs various modes of automated software testing. zu says: "We frequently

unit test our application code with language-specific test frameworks, as well as develop functional tests using tools such as Selenium, WebDriver, Nightwatch.js, and others. We load test our applications using open source tools such as Apache Bench, Siege, and various cloud-based tools."

zu as Digital Partners

zu is an ideal partner for Akwesasne's Smart Cities solution because they offer skills in determining right direction, they have capabilities to build digital products that are required for the vision and they will provide long-term stewardship for the digital systems they have built. They also provide Design Thinking expertise which zu uses to design non-digital process and components, which is a proven method for creating things that will be well received by end users, as they are so much a part of the process of their development.

Here is a sample of the types of major projects and transformational work zu has accomplished in the past 24 years of their existence.

MOBILE AND MOBILE/DESKTOP PLATFORMS

From the development of the TimmyMe iOS App for Tim Hortons' in 2008 on the iPhone, which made sense with the advent of geo-location services, through the years of Blackberry development and its fall from favour. Now into Android development, as well as mobile responsive (or simply 'responsive') design, zu moves into the latest technology. But they always program



for the purpose, not just to use a new technology. Currently, zu uses strong skills in iOS, Android and responsive web design to produce and maintain products for a variety of clients. Some projects of note include:

MYSASK 411 PLATFORM

Rebuilding Mysask411 Mobile and Desktop systems from the core
(Term: 2013- Present)

Directwest built a 100-year legacy on connecting Saskatchewan buyers and sellers. The phonebook they produced served as the principal source for customers seeking and connecting with local businesses. As times changed, Directwest modernized its business offerings with a suite of digital products and services intended to keep pace with global technological innovation. Along with traditional industries around the world, however, Mysask411's user experience came up against disruptive digital headwinds and competition. The web and mobile versions of the Mysask411 platform struggled to perform on modern devices and needed to be rebuilt. Speed and performance were major issues. The web version and mobile applications had to address both mounting technical debt and a dated user experience.

The Mysask411 platform needed a renewed user experience, informed by users and built to last and adapt. zu was brought onto the project in August of 2013, and has since completed dozens of projects of large and smaller scale to improve the functionality and effectiveness of the suite of services

the Mysask411 offers. In addition, zu uses Design Thinking with both DirectWest senior management teams and product teams to identify opportunities for service expansion, which are collected in project backlogs. These are then evaluated and developed on a priority ranking. zu is firmly part of the DirectWest team serving as a digital strategist, developer and long term optimizer of the suite of applications.

HELP ME TELL MY STORY / HELP ME TALK ABOUT MATH

Education Assessment System and iOS application (Term: March 31st 2016 - March 31st, 2019)

The Help Me Tell My Story education platform is another major achievement as an iOS and web system development that also incorporates Indigenous culture. The combination of technologies is similar to what will be deployed for Akwesasne. It has many levels of administrative access and collects data while optimizing the mobile user experience for the end users, who are children.

The Help Me Tell My Story assessment, which takes place by the children interacting with amusing gamified tasks, uses a holistic approach to measure oral language development for Prekindergarten and Kindergarten children. The Help Me Talk About Math application similarly uses a holistic approach to assessment to evaluate grade one students' understanding of seven mathematical processes: communication, making connections, mental mathematics and estimation, problem-solving, reasoning,



and visualization. Both collect data from the children, their caregivers, their teachers, and Elders in their community and provide immediate access to results for educators and caregivers through easy-to-use web-based tools. The overall purpose of these assessment is to help create a real and measurable change in oral language development and real and measurable change in the mathematical process development of children across Saskatchewan.

Both these systems are extensible for other curriculums and are being extended to have French language versions. The systems have also been made available to other jurisdictions – as is intended with the Akwesasne Community Application – and the general public via the Apple App Store, though without the administrative functionality. zu continues to be a transformative digital partner for the Government of Saskatchewan, Ministry of Education.

Other Notable zu Applications

Here is a brief list of other projects requiring mobile application/web application combinations, as will be required for the Akwesasne project.

TIM HORTONS

TimmyMe iOS Application

When it was first launched, TimmyMe quickly became the top downloaded free iPhone app in Canada and Tim Hortons took notice. With over two million users, the app featured GPS to direct folks to the

nearest Tim's drive-thru and included a notepad for taking orders from your co-workers.

SASKATCHEWAN ROUGHRIDERS

iOS Application

zu's created various digital solutions for Saskatchewan's favorite CFL team. In partnership with SaskTel, they took the Roughriders mobile with iPhone and Android apps that deliver schedules, standings, player profiles and stats, news, Twitter integration, videos, live radio streaming, shopping in the RiderStore and more. Rider Nation responded with over 100K downloads in the first year and over 3M sessions, leading to a 52% increase in orders and a 40% increase in customers.

MACKENZIE ART GALLERY

iOS Application

Mackenzie wanted to be a gallery for the 21st century, so zu was brought in to devise ways to use mobile technology as a catalyst for generating discussion, driving foot traffic, and connecting people to art like never before. Now their app is as much a part of the gallery experience as the physical gallery, helping people discover and engage with new exhibits and the permanent collection.

VITERRA MOBILE

Application Android and iOS

Buying and selling of crops require accurate information, and farmers may need that data while literally standing in the middle of a field. Going beyond providing up-to-date commodity prices offered at terminals, zu also created a



nitrogen calculator so that farmers could work out their fertilizer needs on the fly. Users can change criteria, toggle results and, ultimately, make informed decisions. Viterra, like the farmers, understood how technology helps people work efficiently and effectively. This responsive website and web app, drawing on Viterra back-end systems for data feeds, experienced 434% first-year growth, representing 25,000 total hrs spent in the app in 1st year with half of all users accessing the app daily, and one-third spending 1-3 mins per session. The zu team was delighted to help them engage with the global farming community.

Approach to future-proofing the technologies (i.e safeguards against vendor-generated proprietary constraints and obsolescence, a workforce that is able to implement and operate the technologies and systems going forward.

Ensuring high quality and extensive customizability, the Akwesasne Community Application will be built as a Native mobile-web application. Native apps are built for specific platforms (iPhone, Android) and are written in the languages the platform accepts (for example, Swift and Objective-C for iOS apps and Java or Kotlin for native Android apps). Native apps are fast and responsive, distributed in app stores, offer intuitive user input and output and don't require an internet connection. In addition, native code is non-proprietary, has an army of developers at our disposal, and is free to use.

Though this is not a frequent occurrence for zu, transition of projects to alternative service providers does happen, and zu is ready by design and choice of frameworks to not have proprietary blockers preventing other suppliers from being able to take over custodianship of the systems they've built. Recent examples of projects being transferred away from zu include the planned-from-the-start repatriation of the Drupal-based City of Saskatoon websystem; and the repatriation of the PotashCorp websystem – after nearly 20 years of internal zu management – to the new Nutrien management team. (In both these cases, the relationship continues with zu being invited to contribute to new initiatives). In all cases of project repatriation, a transition plan is developed in consultation with the client on how to best setup the environments necessary for maintaining system health long-term and to provide the client team with strategies to maintain and optimize the system.

System longevity

Achieving long-term value from any digital asset requires a commitment to supporting the software development lifecycle. The increasingly rapid pace at which mobile and web technology evolves, and best practices, online threats and user expectations change make it hard to keep up. zu's support and optimization model is designed to keep the Akwesasne team aware of issues affecting application health and security. They will also keep us on track regarding opportunities for iterative



enhancements and to take advantage of new trends or technologies, as they do with their other long-term clients.

ZU SUPPORT AND ENHANCEMENT SERVICES INCLUDE:

Support: Emphasizing continual testing and proactive analysis of known security threats and asset risks.

Optimization: Focusing on keeping pace with modern devices, browsers and operating systems impacting the performance of the platform for users.

Continual support and optimization go hand-in-hand to ensure our digital assets' long-term viability is maintained. zu's technical expertise and development processes make future adaptations such as API development, continued system integrations and reengineering cost-effective and made with ease. Services include:

- Monthly browser, OS and device testing
- Host environment performance measurement
- Optimization backlog development
- Major risk assessment and resolution
- Quarterly reporting
- Continued system integration
- API creation
- Design heuristics review
- Digital brand alignment

zu understands that the development of web-based tools and mobile applications can leave companies feeling handcuffed in their ability to operate systems going

forward. Prior to completion of the Services, Akwesasne and zu will put in place an agreement zu for the maintenance and support of the Akwesasne Community Application; the agreement in Appendix A.

TECH EXPERIENCE OPPORTUNITIES FOR AKWESASNE MOHAWK FIRST NATION

Looking further into the future, this proposed digital eco-system will introduce the Akwesasne community to opportunities to take part in new technology in their community, both for those with existing expertise and those who hope to develop skills.

The Mohawk Council of Akwesasne works closely with the Ontario Emerging Jobs Institute (OEJI). OEJI is a unique offering that provides instruction from industry leaders and hands-on training for jobs of the future. Students train for the growing demand for skilled workers in areas identified as high need including topics such as web development, digital marketing, social media marketing, artificial intelligence, graphic design and search engine optimization. Currently, of the 160 students attending this program, 11 are from the Akwesasne First Nation.

The Mohawk Council of Akwesasne also currently has 15 personnel as a part of their Information Services team. This includes;

- 1 Manager
- 1 Program Support Officers
- 4 Network Analysts
- 4 Hardware Technicians
- 3 Software Analysts and
2 Help Desk Technicians

The team supports provides a range of IT services to all departments and programs within MCA including the Akwesasne Mohawk Board of Education. Information Services oversees the maintenance, repair, upgrade, etc. of more than 800 computers and 25 individual networks and one wide area network. The Software Analyst team supports 75 different specialized software, some of which are built programmed in house. We feel we have the technical and human capacity that is able to implement and operate the proposed technologies and systems going forward. There will be opportunities for zu to train our team to the extent we find appropriate, knowing that zu could remain as principal stewards of the systems, or as helpers, or could be completely replaced by the Akwesasne team, at our option.

