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## **Developing an eCommunity Approach to Broadband-Enabled Community Services in Kitigan Zibi Anishinabeg First Nation**

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### **Introduction**

More than 600 First Nation (Indigenous) communities are located across Canada's vast landmass, many in rural areas or remote places accessible only by air. First Nations are autonomous communities with elected governments. These First Nation governments are responsible for delivering services – including health, education, policing and security and many other services – to their community members. The Canadian government's fiduciary responsibility to First Nations requires it to provide funding for First Nations to deliver these community services. However government funding for First Nation communities is less than that provided to non-Native communities, on a per-capita basis, for basic services such as health and education. First Nation governments are in a constant cycle of having to find and fight for funding to effectively deliver essential services and activities including electronically. There is never enough funding to provide an adequate level of information and communication technology (ICT) infrastructure to provide the support necessary for community services, applications, training, and ongoing and maintenance. Despite these challenges, many First Nation communities are developing, building and maintaining ICT infrastructures and processes to support online service delivery.

The Assembly of First Nations, the national representative body of First Nations across Canada, has promoted a holistic "e-Community" approach to ICT development in First Nations that considers the many elements required to support digital infrastructure in these unique environments. The current study examines how one First Nation community - Kitigan Zibi Anishinabeg - in Quebec, Canada, is using ICT to support online delivery of education and cultural services, health services and policing and security services. The discussion of the research findings considers how an e-Community approach could support the strategic development of broadband infrastructure in Kitigan Zibi in the future.

## **First Nations autonomy, community resilience and communication infrastructure**

The Royal Commission on Aboriginal Peoples (RCAP) was the most comprehensive investigation in Canada into the situation of First Nations. In its 1996 final report, RCAP described how Canadians know little about the peaceful and co-operative relationship that grew among the First Nations and the first European visitors in the early years of contact - including the alliances and the friendship treaties outlining promises that were never kept by Canada (RCAP, 1996).

The history of indigenous peoples in Canada is similar to that of Indigenous peoples globally who continue to struggle against the exploitation of their lands and resources by external forces. In 2010, the Canadian government adopted the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP), which, similarly to the Canadian Constitution, affirms the right of Indigenous peoples to self-determination (Canadian Broadcasting Corporation, 2010). Among the many rights affirmed in the UN Declaration is the right of First Nations to autonomy in matters relating to their internal and local affairs and the right to maintain and strengthen their distinct political, legal, economic, social, and cultural institutions (United Nations, 1997).

In Canada, First Nations for more than a century have experienced various destructive policies, such as residential schools and the ongoing *Indian Act*, that defy all the requirements of the UNDRIP. A function of these state policies is to deprive First Nations of the tools of resiliency (their beliefs, traditions and institutions) in order to assimilate them into the dominant culture. Reclaiming their beliefs, traditions and institutions can help First Nations communities to resist colonial aggression and reconstruct their identities (Alfred, 2009; RCAP, 1996; Tousignant & Sioui, 2009).

Researchers have found that self-determination, community autonomy and control over the delivery of services - such as education, health and policing - contribute to cultural continuity and community resilience (Chandler & Lalonde, 2003). Culturally appropriate services support students, community members, families and community institutions facing adversity (Tousignant & Sioui, 2009).

Researchers have identified the built environment as a core dimension of community resilience. They believe that community resilience can be measured in part by its stock of built capital in the form of infrastructure (Kirmayer, Sehdev, Whitley, Dandeneau & Isaac, 2009). Built infrastructure includes housing, water, power, and communications. For this present study, we understand communications to encompass all elements of telecommunications, including broadband infrastructure, networks, and applications.

## **Broadband, e-Community, and First Mile in Remote and Rural First Nations**

At the time of writing, no coherent federal government policy exists in Canada for broadband networks and communication infrastructure in rural and remote regions of the country (McMahon, O'Donnell, Smith, Woodman, Simmonds & Walmark, 2010). After years of political consultation, the federal Digital Economy Strategy is still only a discussion paper and strangely absent from major national policy plans.