How the technologies comply with relevant legislative and regulatory requirements

LEGISLATIVE REQUIREMENTS

In Canada, mobile applications are regulated under the Personal Information Protection and Electronic Documents Act (PIPEDA). The Act, enacted in 2000, governs how private organizations collect, use and disclose personal information. MCA and zu commit to comply with all applicable laws regarding the protection of personal information including PIPEDA. Please reference our Preliminary Privacy Impact Analysis for in depth analysis.

FLEXIBLE DEVELOPMENT STANDARDS

Our Smart Cities Solution currently presents limited interoperability between technologies such as existing community systems, services, and infrastructure. However, our partner zu is well-versed creating necessary interactions (such as have been necessary in their past projects with many types of interactions) and uses due diligence in all expected and potential integrations. A few instances of interoperability have been identified and will be explored in the next phase for development. These include:

- Requesting, Tracking and Paying for MCA's Smart Taxi service within the application
- Ordering, Delivering and Paying for Greenhouse produce, and the 'Green Food Box' within the application
- Integration and interoperability with third-party fitness and health tracking applications
- Future interoperability with Telus health.

RIDE HAILING SERVICES & SMART GREENHOUSE INTEROPERABILITY

When developing our public transportation system and integrating it with the application, there are three pieces of interoperability requiring third party software and frameworks. First off, like other ride hailing services, (ie. Uber, Lyft, Instacart), our app requires access to the CoreLocation framework. This allows individuals to both request rides and share location addresses with a driver



through geolocation, and order groceries to their specific location. This framework provides classes and protocols to configure and schedule location delivery and send location events to the server. The CoreLocation framework also lets our application define geographic regions and monitor a device's movements as it crosses defined boundaries. Secondly, to display point-to-point directions on a map within the app, iOS developers use a Framework called MapKit. Registering the app as a routing app then makes directions available to the Maps app and all other mapping software on a user's device. Android routes and directions, however, are made possible by the Google Maps Android API. Thirdly, to use a cashless system that allows credit and debit transactions and so remove all risk of human-to-human cash transfers – we will interoperate with one of two leading companies in the mobile payment market, Braintree or Stripe. Both payment frameworks are used by current, emerging and established companies and follow both the Code of Conduct for the Credit and Debit Card Industry in Canada, as well as PIPEDA.

FITNESS AND HEALTH APPLICATION INTEROPERABILITY

With health and fitness applications extremely prevalent today, understanding the interoperability of default and leading health applications will maximize the advantages of integration with them. To ensure the Akwesasne data is stored and managed exclusively under MCA Information Services we investigated the leading brands in health and data tracking.

We need to understand the complexities and privacy concerns of the applications we intend to use, such as Apple Health, Google Fit, and Samsung Health, as well as the wearables offered by Fitbit, Garmin, and Apple Watch. Google Fit was subsequently quickly dismissed due to the requirement that any app that reads Google Fit data must also store any collected health data with Google.

APPLE HEALTH

Apple Health provides operating system level storage for health/fitness data through a framework called HealthKit. Apple's intent is for 3rd party app developers to create apps that integrate with HealthKit to make "rich" fitness data available to both the Apple Health App and HealthKit. Any app can request permission to read/write a number of different types of health information based on a large list of "categories" provided by Apple. Once fitness information is stored in HealthKit, it's essentially available to any app that the user grants access to read from HealthKit. While the HealthKit framework appears somewhat complex, it's capable of surfacing any data recorded by the Health App, or any other "service" (tracker apps), both as granular data and aggregate statistic. This is all good news.

SAMSUNG HEALTH

Samsung smartphones come with the Samsung Health App (aka "S Health") pre-installed. The Samsung Health app is also freely available on the Google Play store for installation on non-Samsung devices. In many ways, Samsung Health is analogous



to Google Fit, but with two key distinctions. Any application that wishes to read/write/share data with Samsung Health must be approved as an official Samsung partner application. Unlike Google Fit, no Samsung account is required to use Samsung Health, though Samsung promotes the creation and use of an account to sync/backup data to Samsung's cloud service, and to make data available across multiple devices.

In conclusion, the health app ecosystem for Android is, unfortunately, more fragmented than iOS. There is no analog to HealthKit (operating system level storage) for Android, and it's up to individual apps to be responsible for the storage and sharing of health data.

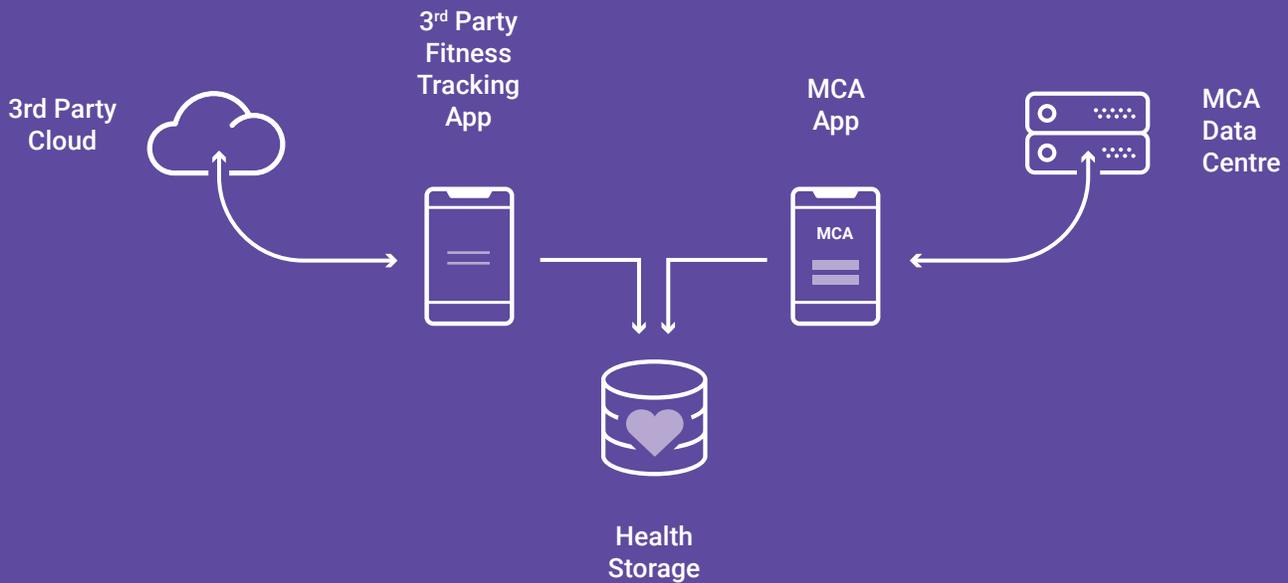
WEARABLES

- Fitbit does not directly integrate with Apple, Samsung, or Google health apps, though fitbit does allow access to data through a web-based API.
- Garmin provides a Garmin connect app for both platforms and so can sync data to any of the health apps discussed above.
- Apple Watch does not provide health tracking on its own. Rather, it relies on "WatchOS" extensions provided by applications installed on accompanying phones that can read and store biometrics to Apple Health.

With this background in mind, we plan to make use of Samsung Health (Android) and HealthKit (iOS) systems. We can then migrate the data users are currently tracking on their devices while maintaining

a familiar user experience for individuals comfortable with their current applications. Privacy concerns remain at the forefront of our build; as stated, MCA and zu commit to complying with all applicable laws regarding the protection of personal information such as that found in The Personal Information Protection and Electronic Documents Act. Privacy is also key to earning the trust of users, as their engagement and acceptance is also a key measurable for our initiative's success.





Fitness Data Sharing

TELUS HEALTH INTEROPERABILITY

The Mohawk Council of Akwesasne is in preliminary talks with Telus Health to implement their proprietary software throughout all Canadian jurisdictions. The opportunities and capabilities of this homegrown system is interesting but needs exploration. Further research and discovery will need to be completed during the strategy phase of implementation.

REPLICABILITY ACROSS CANADA

We suspect that the factors contributing to a higher prevalence of diabetes in the Akwesasne community hold true for all Indigenous communities across Canada.

If we succeed in having a real impact on health outcomes in Akwesasne through the areas of focus we have piloted, we will be open to having our approach and software replicated for use by other first nation communities. We are energized by the possibility of improving the health of other communities via our Smart Cities approach to targeting causative factors we suspect are consistent culprits. While the software may be directly applicable to other communities as it stands upon completion, some degree of customization will undoubtedly be necessary for its deployment, given the specifics of that second situation. Ideally, a consistent

core could be maintained so those future improvements could be rolled out amongst all future users.

ROLES AND RESPONSIBILITIES OF TECHNOLOGY PARTNERS

The role of zu in this project includes helping our team collaboratively identify the strategic direction, providing the design for products and services including the development/programming and support of the Akwesasne Community Application, and it's integrated systems. Within our governance structure, prior to selection of both the Greenhouse System & Electric Public Transportation System technology partners a public tender will be requested for both personnel and strategic implementation.

IDENTIFICATION OF RISKS (E.G PRIVACY ISSUES, CYBERSECURITY BREACHES) AND DEVELOPMENT OF APPROPRIATE MITIGATION STRATEGIES

No Internet technology is risk-free. However, as we intend to program to best practice standards, and follow the available standards for privacy, system security, data back-up and so forth, we will reduce risk to the acceptable baseline all Internet-based systems face. At this time there are no known risks in the implementation of technology particular to this project.

ACCESSIBILITY AND USABILITY OF THE TECHNOLOGIES TO DIVERSE USERS, RESIDENTS AND OTHER STAKEHOLDERS THAT SUPPORT THEIR UPTAKE AND ACCEPTANCE.

Web Content Accessibility Guidelines (WCAG) 2.0 and Authoring Tool

Accessibility Guidelines 2.0 covers a wide range of recommendations for making web content more accessible. Following these guidelines makes content accessible to a wider range of people with disabilities, including blindness and low vision, deafness and hearing loss, learning disabilities, cognitive limitations, limited movement, speech disabilities, photosensitivity and combinations of these. Following these guidelines will also often make your web content more usable in general. (<http://www.w3.org/TR/WCAG20/>)

Each page and feature will be developed with an understanding and incorporation of Web Content Accessibility. Some key elements of the guidelines include the 'Skip to Content' link which allows people to quickly access content by skipping primary and secondary navigation. A redeveloped application will also be screen reader enhanced optimizing the site for visibly impaired individuals. Appropriate contrast will need to be designed between links, text, images and any user interface elements on each page.

zu's team has relevant experience in developing websites and mobile platforms within these guidelines.. From these projects, zu has learned best practices that will be transferable to Directwest. Throughout development, zu will test the mobile platform to ensure that it is meeting level AA Web Content Accessibility. We will also be sure to use the Authoring Tool Accessibility Guidelines 2.0 for content created and migrated to MCA.



Governance

GOVERNANCE FRAMEWORKS AND STRATEGIES TO OVERSEE AND MANAGE PROJECTS, PROJECT RISKS, FINDS, AND PARTNERS THAT ARE RIGOROUS, TRANSPARENT, EFFECTIVE, AND PROVIDE VALUE FOR MONEY

Since the late 90's MCA has been in a Nation Building process, a process that allows for the investigation and negotiation of a draft Akwesasne Governance Agreement. The process was initially termed a Nation Building process and has since been renamed Entewatathá:wi or "We Will Govern".

The overall goal of this process is to investigate the extent of Canada's commitment to negotiate a Self-Government Agreement specific to Akwesasne where MCA exercises jurisdiction. Entewatathá:wi has been working towards establishing the laws, regulations, policies, practices, and institutions that will govern the northern territory of Akwesasne. The Road to Self-Governance Negotiation of a final agreement on Governance will provide clear formal recognition by Canada of Akwesasne's governance institutions and address the relationship of Akwesasne's and Canada's laws. Negotiations have also begun with Ontario and Quebec on some jurisdictional issues. Self-Governance is a long and grueling process that involves negotiations with the government of Canada, our own local governments and leaders, educating and consulting our

community and making sure we protect our inherent rights as Akwesasronon. Ultimately, it will be our community that determines whether or not to accept the negotiated Akwesasne Governance Agreement by holding a community referendum.

- Governance / Council Portfolio's include:
- Department of Technical Services
- Akwesasne Mohawk Board of Education
- Executive Services
- Department of Health
- Department of Housing
- Department of Justice
- Public Safety
- Department of Tehotiiennawakon
- Tehotiiennawakon - Environment Division

Mohawk Council of Akwesasne Carries out projects with at least three personnel involved, Manager, Assistant, and Technician. Project timelines are created with project management theories. Regular project meetings are held with key personnel involved, this includes outside contractors. Mohawk Councils Finance policy requires 3 quotes for anything purchased over 1000.00.

- Managers can sign off up to 5000.00.
- Directors sign up to 50,000.00 with mandatory RFP process.
- The Executive Director signs up to 100,000.00.
- Any Contracts, payments over 100,000.00 must be processed by a Mohawk Council Resolution(MCR). There are 13 chiefs on council and 7 are required to sign in agreement of a decision through the MCR Process.

In working with clientele, their partners and unique stakeholder groups over the years, zu have some proven ideas on governance that can assist in our process as well. As a partnership we believe strongly in the benefit of open communication but recognize the need to focus the collaboration where possible. Before project kickoff, key client decision makers and approved deadlines will be revisited and finalized.

STRATEGY

Typically projects are built in phases with initial consulting and strategy leading to a deliverable such as a communications brief, information architecture, low-

fidelity concept sketches or an experience prototype in the form of wireframes or a mobile prototype for user testing. During this phase, the client's Project Coordinator (PM or Manager) will help coordinate meetings, demonstrations and communicate feedback and approvals at our Product Owner, who is the main point of contact from kickoff to launch. The client's Project Champion (Director level) will be available to provide insight during consultations and liaise with executive and board members who require visibility. An Executive Sponsor (Executive Member) or Committee is often involved early on to set direction with our team but will be consulted throughout the phase to ensure objectives are being met.

PRODUCTION DESIGN AND DEVELOPMENT

Once the direction is set, active production begins with weekly demonstrations of progress as outlined in the project timeline. The Project Coordinator and Project Champion will be required to attend these meetings to provide input and liaise with executive and board members who require visibility. An Executive Sponsor or Executive Committee will be consulted throughout production to ensure objectives are being met at key milestones outlined in the project timeline.

Deliverables will be submitted to the client's Project Coordinator for internal feedback. Any approvals or sign off will follow in weekly production meetings creating a feedback loop from the start of production design and into development. Once development demonstrations begin,

a Technical Lead (Client IT Group Member) will join the client's team to coordinate integrations, flag risks and provide materials and support to our developers if required.

Finally, active user acceptance testing will be performed within the feedback cycle and then again prior to launch. By the end of the project, end-to-end testing will be completed internally at zu and on the client side to reach final approval. Once the product is approved, the asset will go through predefined steps for launch as outlined in the project timeline.

ESCALATION

Throughout the entire process, from strategy to production and launch planning, any issues that require escalation beyond weekly project meetings will be addressed with the Account Manager by the client's manager/director representative. If unresolvable, issues will be escalated to the Executive Sponsor by the client's executive team member.

Details about the partners and their role, capacity and readiness

zu is our only major partner defined through the Smart Cities Challenge. They build digital products and services and uses a design strategy to drive innovation within organizations. Founded in Saskatoon in 1995, zu is a happy, motivated team of 35 confident in achieving success on every project and committed to working

with clients building modern solutions for mature industry problems. zu's team is a mix of Design Thinking experts, analysts, production designers, developers, IT and client support specialists focused on building tools that are informed by users and meet client business objectives. Their services are grouped to correspond with the lifecycle of digital products.

Collectively zu has the bench strength and the decades of experience to hit home runs on big, challenging projects. Our technical depth and our cosmopolitan appreciation for style and elegance are focused by our adherence to the user-centric approach to design. Our plans are therefore on target, our ability to execute proven and not easy to replicate, and the result for the MCA application and Smart Cities Challenge project will embody a balance between being uniquely engaging, practically sustainable and innovative. Our combination of youthful design, project sensibility and decades of programming experience, deployment and support means the best of all worlds for the Akwesasne web system, especially when it comes to creating something for today and for tomorrow.

RISK MANAGEMENT APPROACH

The goal of our risk management is to decrease the chance that we don't deliver working software to a happy client. We want our client to have participated in choices involving adding or chopping features and scope so that the most important features are accomplished on time and on budget.



To assist with managing risk throughout projects, zu utilizes a Project Status Report. This document allows MCA and zu to communicate and provide weekly project status updates during client demos. We can highlight milestones, design concepts or major features and flag them if there is an issue, or if everything is on target. This will also highlight past accomplishments, key activities for the next week and upcoming issues that should be addressed early. We can track all decisions that impact the project, along with a budget update.

Communication is critical for project success. Our approach is to maximize project visibility with clients and form a tight-knit relationship with our project leader, the Product Owner. We document these plans in a project charter before kickoff. This document acts as a reference for key decision makers on the production side and the client side. It includes key milestones and project objectives. Put into action, our Product Owner becomes our client's main point of contact for ongoing production and flagging any issues, risks or challenges as they come up.

The myth still exists that software and complex systems can be planned out like building a bridge. That Gantt charts and timelines and feature sets are predictive of project success. This is not so, and is proven in the terrible track record of software projects that have failed, even though all these risk-reducing factors were in place.

zu has long ago recognized the importance of the Agile method for software building that accepts lack of predictability and

instead focuses achieving project success by accomplishing important things first, by allowing the scope to be modified to make the most effective use of the constraints of time and money, to recognize dead-ends quickly and double down on good ideas that arise in the process of building. Transparency and approval for what is being done, what is done and what will be done are discussed in sprints with the client at regular and short intervals.

EVIDENCE AND DETAILS ABOUT THE PARTNERSHIPS, INCLUDING THEIR NATURE, TERMS, ACCOUNTABILITY STRUCTURE, AND FINANCIAL REQUIREMENTS.

On the 30th day of September 2018 The Mohawk Council of Akwesasne and zu.com communication Inc. entered into a contractual partnership between client and consultant. Please refer to the confidential annex for our Master Service Level Agreement and Memorandum of Understanding during the Finalist phase of the Smart Cities Challenge.

APPROACH TO PARTNERSHIPS THAT RETAINS COMMUNITY CONTROL OVER SENSITIVE AND PERSONAL DATA

Although zu is the contracted firm to build the technical aspects of the app/web portal, Mohawk Council will own the rights of the system and house and retain all data created with the system. All data collected, used, and disclosed will be managed under the Mohawk Council of Akwesasne stored on MCA internal data centers and servers. Please refer to our Preliminary Privacy Impact Assessment for an in-depth analysis of information privacy.