At the same time, in the Canadian policy landscape, the federal government is responsible for policy related to its relationship with First Nations.

The First Nations Chiefs, through their national political representative body, the Assembly of First Nations (AFN), have passed numerous national resolutions relating to broadband infrastructure. The most recent was at the AFN Chiefs meeting in December 2011. In 2010, the AFN published its e-Community information and Communications Technology (ICT) model, based on a framework developed by the Keewaytinook Okimakanak tribal council (Whiteduck, 2010). In this national model, communication infrastructure is part of a broader plan for economic, social, and cultural change based on knowledge and information. The e-Community ICT model is aspirational, in that it suggests how First Nations should approach developing a strategic plan for its broadband infrastructure and ICT development. However no funds are available for individual First Nations to develop or implement an e-Community strategy.

The AFN's e-Community ICT model builds upon a "common network model" employed by Canadian governments, institutions, companies and corporations. It has five themes: First Nations capacity development, First Nations connectivity, human resources development, information management, and partnerships (Whiteduck, 2010). The AFN is also proposing that First Nations communities and organizations oversee the public funding required to develop and control the communication infrastructure in their communities.

In its latest national resolution, the AFN noted that the e-Community ICT model is very compatible with a First Mile approach (McMahon, O'Donnell, Smith, Woodman, Simmonds & Walmark, 2010). The First Mile describes the need for First Nations to own, control and manage their local broadband infrastructure and the services and data flowing through their local networks. First Mile concepts support the principles of OCAP (Schnarch, 2004) applied to broadband - ownership, control, access and possession. These concepts also include support for First Nations to use broadband and ICT for community-controlled service delivery in a holistic manner. Policies to support a First Mile approach include supporting community members to use these technologies effectively and ensuring they have the capacity to do so (McMahon et al., 2010).

### **Services and Broadband Infrastructure Kitigan Zibi Anishinabeg First Nation**

The current study considers these larger historical, political, economic, cultural, and social elements in the context of the research literature. The research looks to explain the development of the broadband communication infrastructure in Kitigan Zibi Anishinabeg First Nation and how the community is using this infrastructure to deliver local services and engage with community members. The paper highlights some of the community's challenges and discusses some ways forward. In the discussion, we consider the AFN's e-Community model in more detail and explore ways that Kitigan Zibi can apply it when developing their own local broadband strategy (Whiteduck, 2010).

Kitigan Zibi Anishinabeg First Nation is unceded territory<sup>1</sup> in a rural region of Quebec two hours by road north of Ottawa. Kitigan Zibi is the largest Algonquin community in Canada, both in size (184 square kilometres) and population (2,988 registered members in September 2012, of which 1,560 live in the Kitigan Zibi community). The community's published story - *Since Time Immemorial* - describes the history of the community, including the Anishinabe ancestors, the first contact with Europeans and the impact of the colonial regimes (Kitigan Zibi Education Council, 2004). Since 1980, Kitigan Zibi has successfully supported community members to take ownership of service development and delivery, and today Kitigan Zibi is recognized as a leader for their community services.

Among the community's many services and programs are: an elementary and secondary school, a day-care centre, a cultural centre, a community hall, a community radio station, a health centre, a local police force, a youth centre and others. Their community services are led and staffed by fully trained and qualified community members.

Kitigan Zibi is a member of the First Nations Education Council (FNEC), a regional organization responsible among other program areas for technology development in member communities. In 2007 FNEC proposed the creation of a fibre optic installation program to increase the effectiveness and range of its network. By 2009 FNEC had raised the funds required to develop local (internal) fibre networks in eight First Nations, including Kitigan Zibi (Whiteduck & Beaton, 2014). The fibre build in the Kitigan Zibi community extended the high-capacity network to the band office, the health centre and police station, the community primary and secondary school, the community training centre and the cultural centre.

As computers, broadband communication networks, and Internet and cellular services have become available in Kitigan Zibi, the service sectors have been integrating these technologies with a goal of improving services for and communications with community members. At the same time, and similar to First Nations across the country, Kitigan Zibi faces challenges in their efforts to remain innovative and plan for future delivery of services using technology.

The Kitigan Zibi community owns the local broadband infrastructure that supports the development and enhancement of its local services. In this study, we argue that local ownership, control, and management of the local broadband communication infrastructure is critical to support First Nations in their delivery and use of community services now and into the future.

## **Study Methodology**

For our collaborative study, we conducted and undertook a qualitative analysis of interviews with community services staff in Kitigan Zibi Anishinabeg. The interviews explored questions of technology and community, including their current successes, challenges, and future potential. Kitigan Zibi is

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<sup>1</sup>Unceded means that the Algonquin people never gave up their territory or signed a treaty to share the land, and so it remains Algonquin territory.

developing a strategy to integrate communication infrastructure and ICT into services that promote community, economic, social, cultural, and intellectual development. The discussion focuses on how the community can integrate a holistic “e-Community” approach into its strategy.

The Kitigan Zibi study is part of a larger First Nations Innovation (<http://fn-innovation-pn.com>) research project in the Quebec, Ontario and the Atlantic regions. The current study is a collaboration between the University of New Brunswick, Kitigan Zibi First Nation, and the First Nation Education Council; the authors include staff from the three collaborators. Kitigan Zibi worked with the visiting researchers to define and carry out the study, community members were welcoming and informative, and research partner FNEC provided logistical support, ideas and technical expertise.

Researchers from the University of New Brunswick visited Kitigan Zibi in June and August 2011 and completed 14 interviews with community service providers. The interview transcripts were coded and subjected to a basic thematic analysis. Community co-authors and partners contributed additional information and perspectives. This approach provided a clear picture of the development of community services in Kitigan Zibi, as well as how the community is using its communication infrastructure for service delivery.

Based on these findings, a further analysis considered the e-Community model and some of the opportunities and challenges for the future. The research protocols follow the ethical guidelines for doing research with First Nations communities outlined in the federal Tri-Council Policy Statement on research ethics (CIHR, 2010).

### **Research Findings: Community Services and Broadband Infrastructure**

The research findings describe the community’s use of ICT to deliver services in three core service areas - education and culture, health, and policing and security. In addition to these three areas, Kitigan Zibi provides many services and activities using ICT that are not discussed in this current study, including local administration where ICT is very heavily used.

#### ***ICT in Education and Cultural Services***

Kitigan Zibi’s education sector administers 21 programs delivered through the primary and secondary schools, junior and senior kindergarten, special education service, and cultural centre.

The community emphasizes the importance of educating young people so they gain the necessary skills to pursue post-secondary education and further their goals, including entering the labour force. Assistance includes support for community members through their post-secondary program for students in universities and colleges in Canada and the United States. One service provider explained: *“We offer tuition, living allowances, books and travel funding if they meet the criteria of our post-secondary policy. So we support about 145 students in that program”* (Community Member).

The various components of the education sector use ICT in numerous ways to deliver services. Kitigan Zibi Kikinamadinan (high school and elementary) takes an innovative approach to teaching and learning by integrating ICT into the classroom (Lockhart, Tenasco, Whiteduck, & O'Donnell, 2014). Educators use email on a daily basis. In the classrooms they and the students use SMART boards (electronic, internet-linked whiteboards), e-Learning programs, various multimedia programs, videos, laptops and iPads. In addition, ICT is also used in after-school programs, summer programs, and projects such as the Indigenous Culture and Media Innovations (ICMI) program.

Wazon, the community daycare and after school program, is dedicated to offering exceptional service to Kitigan Zibi and other First Nation families. The staff uses ICT to communicate with parents and the community through email, telephone, and the community online newsletter. The interviews identified an ongoing need for training and support of the education sector staff to stay up-to-date with technology developments.