Engagement

APPROACH TO ENGAGING WITH, GAINING ACCEPTANCE FROM, AND ONBOARDING RESIDENTS AND OTHER STAKEHOLDERS FOR PROJECTS THAT ENSURE ONGOING ALIGNMENT BETWEEN THE OUTCOMES AND THEIR CONCERNS AND NEEDS.

In order to understand where we are going in the implementation phase, it is important to understand where we have been over the Finalist phase. As strong believers in human-centered design, and designing with users and for your users, we have put Community Engagement at the forefront of our Smart Cities Challenge solution.

Over the past several months, we facilitated workshops with inclusive user groups, interviewed internal and external stakeholders, hosted community engagement events, and surveyed and user tested our prototypes with Akwesasne community members. The 5 stage approach brought by Design Thinking was executed by our partners at zu through a series of trips to our community. We completed the recyclable model several times to come to the prototyping and feature prioritization of our Community Application, narrow in on our Smart Greenhouse concept from several implementation ideas, and understand the true needs of the community for the execution of our Electric Public Transportation System.

To ensure a substantial amount and quality of community engagement, we leveraged

the Design Thinking methodology and process, which is a **practical approach** to finding **creative solutions** to problems, inspired by traditional design methods, or more simply, an approach to problem-solving, which we will dig a bit deeper into and outline below.

“Thinking like a designer” means leveraging empathy, experimentation, and often technology, to produce solutions that help real people. Design Thinking is heavily rooted in Human-Centered Design, which emphasizes a user-first approach: finding out what users really need, then balancing solutions for those needs with the possibilities of technology, and requirements that define success for the business.

Several popular Design Thinking structures have emerged over the years. Most have the same basic underlying model:





A common Design Thinking structure

1. Do Some Research

Research is critical to Design Thinking. Gathering information about a problem helps define the problem (or more typically, problems), so we can determine what the right problem is to solve. Design thinking research takes the form of interviews, usability testing, surveys, looking at analytics, and so forth. And research never really stops as feedback goes back in the top and then becomes the subject of feedback once more.

To ensure we look at user needs from multiple angles, we follow four research themes.

About Them - Takes the form of indirect research about Akwesasne and our community members living here. We looked at existing internal data, industry and community reports, and aggregated data. This indirect research included:

- Akwesasne Satisfaction and Experience Surveys
- Akwesasne Cultural Orientation Guides

- Mohawk Council of Akwesasne Department of Health - Annual Reports
- Mohawk Council of Akwesasne -Healthy Eating and Active Living (HEAL) Program - Indicator Reports
- Mohawk Council of Akwesasne - Strategic Plan
- Mohawk Council of Akwesasne - Comprehensive Community Plan

With Them - The most common method of “with them” research – or “with Us” in this case – is a simple 30 to 45 minute 1:1 interview in person or on the phone with the interviewee. “With them” interviews were undertaken with our community members themselves and also with groups and individuals that regularly interact with community members. In the finalist stage of our work, our “With Them” research included interviews with many distinguished individuals including:

- Amber Montour (Manager, Wholistic Health)
- Sarah Thompson (RN, Supervisor)
- Della Adams (Traditional Medicine Employee)
- Lesley Bero (Program and Diabetes Prevention Manager)
- Karole Mitchell (Community Health Nurse)
- Cindy Francis-Mitchell (Assistant Director of Health)
- Andrew Francis (Data Health Management Coordinator)

During these interviews, we asked straight



forward, open-ended questions to gather information and insight while leaving the interview loosely scripted. This allowed our interviewers to adapt their line of questioning and vary which answers received more detailed follow up questions. We ask, for instance, What do they know about the client? Where they see their clients struggle? What questions are clients asking? What can be done to make the user's experience better?

“Be them” - The “be them” method allows researchers to gain empathy for a user's pain points by walking through an entire journey exactly as they would experience it, from start to finish, in the most natural context possible. As a part of our research phase we had MCA employees take us through their diabetes journey. Each journey started with being screened for diabetes, to find out if they were free of symptoms, pre-diabetic, or diagnosed diabetic. Then it was understanding the implications of their assessment, and how they were to manage their life in each case for the long term. This led the research team to an understanding of their journey, all the user's actions, touch points, thoughts, and emotions experienced by the individual through the process, often including their family's experience with the individual's journey. In approaching any particular event or process as a journey, fewer possibly important elements will be missed. More details will be noted this way, when subjects are asked to tell a story exactly how they walked through it, rather than if people are simply asked to describe what they remember about an experience.

2. Identify Insights

Once we finished the research stage, we sought to extract meaning from it. Pulling insights out of our research, and choosing the really important ones is an incredibly valuable step in setting the stage for effective ideation. Many folks typically want to brainstorm on ideas without adding new nuggets of information to the conversation, and so get nowhere new.



Journey Mapping workshop with Akwesasne community members and stakeholders

But Design Thinking has us start with a load of information, and then provides methods to identify insights efficiently and collaboratively. These insights then feed the creation of really innovative ideas. In our workshops with MCA stakeholders we used the techniques of the practice, we group shared and affinity mapped to identify patterns and themes. We wrote and edited challenge statements to concentrate on the most important underlying challenges of diabetes.

Our preliminary research and stakeholder workshops led us to the following key insights.



Ideation Workshop on 'How Might We' statements with Akwesasne community members

WESTERNIZATION

Since the imposition of Western culture on our community, the Mohawk people have been subject to drastic change in their daily diet. First, many community members have moved away, not just from their home territory, but from their traditional lifestyle and food sources. There they are eating the fatty and carb-heavy alternatives that are convenient and cheap, whether from chain restaurants or other seemingly economical options. Second, the fast-paced, consumption-oriented lifestyle now everywhere is still very new to our culture. Healthcare workers, particularly those involved from a diabetes prevention/management point of view state, observe that the people of Akwesasne are practicing less and less the holistic and traditional approaches to medicine. Our people increasingly have come to accept the disease that comes with westernization and western ideas about health. We become used to taking pharmaceutical drugs to combat metabolic and diabetic disorder, rather than look for answers in our traditional approaches to health.

CHECKUP FREQUENCY IN HEALTH & DENTAL

It is apparent that community members, particularly men, do not see a doctor regularly. This of course contributes to poorer health outcomes. Many factors may be in play with this behaviour including: pride and the desire to show strength; a genetic predisposition that allows Mohawks to actually handle pain better than others; the absence of a male doctor within the community. Again, lack of options for public transportation also plays a key role in this exacerbating this unfortunate infrequency of interactions with health and dental services.

HEALTHCARE SYSTEM DISCONNECTION

Further difficulties arise from the complicating reality that Akwesasne people and their families – though one community of Mohawks – live in 3 jurisdictional areas: Ontario, Quebec and the state of New York where they are dual-citizens. It is not hard to imagine the complications this causes our own internal health care efforts: having to interact with three separate systems none of whom are recognized for ease of use. Our people may be using health and dental services from multiple institutions located in different jurisdictions. And so we find many of our health client's records to be inaccurate and/or incomplete. This causes an overall lack of transparency, and makes difficult our ability to even assess where we are as a community health wise. Issues in terms of data consistency, information collection and information aggregation make it difficult to even begin to interpret the overall system's performance in a holistic way. How will we

find insights worth acting upon without good information?

The poor state of record keeping caused by these overlapping jurisdictions is extremely straining on healthcare professionals. These folks are trying to help and are striving to accurately diagnose the individuals they see. But they just don't have the basic information of an accurate medical history to work with. We need to give our health care professionals, and the people themselves, complete and accurate baseline health records. Knowing where we are as a system and as individuals is key to knowing where to go and whether we are heading in the right direction. Health assessment is based on measurable data, and the health of the system is based on measuring the improvement in outcomes. Improvements and consolidation are needed in the medical records of our people. We cannot expect that this improvement will be provided by the three medical systems we deal with. This centralization will be something we need to build ourselves. It will be important in our battle to reduce new cases of diabetes in our community.

LOSS OF TARGET DEMOGRAPHIC FOLLOWING PRIMARY SCHOOL

Individuals from 12-25 are our primary target demographic for preventing new cases of diabetes. When this cohort are in our community and in school on the reserve, The Department of Health has the opportunity to educate them. Given our people's increased susceptibility to metabolic diseases and diabetes, we have to act

proactively with our young people to prevent new cases. Akwesasne is home to three Akwesasne Board of Education Elementary (AMBE) Schools. These schools include Ahkwesahsne Mohawk School, Kana:takon School, and Tsi Snaihne School. While in school our children receive instruction about nutrition and health promoting lifestyles, learning to make habits of healthy choices. Following graduation from our schools, however, our students only secondary schooling options are off reserve. Our losing access to them following primary education means we have lose our opportunity to continue training them for long term health. This insight identifies a barrier we target to overcome.

GOAL OF INSIGHTS

Our goal of identifying insights is to better define the problem(s) and understand what are we really trying to solve. Insights set the stage for idea generation. But before we generate ideas we use an interim step to reframe insights as questions.

The How Might We framework is particularly effective for inspiring creative solutions for two reasons:

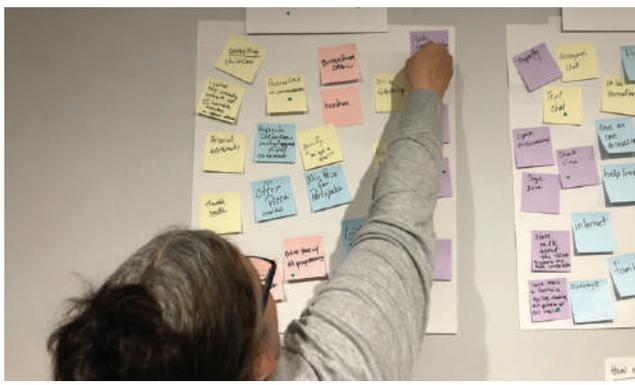
1. Its phrasing implies that a solution is possible.
2. It's often easier to craft solutions when you're trying to answer a specific question.