The community's cultural centre displays Kitigan Zibi culture and heritage within the building, which also serves as a venue for community activities and gatherings. ICT is deployed in a variety of ways by staff and the community at large within this centre. Staff communicate with one another and other sectors via email, use the community online newsletter and Facebook to advertise events, and create detailed exhibits with the help of web searches and heritage videos. The centre is also one of many locations in the community with a videoconferencing unit available for meetings and events - this facility allows community members to participate in gatherings outside their rural environment and to connect with people in distant locations for live audio-visual exchange of information.

### ***ICT in Health Services***

Kitigan Zibi administers their own health services through various programs. These include environmental health and social services; community health nursing; home and community care programs; mental health counseling; substance abuse addictions counseling; medical transportation; and a medical clinic. All of these services and activities make extensive use of ICT, notably for their (online) reporting functions for which the technology is essential to daily operations.

Kitigan Zibi's health centre is well established and, being a rural community, brings doctors in three times weekly to consult with community members and support health and wellness. The health centre includes staff trained in assisting the older population with activities of daily living, three addictions counselors available to help community members, and two youth workers trained in youth protection.

All the health sector staff, apart from the doctors who visit the community, are members of Kitigan Zibi Anishinabeg First Nation. One issue faced by Kitigan Zibi and all other small communities is that because of the interconnectedness of Kitigan Zibi, there can be challenges to working in sensitive areas such as palliative care and child protection because of privacy concerns. Even considering these

challenges, the community sees great value in their own members administering their services and so it supports community members to obtain the necessary qualifications.

In the workplace, health service providers are using mobile phones, computers, email, videoconferencing, and other technologies to facilitate their everyday work. Service providers noted that texting has improved the way co-workers can communicate with one another, making it more efficient.

The community nurses and medical transportation drivers communicate with one another and the main centre via mobile phones provided by the community. This increases availability while ensuring that these service providers are accessible at all times if they need to be reached immediately. The limited cell service in some parts of the community, can create challenges for health service delivery using mobile technologies who on occasion may be out of range.

Technology is most often used for reporting since the health sector obtains funding support from different levels of government such as Health Canada and the department of Aboriginal Affairs and Northern Development Canada, all requiring electronic delivery of reports. Health sector staff also use the Internet for communicating with referral services for clients.

Videoconferencing allows health centre staff members to communicate and participate in meetings with different levels of government as well as other health services in other Algonquin communities. The videoconferencing units in the health centre are also available to community members who reserve them for meetings. There are challenges with using videoconferencing, which include, but are not limited to, connection problems. One health service staff member explained: *"We rely on our techs to help us explain what's going on with our connections and we're getting different explanations as to why problems are happening and, honestly, we don't know. We don't know who is right, what is going on"* (Service Provider).

The service providers working in the health sector understand that they must continue to evolve their technology and how they use it including for outreach to the younger generations in an efficient way. The community website is one place where updates and news regarding their services can be posted and as well there are other online forums such as Facebook where information can be shared. One service provider explained the different techniques required for the dissemination of information to the community: *"... when we're doing our programming, we have to keep that in mind that they [the older generation] like gathering and talking to each other and sharing information that way, whereas if you're trying to communicate with the younger generation then you have to do the Facebook thing or you have to do the social networking or the internet thing, you know"* (Service Provider).

### ***ICT in Policing and Security Services***

The eight officers that make up the Kitigan Zibi Police force are all long time members of the community. ICT is integrated into their everyday operations since they use it to communicate with one another, other police forces, the community, and the world at large.

Due to their position, it is important for officers to be available at all times. Advances in mobile technologies have done much to increase their ability to respond to the community. Officers always have their cell phones with them, ready to react quickly to calls. Texting, for its convenience and better security, has taken the place of voice calls. Officers communicate quickly with one another via text messaging.

Social networking sites such as Facebook have also had an impact on the services that the Kitigan Zibi Police force delivers. Given the size of the community, everyone knows everyone else and accessing information about people is less difficult, now that people post so many things about themselves online. Referring to Facebook, one officer mentioned: *“We use it in the investigations. Certain issues we have to deal with here in the office like, for instance, we do a lot of drug work so we access information on people through Facebook. If we have targets, well, we know what they’re doing, who their friends are, etc... It’s a real good investigative aid. That’s part and parcel of what the positive things for us here at the police station”* (Police Officer).

The police force also makes use of Internet databases specifically designed for police departments in Canada. They are able to access information about individuals and share this information with other departments across the country.

The challenges faced by the policing sector involve connectivity and adaptation. One officer mentioned that constantly having access to a signal on their phone was important but was not always possible depending on their local location. Kitigan Zibi covers a large geographical area, and within the community boundaries some homes and roads are relatively isolated and, as a consequence, outside of cell phone range. Another challenge experienced by officers is keeping up with the quickly evolving technologies. Using these technologies has obviously been a benefit as it has increased the department’s efficiency in responding to situations and pursuing investigations.

### **Discussion: An e-Community Approach and Strategic Future Service Development**

The following discussion considers the study findings in light of the e-Community model developed and supported by the Assembly of First Nations (Whiteduck, 2010). The guiding question is: How can Kitigan Zibi integrate the e-Community approach in the strategic plan for sustainable local broadband communication infrastructure?

#### ***Capacity development***

As described earlier, the AFN's e-Community ICT model builds upon a common network model employed by Canadian governments, institutions, companies, and corporations (Whiteduck, 2010). Following the common network model, First Nations require capacity development resources for new and existing infrastructure development, institutional development, and operations and management that are stable and predictable.

This includes capital funds to build administrative infrastructure and support ongoing operations and maintenance of the networks. The funding formula needs to be holistic and coordinated among all the community's program areas. The traditional services silo approach to broadband development is not sustainable. Broadband communication infrastructure is, and needs to be seen and supported as, the cross-sector enabler for all program and service delivery. Currently the different service silos - health, education, policing - each have their own budget for broadband and ICT; these could be reviewed to identify resources for sustainable community-level ICT. One option would be to create broadband communication infrastructure as a new service area, staffed in a manner similar to other core service areas and with a vision for innovation, operational excellence and user satisfaction. Another option would be for the different service sectors to pool together their funding for ICT development and support and work toward a more integrated approach.

It is important to underline that the First Nations e-Community approach is only a high-level model and that so far First Nations including Kitigan Zibi have not had any access to funding that would support their development of these coordinated, integrated and strategic approaches to ICT use. In contrast, all levels of government in the Canadian context - federal, provincial / territorial and municipal - have resources to develop strategic and consolidated approaches to ICT development, and they are able to use public funds to contract the private sector to support their strategic ICT development.

### ***Connectivity***

The study clearly demonstrates that broadband infrastructure and ICT are heavily integrated into community service delivery in Kitigan Zibi First Nation. According to the e-Community model, future levels of service will depend on the community's ability to manage and transfer information and will need to be based on adaptable, scalable, sustainable, and affordable digital communication systems.

The community is still developing its connectivity and many challenges remain in achieving the goal that all community homes have an adequate internet connection and the ability to use it effectively. One challenge is ensuring that all homes can access the Internet – currently some homes are outside of coverage of community Internet services. An additional challenge is cost. Some families must make a choice between getting an internet connection and paying for other household expenses. The e-Connectivity model supports First Nations ownership and control of its local infrastructure, including the ownership of network circuits. This would allow First Nations to ensure a guaranteed bandwidth. With bandwidth guarantees, Kitigan Zibi will be able to control the flow of data and information on its local networks. It will also be able to determine how the available resources are managed and used by the different service areas, in the same way that hospitals, universities, and other public institutions

manage their own bandwidths. For example, the community would manage the network so that an e-health application, such as a doctor consult, will be given priority support over downloading a music file.

In particular, the study clearly found a need for improved cellular and mobile connectivity. Both health and policing services require reliable mobile services with good connectivity throughout the territory. Anything less will mean inequitable services that disadvantage community members living in the most rural areas of the territory.

Following the e-Community model would mean that Kitigan Zibi would have managed broadband circuits that enable the community to administer its own data, applications, and services. It would have the capacity to assess and select IT solutions that are scalable, available, sustainable, and have the capacity required. For example, the model will allow the community to develop local cellular services in currently underserved areas of the territory.