Collaboratively with zu, we crafted How Might We Statements. These are intended to create a road map that will lead us to generate new ideas to help the Akwesasne community.



Our How Might We Statements included:

- How Might We reduce the time and distance to healthy food?
- How Might We create a solution that bridges the gap between traditional and modern medicine?
- How Might We make people feel more comfortable discussing sensitive topics with health care professionals?
- How Might We maintain health education and contact with our people through High School?
- How Might We motivate people to take advantage of existing programming?
- How Might We encourage people to get screened for pre-diabetes earlier?



'How Might We' Statements being explored during Akwesasne community workshop

3. Come up with some ideas for solutions

Referencing our How Might We Statements, our next step was coming up with ideas to solve them. There's seemingly no end to the number of ways to approach idea generation (aka brainstorming or ideation). Ideas can be generated individually, as a group, or both. Ideas for solutions can be written, drawn, built in 3D, acted out, etc. The key is to focus on generating lots of possibilities, not necessarily trying to find the silver bullet solution right off the top.

Using a combination of individual and group ideation tends to result in the best solutions because:

- Individuals working alone can focus their thoughts to come up with more fully formed ideas.
- People working in a group can then use the individual ideas as springboards to evolve their own idea, build on another's idea, or come up with more new ideas.

In a small group session with health care professionals, council representatives and community members we began writing, drawing, and acting out solutions. This resulted in nearly a hundred different solutions to the above How Might We statements. We derived solutions that would make food and healthcare more accessible through various approaches including transportation improvements, diabetes prevention education (choice), cooking classes (variety). We had ideas regarding increasing programs offered that promote healthier lifestyle and provide

fitness resources, including tweaking our competitive nature with district games, where individuals compete against one another in sport and art. We envisaged anonymous helplines for health care advice and direction. We identified the implementation of greenhouses as a good idea: they are increasingly practical to operate; they would be an educational enhancement if associated with our schools; they would increase our accessibility to healthy produce. Additionally, moving our agriculture into greenhouses would decrease our exposure to toxins in the food we have no choice but to grow in our now polluted soil.

This group session produced over a hundred ideas. Participants were energized by the opportunity to develop their own ideas, to build on another's idea, and to see their idea taken further than they imagined when the whole group contributed on theirs. We saw useful innovation happen and produce good ideas. We used Design Thinking approaches to make choices as a group. We voted on favorites to focus down on the best of the hundred. We took the finalists further and worked until these most viable ideas became prototypes.

4. Try ideas out

Prototyping possible solutions is the least expensive way to fail, and the fastest way to learn. Prototypes can be digital, paper, or a combination of any kinds of materials, sometimes looking like arts

and crafts. Participants can prototype a process, a pamphlet, a script. From our ideation session, we sketch-prototyped, and digitally-prototyped several concepts based on ideas we had discovered in the stakeholder engagement from our workshop.

SMART GREENHOUSE SYSTEM SKETCHED-PROTOTYPES

Through our workshops it was evident that the implementation of a Smart Greenhouse System was crucial to bringing healthy, affordable and accessible food to the community. To determine a strategy which would create the best benefit for our community, we narrowed the options down to three:

- 1 Large Community Greenhouse supporting all districts
- 3 Medium Community Greenhouses supporting each district
- Several neighbourhood operated community greenhouses supplying the homes in those neighbourhoods.



Smart Greenhouse System Prototype during community engagement

ELECTRIC TRANSPORTATION SYSTEM SKETCHED-PROTOTYPES

Likewise, our ideation workshops made us aware that some form of transportation system in the community was going to be necessary to our Smart Cities approach. This led us to prototype multiple concepts to potentially solve this clear barrier to many of the issues we identified as insights. These transportation solutions included:

- Ride-Sharing System connecting individuals who can offer rides with individuals who need them.
- MCA operated and subsidized Smart Taxi Service



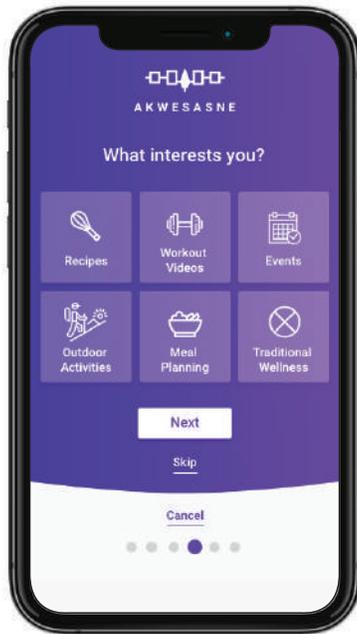
Electric Transportation System Prototype during community engagement

AKWESASNE MOBILE/WEB APPLICATION DIGITAL PROTOTYPE

In the finalist phase, a goal for the combined team was to create a working prototype of the Akwesasne Community Application. The application will allow the necessary communication and coordination for the whole Smart Cities approach to work, like glue for all the parts. Prototyping is a major milestone in the Design Thinking approach to building a product or service,

as it is the artifact representing the culmination of all the previous work, and is a clear target for what the next stages seek to create. So, following Design Thinking exercises with users where features were developed by users, early versions of our application prototype was created by our partners (zu) in AdobeXD. This online, interactive version of our app allowed community members to navigate through its functions using their devices in ways close to having a working application.

This digital prototype, a replica of the application, demonstrates initial sign up and login screens, as well as 4 tabs: Wellness, Nutrition, Fitness, and Community. Sub menus for these tabs each bring additional screens showing how these new opportunities to Akwesasne will work. The application, which is expected to expand in capability over time, provides room for expansion of functionality in future phases. With extensive engagement and feedback from the community to ensure proof of concept, followed by cycles of iterative prototypes produced and shared with each round incorporating feedback followed by more user-testing – we produced a prototype interface. On the following page is a link to the the Akwesasne Community Application prototype.



- Traditional and modern health resources in the forms of videos, blogs, podcasts, and recipes
- Booking of traditional, holistic and community healthcare appointments
- Access and storage CANRisk survey results, with prompts to take necessary action
- Compete in activities alone, or with friends in order to gain rewards
- Events and programs page to stay up to date and aware of opportunities in the community

CLICK THE LINK TO VIEW THE PROTOTYPE

<https://adobe.ly/2ERy3X3>

- Features and functionality of prototype include:
- Login screens with terms of use, privacy policy including collection, use, and disclosure messaging
- Ordering and payment of the Smart Delivery Service (for food deliveries from the Green Food Bag and Smart Greenhouses)
- Requesting and payment of rides from the Electric Public Transportation System

5. Get some feedback

Getting feedback from our community on these more mature prototypes was the next critical step to ensure our solution would meet their expectations. The majority of our this wider community feedback and user-testing would be completed at our community engagement events.

We were aware of the lack of transportation limiting participation for many. So we made sure to host community engagement events in each of the three districts so there was ample opportunity for everyone to contribute to our Smart Cities Solution. For both the Smart Greenhouse System and the Electric Public Transportation System, we used a multifaceted approach to get good feedback from users. We mobilized a number of strategies:

Interviews - Members of our team and zu's were stationed around the meeting space in



order to answer questions, pose their own questions back to users and to follow up to enquire why certain notes were given or decisions made.

Dot voting - Allowed community members to simply leave adhesive dots on parts of the solution sketch they really liked or approved of.

Feedback Notes - Gave users the opportunity to provide feedback by writing comments on adhesive notes and sticking them anywhere on the sketches. Their comments led to other participants also dot voting on the stickies themselves, giving approval or making further suggestions, all in a casually collaborative and efficient way.

Voting box - With multiple concepts and many participants, we simply wanted to give individuals the ability to vote for their overall favourite concept. This gave us an idea of which concept would be likely to benefit the community the most, and so be adopted for actual use by them.

This resulted in a more flushed out application prototype that we were extremely excited to get it into the hands of our users. Gaining feedback on this now more mature prototype came through a number of methods:

1:1 user testing - Members of the zu team had community members work with the application under one of our team's observation. This provides some the highest quality insight into the apps success in the presentation of features and functionality.

Dot Voting - As in our previous use of dot voting on interface sketches, we now made printouts of the application screens, taped them to the wall and encouraged community members to vote on their favourite features.

Feedback Notes - Feedback notes gather more specific insights, new ideas and enhancements – then just votes. And participants enjoy the ability to leave feedback and suggestions right next to interface features, and to see what other folks are saying. This is a high quality feedback method providing insights very useful to the designers.

Interviews - Members of our team and zu's were again standing ready to answer questions, and to engage in brief conversations to clarify exactly the nature of the participants opinion, idea or critique.

Getting feedback on our prototypes was in essence just more research. We gathered information about how people use the solution, where they stumble, what they liked, what they disliked, and things we can make better. Design Thinking has led us to a Smart Cities Solution that we can confidently say was designed and created by and for the community using it. This engagement with users is the missing step in so many software projects that fail. Our extensive efforts in community engagement on the app greatly increases our potential for success.



Data & Privacy

PRELIMINARY PRIVACY IMPACT ASSESSMENT (PIA) OR PRELIMINARY RATIONALE ANALYSIS (PRA) WITH EVIDENCE THAT RELEVANT PRIVACY AUTHORITIES WERE CONSULTED AND THEIR GUIDANCE WAS CONSIDERED IN ITS DEVELOPMENT

Following an in-depth analysis of our Smart Cities Challenge solution(s), and multiple meetings with the Privacy Commissioners of Canada, Ontario, and Quebec, we are confident in taking the appropriate measures to ensure the minimization, anonymization, consensual and security in the collection, use and disclosure of information. To both implement and maintain an effective future-proofed solution, while constantly measuring our progress, a number of PII and non-PII data points will need to be collected. Within our PPIA, we highlighted ways in which we intend and commit to comply with the Personal Information Protection and Electronic Documents Act.