### ***ICT Human Resources Development***

Leading up to the latest developments is the community's ongoing focus since 1980 to support community members in their post-secondary education and training. Many community members leave to pursue further education - primarily to Ottawa - and then return to contribute their skills to the growth of Kitigan Zibi. In many cases they are then qualified to be community service sector staff working in all the sectors including education, health, policing and security among others. Almost all the Kitigan Zibi community sector staff are lifelong members of the community. Kitigan Zibi has obviously been successful at training, hiring, and retaining community members for these highly skilled roles. It is these community members who are integrating broadband networks and applications into community service delivery.

The e-Community model recognizes that community IT specialists and information management training are required to support the local and regional systems. A coordinated development strategy for local ICT capacity building will support First Nations and their regional organizations with the resources for local education and application development.

The research clearly identified an ongoing need for training community services staff in all three sectors included in the study. Included in the training would be elements more streamlined ways of explaining technical ICT issues to particularly health centre staff.

Ongoing training is a cross-sectoral need. One Kitigan Zibi service manager interviewed for this study explained: *"There's a lot of technology out there... learning how to use it properly, I think, is a challenge and having time to get your personnel to get the training that's required. I think that's the challenge. Often, there are so many things happening in a day you can rarely set off enough time on the side to really get caught up on some of this stuff. But training is crucial; ongoing training is crucial to keep up with changing technology"* (Service Provider).

All staffing levels and roles will need to be included in the training; the skills, contributions and training needs of administrative staff are complementary to those of program managers and all service delivery staff. Training plans will need to be tailored to the different staff needs. Training and awareness could focus on developing a culture of community technology innovation in all service areas and programs.

At the same time, connectivity and extensive use of ICT can be both a friend and an enemy, especially considering the need to maintain a healthy work-life balance. ICT allows more immediate contact with people, increasing the time pressures that staff experience. Staff members need to find a necessary balance so that their work life does not make them disconnected from their lives at home.

Clearly there are also differences among community members in their level of ability to use ICT effectively – the most obvious being the age gap, with the community youth being much more active users of technology than older community members.

### ***Information Management***

Additional investments are also required for local information management systems, document management, and e-reporting that ensure the principles of OCAP - ownership, control, access, and possession - (Schnarch, 2004) are protected.

The e-Community model includes the capacity to manage data and information. This includes knowing how to develop locally and regionally managed ICT systems to create, build, expand and maintain these communications infrastructure supporting community service delivery. An appropriate approach is support for First Nation information planning, accountability, and tool design (Whiteduck, 2010).

A holistic approach suggests that Kitigan Zibi's local broadband infrastructure strategy will include analysis of current and future local and regional economic data, training requirements and delivery milestones, local security and emergency information requirements, and the systems to support delivery and management of information in various service areas - education, health and so on - and appropriate data storage and controls. All these are from the e-Community model (Whiteduck, 2010).

### ***Partnerships***

Many First Nations have developed solid and innovative partnering arrangements with the private sector and government to develop local and regional e-community opportunities. The e-Community strategy supports local innovation through these partnerships. Innovation is happening and needs to be supported in many areas, such as support for First Nations to negotiate arrangements that leverage national economies of scale, such as large educational software purchases for First Nations schools (Whiteduck, 2010).

The e-Community strategy also calls for national research partnerships. The research can ensure that

local and regional First Nation authorities receive the recognition needed to establish these relationships with the appropriate partners (Whiteduck, 2010). The Kitigan Zibi community is a partner on several large research projects related to technologies and other topics of interest to the community.

## **Conclusions**

Our objective for this study has been to explain how the broadband communication infrastructure in Kitigan Zibi Anishinabeg First Nation supports the development, delivery and enhancement of local services and how the services and infrastructure can be sustained through a strategic plan that considers the e-Community model. The analysis includes the importance of maintaining a focus on the community ownership of its local infrastructure and why ownership and control is critical to the support of services at the community level.