Types of methods of data collection, generation, analysis, storage and transmission, and plans for re-use, re-distribution, derivative production, archiving, and preservation that reflects the entire data lifecycle in project design.

As members of the communities ourselves, and proud of Akwesasne individualism, we approach the collection, generation, analysis, storage, and transmission of data as if it were our own.

Collected - Personal information will be collected within the application through. This data will be gathered anonymously from inception and in aggregated form to gain insight into the progress of the community. Collected information will include personal information, aggregated information, and device information.

Personal Information - Full name, Home address, Email address, Credit Card Numbers, Age Range, Telephone and Login Details. This information is fully encrypted at first point of contact, in transit and at rest.

Aggregated Information - Gender, Race, Age Range, Workplace, Height & Weight, BMI, Waist Circumference, Physical Activity Levels, Diet, Fruits and Vegetable Intake, Blood Pressure, Blood Sugar Levels, Family History in Relation to Diabetes

Device Information - Device IDs, Internet Protocol (IP) address, Unique Device Identifier, Cookies tracking, and Location Tracking (While using the app)

Adept in the security of information, our partners, zu, have been ensuring the safe



disclosure of information for over 23 years. All data surfaced and in transit between the application and Mohawk Council of Akwesasne Servers, will be managed through;

- SSL encrypted communication for all data in transit.
- Credentialed access to sensitive information at all touch points.
- Strong, AES encryption of sensitive data at rest.
- Secure, off-site storage of data backups
- Logical, and physical separation of collected PII and de-identified, aggregate data that will power community dashboards and open data initiatives.
- An extract, transform, load (ETL) step to pull data from the community application database into a separate repository of information used to generate redistributable reports that are devoid of PI.

Use - The use of the collected information will ultimately allow us to measure the success of our Smart Cities Solution. It will provide us insight into the communities progress enabling us to adapt our approach in areas of low participation and capitalize on areas of high participation. All information will be fully encrypted through SSL, and in an aggregated form to not tie information to an individual or key identifier.

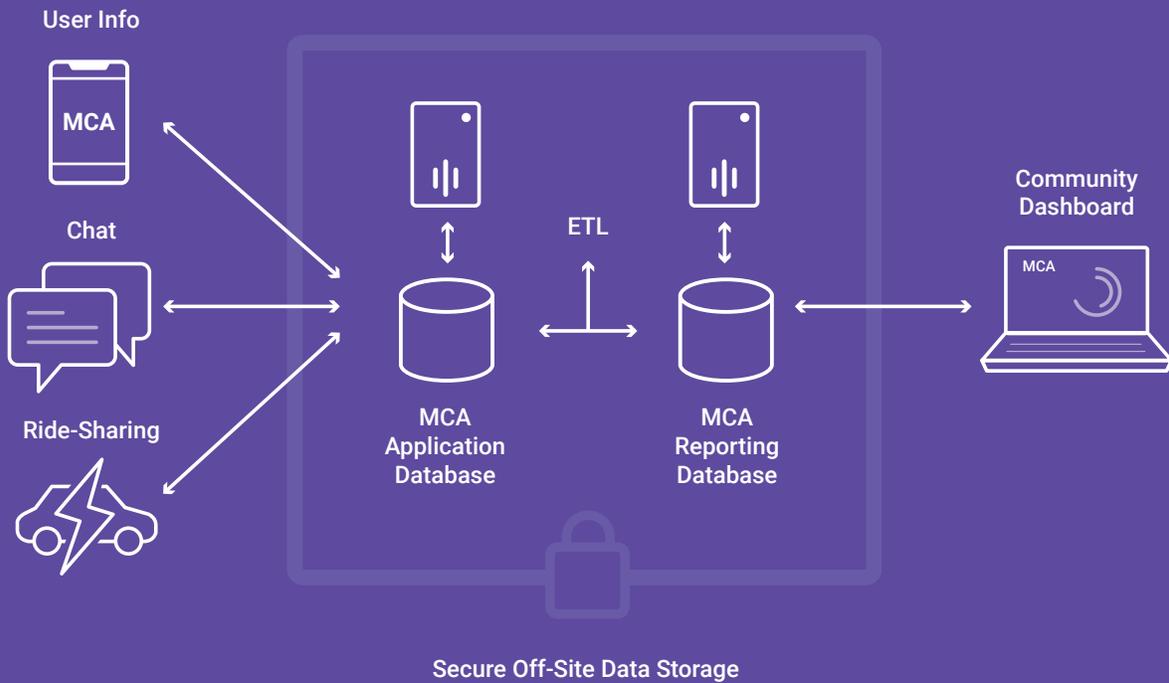
Disclosure - All information not highlighted as aggregate information, will be fully

encrypted and untied to the individual at initial contact, in transit and at rest. Personal information will not be made available to any third parties but only Mohawk Council of Akwesasne internal trend analysis and measurement

Efforts made to integrate security and privacy considerations into project design, particularly those that were raised users, residents, and other stakeholders.

Balancing design standards, user experience, and the privacy implications resulting from the former are all considerations necessary for the implementation of our Community Application. Below we highlight several best practices to integrate security and privacy considerations into our project design.

- Identification of what personal information is being, or may be, collected about them at time of consent
- Identification of all purposes for which information is collected, used or disclosed at time of consent
- Provide information to individuals in manageable and easily-accessible ways
- Multi-Factor Authentication
- “Just-in-Time” privacy notice where possible
- Treating consent as a dynamic and interactive process.
- Be positioned to demonstrate - either in the case of a complaint from an individual or a proactive query from



Data Flow Diagram

a privacy regulator - that we have a process in place to obtain consent from individuals.

- Obtain consent from a parent or guardian for any individual unable to provide meaningful consent themselves
- The ability of an individual's right to withdraw consent
- The ability of an individual's right to review and update personal information logged

Budget & Project Breakdown

zu's projects are tracked hour by hour, day, by day, week by week and month by month. Their time tracking system called Replicon records their time in 15-minute increments. The time spent is fed into burn and resource charts that are scrutinized against detailed work plans produced at the beginning of each production phase and broken down further by each week by zu's experienced product owners. The PO's work with zu's designers and developers to further break down work on key features into bite-sized "user stories", that are then used to create tasks in Jira and Replicon for assigning work and recording time respectively.

The Akwesasne team is kept in the loop via zu's weekly progress reports that feature a cost breakdown to date, budget forecast for the week ahead and expected spend upon completion. Risks are flagged in the report and discussed in weekly production meeting with the Akwesasne team. A decision log is kept by zu to maintain

transparency throughout the project. Between their time tracking system, weekly reports and weekly status meeting, we'll be kept informed of risks, spend totals and decisions to ensure proper cost control from kickoff to launch. Work is completed upon our approval with production billing rate of \$140/hr and a standalone strategy rate of \$175/hour.

Our Smart Cities Solution will be assembled using, really no experimental technologies or untested software approaches. Therefore, our estimates are straightforward and not based on speculative math. Nevertheless, public tenders under the oversight of the before mentioned committees should provide us with competitive prices for the equipment and installation of the equipment we need to build the Electric Public Transportation and Smart Greenhouse Systems.

APPLICATION & DASHBOARD	HOURS	SUB-TOTAL
Phase 1: Strategy & Validation Stage	150	\$175,875.00
Phase 2: Design	230	\$273,000.00
Phase 3: Development	355	\$509,250.00
Phase 4: Dashboard Development	240	\$252,000.00
Subtotal	975	\$1,210,125.00
With contingency 10%		\$1,331,137.50
Taxes (11%)		\$146,425.13
Travel Costs & Expenses		\$75,000.00
Application & Dashboard Implementation Total		\$1,552,562.63

GREENHOUSE IMPLEMENTATION ESTIMATE	SUB-TOTAL
Greenhouse Engineering and Design	\$150,000.00
Ahkwesahsne Mohawk School Greenhouse	\$300,000.00
Kana:takon School Greenhouse	\$300,000.00
Tsi Snaihne School Community Outreach Greenhouse	\$450,000.00
Curriculum Specialist (3-Year Term)	\$240,000.00
Subtotal	\$1,440,000.00
Taxes (11%)	\$158,400.00
Greenhouse Implementation Total	\$1,598,400.00



ELECTRIC TRANSPORTATION SYSTEM ESTIMATE		SUB-TOTAL
Electric Cars (12 x \$45,000 each)		\$540,000.00
Electric Car Charging Stations (6 x \$5,000 each)		\$30,000.00
Natural Resources Canada Rebate		(\$15,000.00)
Electric Bus		\$300,000.00
Subtotal		\$855,000.00
Taxes (11%)		\$94,050.00
Transport System Implementation Total		\$949,050.00

OVERHEAD COSTS	
Project Coordinator Salary - 2 Year Term	\$200,000.00
Project Assistant Salary (x1) - 2 Year Term	\$150,000.00
Greenhouse Interns (x3)	\$150,000.00
Driver Wages	\$100,000.00
Subtotal	\$600,000.00
Admin Management (10%)	\$60,000.00
Taxes (11%)	\$72,600.00
Overhead Total	\$732,600.00

PROJECT COSTS	
Application & Dashboard Implementation Total	\$1,552,562.63
Greenhouse Implementation Total	\$1,598,400.00
Transport System Implementation Total	\$949,050.00
Overhead Total	\$732,600.00
Project Total	\$4,832,612.63

FINALIST GRANT EXPENDITURES	
zu Strategy & Design Consultation	\$176,200.00
Community Engagement Events	\$29,500.00
Project Coordinator Salary	\$8,000.00
Travel	\$7,000.00
Subtotal	\$220,700.00
Taxes (11%)	\$24,277.00
Expenditure Total	\$244,977.00

** Remainder of budget will be used through the spring finalist stages, including presentation and travel*

Implementation Phase Requirements

While our Challenge couldn't be more significant to our community, the proposed Smart Cities system does not require special attention in regards to either municipal, provincial, or federal legislation, nor for reporting or policy requirements. Our consultation with Indigenous groups, since this is ourselves, is about ensuring we are inclusive of the many voices of our community. To that end, we have relied on many types of engagement to determine our initial approaches, and as touchpoints at every step of the planning and process of solution delivery. The most complex areas of legislative impact are around personal data privacy, and the risks of trying to

build a comprehensive understanding of the state of our people's health. This is covered in our Preliminary Privacy Impact Assessment.

Community Employment Benefit

Our Smart Cities project will provide many benefits towards new skill development, as well as full and part time labour opportunities. Part of the value of these employment opportunities will be every participant knowing that the work they are involved in directly benefits our community and has the higher purpose



of improving health outcomes and quality of life at Akwesasne. The Electric Public Transportation System will create employment through MCA employed Smart Taxi drivers, and bus drivers. The Greenhouse will create opportunities for all ages and ability levels, providing positions in horticulture engineering, gardening, plumbing and electrical, as well as project and inventory management. Volunteers will also be needed and will receive exposure to trades and professions not currently in Akwesasne. The Akwesasne Community Application will also create numerous opportunities. Our Mohawk Council of Akwesasne Information Services team will undoubtedly need more help, and will towards those graduating from Ontario Emerging Jobs Institute for applicants. Hosting, maintaining and enhancing a combined mobile and web-based application like the Akwesasne Community Application requires all manner of skills. These include programming for all the devices and frameworks in use, database management, server management, system security and privacy, CMS management, social feed integrations, location management, training, and more. Some areas will require a depth of expertise, others will be necessary at shallower depths of experience. We are committed to not only innovating the products and services of our community but also developing the expertise and education of our people. It is time for us to make use of the technology that is key to our moving forward with our challenges and opportunities, and to become self-sufficient with these skills.

Commitment to a Climate Lens Assessment

Should we have the opportunity to move forward with the implementation phase, we will commit to completing the Climate Lens Assessment. This will make more sense after the public tenders for solution equipment have been received, and choices made about which equipment provides the best value at that future point in time. We are confident our Smart Cities approach will bring positive climate impact, but will confirm the expected measured effects when appropriate details for the analysis are available.

Risk in Regards to Implementation Plans and the Regulatory Environment

We do not foresee risks to our Smart Cities project in failing to meet relevant municipal, provincial, and federal reporting and legislative requirements. Granted there are always risks associated with making mistakes in regards to construction of buildings, and the Smart Greenhouses are structures. There are information privacy risks. There are labour standards rules. There are employment related taxes to be paid. There is general reporting to the various Revenue Collection agencies. But none of these seem either notable as unique to our project, nor are new risks that our community does not already face.

Thank you for taking the time to read our proposal. We hope you have found our plans to improve the health of our people through this combination of Design Thinking, Smart Technologies and Web-based Software to be practical, achievable and worthy of being taken to fruition.

Our consultation with Indigenous groups, since this is ourselves, is about ensuring we are inclusive of the many voices of our community.



Appendix A



SCHEDULE "A" to MASTER SERVICE AGREEMENT
STATEMENT OF WORK: SUPPORT AND OPTIMIZATION

RE: Website Support and Optimization Service Agreement between the Mohawk Council of Akwesasne. (the "Client") and zu.com Communications Inc. (the "Webmaster") dated effective the 30th day of September 2018.

Support and Optimization Overview

Retaining long-term value from any digital asset requires a commitment to supporting the software development lifecycle. The increasingly rapid pace at which web technology and best practices, online threats and user expectations evolve make it hard to keep up. Our support and optimization model is designed to keep MCA team members aware of issues affecting site health and security, opportunities for iterative enhancement and potential opportunities to leverage new trends or technologies.

We structure our approach to long-term viability in two ways. The support fee enables your website to be flexible and protected from the changing nature of technology and online threats while the optimization budget allows your website to evolve alongside your corporate and communications strategies. Together, these two approaches to health and optimization ensure the successful transformation of your digital asset over time.

Definitions:

Bug – A bug is defined as a defect or defects in the existing code that produces an incorrect or unexpected result.

Existing code – Refers to code in use at the commencement of support and optimization agreement.

Minor version – Point sequence updates to supported, dependent software. Ex. *major.minor*

Major version – Whole number sequence updates to supported, dependent software. Ex. *major.minor*.

Schedule A: Budget

Annual Support Budget: Fixed TBD broken into a TBD monthly fee.

Monthly fee includes the services outlined in Schedule B: Support Services. The scope of services will be evaluated annually from the initial start date as the website may grow and the scope of support services and fees may be expanded.

Annual Optimization Budget: Recommended TBD broken into a TBD monthly forecast.

The annual optimization budget will include the variable costs dedicated to building out new features, website enhancements and major system upgrades discussed in Schedule C: Optimization Services. Optimization work will only be completed upon client approval at a production billing rate of \$140/hr and a standalone strategy rate of \$175/hour.

*Any changes in costs as a result of changes to hosting arrangements at the request of the client will be reflected in changes to the monthly fees.

*Variable cost will be affected based on US dollar conversion and hosting usage.



* Any work related to hosting maintenance including server configuration, server maintenance and host provider management will be recorded hourly and billed to the optimization budget at a rate of \$140/hr.

Schedule B: Support Services

Support Services Scope:

1. Monthly proactive performance testing and bug diagnosis
 - a. New minor version and major version browser/OS testing and 3rd party integrations monitoring for updates or security issues.
 - b. Run any automated tests as well as manual testing per code release.
 - c. Generate bug report; prioritize non-urgent bugs; catalogue major version browser and OS issues for optimization.
2. Bug resolution
 - a. Bugs will be catalogued and prioritized based on services levels outlined in Schedule D.
 - b. Bugs will be fixed based on priority.
 - c. Minor version browser/OS and 3rd party integrations bugs will be resolved under the fixed support fee outlined in Schedule A.
 - d. Major version browser/OS and 3rd party integrations upgrades covered under optimization budget outlined in Schedule A.
3. 3rd party integrations support
 - a. Any fixes required to ensure 3rd party integrations are up to date, secure and functioning.
 - b. 3rd party integrations may include:
 - i. Google Maps
 - ii. YouTube
 - iii. Google Analytics
4. Drupal Support
 - a. Minor version updates and security patches
 - b. Deployment support



- c. Administration View bug diagnosis and resolution
 - d. Additional local environment setup for ensured redundancy
5. Quarterly Services Reporting
- a. Incident tracking and diagnosis
 - b. Analytics review
 - c. Document major risks
 - d. Document known 3rd party feed updates or enhanced feature availability
 - e. Document new browser/OS and device releases
6. Supported Browsers and Devices:

Monthly Testing - We currently test for the following operating systems and devices:

Device	Versions	OS
iPhone	SE, 8, 8+, X	iOS 11.0+
iPad	Mini, 4th Gen, Pro	iOS 11.0+
Android Phone & Tablet		Android 6.0+

Note: A review of website traffic by browser and OS will be conducted to determine whether backwards compatibility is required. If any one browser or OS makes up more than 10% of the overall traffic, zu will ensure the website is optimized for that instance.

Browser	Versions
Internet Explorer	11.0+



Safari Latest version

Firefox Latest version

Google Chrome Latest version

Schedule C: Optimization Services

While Support Services ensures asset health, Optimization maintains relevancy, strategic alignment and future growth opportunities. If assets are left stale they will never achieve the long-term value intended for the business or users. We recommend a balance between investing in system upgrades and feature enhancement to keep pace with the evolving nature of web technology and user expectations.

1. Website optimization:

- a. Custom feature development
- b. Section or website-wide content updates
- c. Major version Drupal upgrades (ie. 8.0 – 9.0)
- d. Additional 3rd party tool integration, API development, microservice integration
- e. Production design elements
 - i. Infographics
 - ii. Data visualization
 - iii. Print materials
 - iv. Heuristics reviews
- f. Website template adjustments
- g. Website main navigation changes
- h. Strategy services: user testing, stakeholder engagement, design sprints, product design, and development

2. Microsite development and optimization:



- a. Additional microservice websites for campaigns or special needs
- b. Development of additional websites such as a dark site for crisis communications, community websites, further form integrations

Schedule D: Service Levels

zu business hours are 8:30 AM – 4:30 PM, Monday-Friday

Team - The developers responsible for performing support services include senior zu team members including one Acquia Drupal certified developer.

Urgent Requests:

1. Impact on all users on given platforms.
2. Website or application is non-functioning or severely degraded.
3. Loss of functionality to an entire section of the website.
4. Notice must be emailed to MCA@zu.com to ensure all members of the production team and support staff are notified.
5. zu will respond within one (1) hour with an estimated timeline to address such a request within business hours.
6. Urgent requests will be resolved at the earliest possible time and as quickly as possible. The team will work continuously until a resolution is met.
7. Urgent requests brought about by actions of the Mohawk Council of Akwesasne, its host provider or 3rd party participants will be resolved. Billing costs associated with these issues will be reviewed on a case by case basis and possibly fall outside the support services budget.
8. Should an urgent request be identified and communicated to zu outside of the stated business hours, and should the issue be deemed unable to be mitigated through a short-term rollback, zu Operations will then assess the next steps on a case-by-case basis in consultation with the Mohawk Council of Akwesasne to determine an appropriate resolution.