Similar to other First Nations across the country, Kitigan Zibi faces constant funding challenges to maintain and develop its infrastructure and service areas using ICT. Staff described a year-to-year struggle, not knowing what level of funding will be available for ICT development and spending. Government policies related to ICT in First Nations are undeveloped or non-existent and so it is very difficult to obtain the funding required to provide appropriate IT services in the community.

The study suggests that the funding available for ICT development, training, support and ongoing maintenance is inadequate. This is experienced in all sectors. (In health for example, the funding available per capita in Kitigan Zibi First Nation is lower than that provided to the local health centre (CLSC) in a neighbouring town.) The current lack of a federal plan for supporting infrastructure development in rural and remote communities means that accessing stable funding sources will be a challenge for Kitigan Zibi. To ensure sustainability, growth and further innovation in its delivery of community services, Kitigan Zibi will need ongoing revenue to develop and maintain its broadband communications infrastructure.

Following on from the research by Kirmayer and colleagues (2009), broadband communication infrastructure and ICT applications can be considered measures of community resilience. Infrastructure is a cross-sector enabler supporting all areas of community communications and service delivery.

Our findings support the perspective that community autonomy and control over the delivery of services - in this case education, health and policing - can be supported by the community's use of broadband networks and tools. The culturally appropriate services delivered using broadband communications are supporting community members, families and community institutions.

With the right support and strategic approaches, Kitigan Zibi Anishinabeg will no doubt be able to continue to expand as a leader in the digital economy and society and serve as an example of a small autonomous community using its broadband communication infrastructure strategically in culturally-

appropriate ways. By focusing on the needs of their community members and taking a holistic strategic approach to broadband, Kitigan Zibi is asserting its community-oriented values. First Nations such as Kitigan Zibi are models of innovative communities, making the best strategic use of scarce resources to build robust and sustainable infrastructure and applications that meet the needs of the community members.

One community member interviewed for this study pointed out that these technologies are an important component of the future development of Kitigan Zibi because the community:

*...would like to remain sort of cutting edge of what's happening out there. We don't want to be 5 or 10 years behind in terms of what's out there. We want our students to leave our system fully aware of as much technology as possible when they go on to vocational programs or postsecondary programs. It's part of giving them the tools they need to be successful if and when they choose to leave Kitigan Zibi. (Kitigan Zibi Community Member).*

To emphasize the general feeling that community members who took part in this research have about the importance of technology for community advancement, we can draw upon an inspiring message from a community member:

*...I could probably only speak to the rather strong sense that I have of ... It's woven its way into the fabric of the community, and it's considered ... I'm going to use the word essential. It's really .. no longer a question of just a tool, it's a question of lifestyle, both in the home and academically... I'm going to say that broadband is a right, it's not a privilege. And it's essential. (Kitigan Zibi Community Member).*

The Kitigan Zibi First Nation is passionate about ensuring that community members have all the technology required to take advantage of opportunities to improve their lives. There are many innovative ways that the community would like to use technology in the future, such as to support Native language development and for economic development and the establishment of more online businesses.

Kitigan Zibi's local broadband infrastructure is a cross-sector enabler that provides the necessary foundation for many local community services and processes. The Kitigan Zibi community has integrated many broadband applications into its community service delivery and communications, and the community is now working to develop its strategic plan for the local fibre infrastructure that it owns. Kitigan Zibi First Nation is a vibrant community that will need to ensure its communication infrastructure meets the community's growing needs. A strategic plan could identify areas of growth and development to take advantage of future technology innovation.

First Nations in Canada are increasingly seen as leaders in broadband development and appropriate ICT use (Gratton & O'Donnell, 2011; O'Donnell, Johnson, Kakepetum-Schultz, Burton, Whiteduck, Mason, Beaton, McMahan & Gibson, 2013; O'Donnell, Kakekaspan, Beaton, Walmark, Mason, & Mak, 2011).

There are many ways these leadership activities can be encouraged and sustained. First Nations can provide examples for rural and remote communities everywhere for developing sustainable local broadband infrastructure and services.

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