Non-urgent requests:

1. Impact on one (1) or more user groups or any device platform.
2. Application continues to work but non-critical functionality is unavailable. Restoration is not time sensitive.
3. Application continues to work but little non-critical functionality is unavailable.
4. Request is made in Zendesk or, if Zendesk is not being leveraged, a request is emailed directly to the Product Owner PO.



5. Response within eight (8) hours on a timeline for an estimate within business hours.
6. Non-urgent requests will be prioritized and resolved based on a mutually agreeable schedule.
 - a. This doesn't include downtime that might occur due to the host provider.

MCA Responsibilities:

1. Grant zu access to MCA's facilities, information technology infrastructure, information and data, and personnel for the provision of the services.;
2. Maintain backup data, and perform all other tasks required or recommended by zu to prevent or mitigate any loss or damage to MCA's data or other information arising out of the provision of the Services;
3. Comply with all reasonable procedures and requirement of zu to facilitate and assist in the provision of the Services
4. Perform those tasks assigned to MCA conscientiously and using qualifies and competent personnel;
5. Active communication with the zu team, and bi-weekly meeting attendance;
6. Drupal CMS content authoring & publishing, including;
 - a. The editing of existing and addition of new content and documents
 - b. Creation of new pages using existing content and page types
 - c. Management of Content Menu Settings and URL Paths
 - d. Rearrangement and addition of menu items

Schedule E: Quarterly Performance Reporting

Availability (Current Month; Previous Month; YTD):

- Service Time
- Unplanned Downtime Duration
- Maximum Downtime Duration
- Number of Downtime Occurrences
- Total Page Failures

User Experience (Current Month; Previous Month; YTD):

- Average Response Time
- Maximum Response Time

Capacity (Current Month; Previous Month; YTD):

- Average User Capacity
- Maximum User Capacity



- Completed Pages
- Bandwidth Consumption

Performance (Current Month; Previous Month; YTD):

- Average CPU Usage
- Maximum CPU Usage
- Average Latency
- Total Page Hits
- Average Page Load Time
- Maximum Page Load Time

IN WITNESS WHEREOF the parties hereto have executed this Statement of Work to be effective as of the 1st day of January 2019 ending the 31st day of December 2019.

Mohawk Council of Akwesasne

zu.com Communications Inc.

Per: _____

Per: _____

Title: _____

Title: _____

Signature: _____

Signature: _____



Appendix B





Akwesasne Area Management Board

P.O. Box 965
Cornwall, Ontario K6H 5V1
Tel: 613-575-2626 Fax: 613-575-2863 www.aamb.ca

March 4, 2019

Rhonda Adams,
Manager, Information Services,
Mohawk Council of Akwesasne,
PO Box 579,
Cornwall, Ontario
K6H 5T3

She:kon Rhonda,

Thank you for your email concerning the Akwesasne Smart Cities Proposal. I have been watching the development of this initiative with great interest given the tremendous possibilities and benefits Smart Cities could have for Akwesasne.

The Akwesasne Area Management Board (AAMB) would be pleased to participate in the Smart Cities Proposal by becoming a partner in training and employment opportunities. The AAMB offers a variety of programs and services that could dovetail with Smart Cities including Internships; Training on the Job (Job Opportunities); and Youth Initiatives to engage young people. Our goal is to work with employers to expand the range of opportunities for Akwesasne workers and clearly the initiatives proposed in Smart Cities would match this objective.

The Akwesasne Area Management Board looks forward to receiving more information on the Smart Cities proposal and extends best wishes on the development of this important program.

Skennen,

AKWESASNE AREA MANAGEMENT BOARD

Russell Roundpoint,
Executive Director.



Saint Regis Mohawk Tribe

Amberdawn Lafrance
Saint Regis Mohawk Tribe Environment Division
Akwasasne Cultural Restoration Program

March 4, 2019

Rhonda Adams
Project Lead Smart Akwasasne
Manager Information Services
Mohawk Council of Akwasasne

Dear Rhonda Adams:

I am writing to voice my full support of the Smart Akwasasne Project and their proposal to the Smart Cities Challenge.

The Saint Regis Mohawk Tribe's Akwasasne Cultural Restoration (ACR) Program was established in 2013 as a result of the St. Lawrence Environment Natural Resource Damage Assessment Settlement. The name that we have chosen for ourselves in our language is "Áse Tsi Tewá:ton" which means "make it new again". This name and its meaning describe what we are doing for Mohawk culture through the program; we are making it new again, and bringing new life to our traditions and cultural practices and strengthening the connection of our people to the land. The program is overseen by the Akwasasne Restoration Commission which is made up of representatives from the community, the Mohawk Nation Council of Chiefs, the St. Regis Mohawk Tribe, and the Mohawk Council of Akwasasne. The main component of "Áse Tsi Tewá:ton" is the Cultural Apprenticeship Program which is a four-year program in traditional, land-based, cultural practices. We hired eight Cultural Practitioners in the categories of Water, fishing and the use of the river; Horticulture and traditional foods; Medicine plants and healing; and Hunting and trapping. The program graduated 13 apprentices in 2017 and held over 150 community workshops since 2014.

Two goals of the Smart Cities proposal can be directly supported by the ACR program: Greenhouses and Cultural Awareness. The ACR program has the resources to offer traditional teachings related to Indigenous food sovereignty, Haudenosaunee heirloom seed saving, traditional gardening and harvesting practices, Kanien'keha language, and curriculum centered on these teachings.

Sincerely,

Amberdawn Lafrance
ACR Program Manager

71 Margaret Terrance Memorial Way
Akwasasne, New York 13655
Phone: (518) 358-2272
www.srmt-nsn.gov



**Akwasasne Freedom School
Via Mohawk Nation**

P. O. Box 290
Rooseveltown, NY 13683

P. O. Box 1832
Cornwall, ON
K6H 5R7

TL: 518-358-2073

office@freedom-school.org

To: Infrastructure Canada Smart Cities Challenge

**From: Kanerahtens Tara Skidders
Akwasasne Freedom School Office Manager**

Re: Proposal on Curriculum Development for Greenhouses at schools

Date: March 1, 2019

Tekwanonhweratons (greetings),

I hope this letter reaches you in good health and spirits. I am writing on behalf of the staff, students and families of the Akwasasne Freedom School. We are in support of this program and hope that it will help to build on what we have already created and follow. As Onkwehonwe (native) we have always been instructed to grow our own food for the nourishment and health of our body, mind and soul.

This proposal is absolutely necessary for our youth and families of Akwasasne. Students need the opportunity to learn where their food comes from as well as the work that goes into growing the foods. There is a plethora of knowledge to be shared which covers all subject areas such as science, health, math, social studies and cultural practises. This curriculum will be taught in English and Kanien'keha (Mohawk) which will strengthen language revitalization efforts for the immersion schools and create much needed curriculum. Immersion teachers are often creating their own curriculum for their classes because it is not written in the language needed. This will help alleviate the extra work that these teachers have.

We look forward to being part of such an important project in the near future.

Niawenhko:wa (thank you very much),

Kanerahtens Tara Skidders



March 1st, 2019

To Smart Communities Challenge Reviewers:

I am writing on behalf of Canadian Organic Growers (COG) to support the tremendous environmental and economic benefits of the SMART Akwesasne application.

COG is a registered national charity (13014 0494) and an organic farm and consumer membership organization with over 1,000 members and supporters. Since 1975, COG has engaged in farmer education, policy work and sector development and has offered a united voice for producers who practice organic agriculture.

Eric Payseur, COG's manager for an exciting new initiative called *Growing Eastern Ontario Organically*, has toured Akwesasne and examined the potential for transforming the community and community health outcomes through food.

We are in discussions to partner with Akwesasne to provide culturally appropriate training and education resources for the community regarding organic agriculture and food production. We have discussed remediation of land from industry contamination, maximizing the sustainability of existing land and food production infrastructure, the production of heritage seeds, supporting public health, and engaging youth in the green jobs of the future. We are particularly excited about the APP for bartering locally produced food, and the potential to connect with the Food and Agriculture Mapping project of Stormont-Dundas-Glengarry Counties to increase food tourism in the region and sell surplus to the surrounding communities. Our consulting/training for greenhouse or land-based agricultural production, or

our nature is organic ~ le bio, au coeur même de notre nature

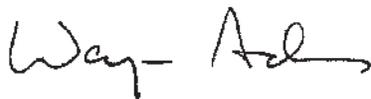
Canadian Organic Growers | Cultivons Biologique Canada
410-100 Gloucester Street • Ottawa • Ontario • K2P 0A4
1-888-375-7383 (Canada) • (613) 216-0741 • Fax (613) 236-0743
office@cog.ca • www.cog.ca

value-added food preservation, production and marketing will allow Akwesasne community members to become food secure and tap into the economic benefits of an almost \$6 billion Canadian organic industry.

Despite its problematic location across 4 provincial or national borders, certified organic production and value-added foods present incredible environmental and economic opportunities to the people of Akwesasne. SMART Akwesasne would be situated in a tremendous synergy centred around agriculture, agri-food, and positive environmental initiatives in Eastern Ontario; the Canadian Organic Growers and its other Eastern Ontario partners will be a key resource for implementing this initiative.

I know there are many communities vying for your financial support in order to make their ideas happen. However, I believe the changes here will have the greatest possible benefit imaginable. If you have any questions or would like me to elaborate further, please do not hesitate to contact me.

Sincerely,

A handwritten signature in black ink that reads "Wayne Adams". The signature is written in a cursive style with a long horizontal stroke at the end.

Wayne Adams
Executive Director
Canadian Organic Growers