Stories from the First Mile: Digital Technologies in Remote and Rural Indigenous Communities

First Nations Innovation and
First Mile Connectivity Consortium

http://firstmile.ca

2018

This book is a celebration of the achievements of remote and rural Indigenous communities associated with the First Nations Innovation (FNI) research project (2005-2018), and the First Mile Connectivity Consortium (2013-ongoing).

Cover artist Jesse Fiddler explains his thoughts about his artwork:

> *Creating paths for communities. This time of year, I do a lot of snowshoeing so I want to use that as the theme of the graphics. Breaking new paths in snowshoeing is the hardest work and it gets easier for those behind us. So the images I am thinking of is a man snowshoeing, breaking ground with part of his community behind him. I like the new aspect of adding technology to this lifestyle as it reminds us that it's a tool to be used in our way of life where ever we are. Even just now, I'm sitting looking at google maps on where to make a trail next on the trapline. Then I save it on my phone for the next time I go out. I know most of my fellow hunters and trappers do this as well. (Sioux Lookout, Ontario).*

March 2018

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The list of FMCC partners and logos is inside the back cover of this e-book.

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Installing components on a cell tower, Published with permission from Keewaytinook Okimakanak KNET Services (Ontario).

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This book is an overview of the publications, policy documents and stories available on the First Mile website: http://firstmile.ca. The views expressed are those of the authors. The academic publications were prepared by the First Nations Innovation (FNI) research project (2006-2018), and the policy documents and stories were produced with the First Mile Connectivity Consortium (FMCC) (2013-ongoing). This book's editorial and production team was Susan O'Donnell, Brian Beaton, Mary Milliken, Rob McMahon and Bill Murdoch with contributions from other FNI and FMCC team members (listed below). The Manitoba First Nations Education Resource Centre provided the book publication.

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Piikani Literacy Camp at dusk, Published with permission from First Nations Technical Services Advisory Group Inc. (Alberta)

Foreword

By Brian Walmark

It has been almost 15 years since the research conference in Montreal when Brian Beaton, then coordinator of Keewaytinook Okimakanak (KO) KNET, and myself met with Susan O'Donnell, then with the National Research Council of Canada as well as the University of New Brunswick. It was refreshing to meet someone who was more idealistic, hard-working and crazy than the community teams we worked with every day back in northern Ontario. The community teams were struggling to provide their First Nations with telecommunications networks, broadband applications such as telemedicine and digital education and other tools we took for granted in the south.

It did not take long for us to come up with the idea for a project called RICTA (Research on ICT) with Aboriginal communities. With funding from the Social Sciences and Humanities Research Council (SSHRC), we developed a plan for a gathering of academics and community members. I remember our discussions concerning which city should host our first RICTA meeting. Montreal, Toronto and Vancouver were the popular choices for these kinds of gatherings. Each was centrally located with great accommodation, fine restaurants and lots of meeting spaces. Brian Beaton and I argued that this kind of gathering should take place in one of the First Nations we served but we didn't hold out much hope. The RICTA members agreed to an on-line vote. I remember grumbling that we had better prepare for another trip to Toronto. I was wrong. The participants voted overwhelmingly to hold the first RICTA gathering in Deer Lake First Nation.

In this remote community, we discussed ways in which community members and researchers could work together to tell their stories from the community perspective. Frankly, I don't remember so much about the details, the logistics or the tears in gathering university academics from across Canada and the United States to Winnipeg where we boarded two charters to Deer Lake. Since then, we've witnessed many direct and in-direct spinoffs of the First Nations Innovation Project. The work of Brian and Susan and the rest of the First Nation Innovation team has changed the narrative of the Last Mile in First Nations communities across Canada into a First Mile re-focus.

However, there have been many indirect impacts too. The work of Franz Seibel of the KO Research Institute with First Nations community researchers in Ontario's far north has created full-time community research jobs that address the needs of First Nations leaders in their land-use and management decisions. In Fort Severn First Nation, the guiding research principles of RICTA and later the First Nations Innovation research project

has informed the way in which community members including hunters, trappers and Elders work with Western-trained specialists on the community Polar Bear research project culminating with the keynote presentation by then Chief Matthew Kakekaspan on Cree knowledge of the Polar Bear at a circumpolar research conference in Paris, France in January 2011. It's been a great honour to have played a small role in this research movement but there remains a great deal of work to be done and the need to ensure that the hard fought-victories by First Nations to own and control these telecommunications and broadband tools in their communities and traditional lands are not lost.

Thunder Bay, Ontario
Brian Walmark is the former Research Director of Keewaytinook Okimakanak Research Institute.

Fort Severn, from the K-Mobile cell tower under construction. Published with permission from Keewaytinook Okimakanak KNET Services (Ontario).

By Craig McNaughton

This book presents a totally different picture of First Nations.

Colonial history has generated a perception that First Nations communities are chronically dependent on government assistance. In contrast, this book provides powerful evidence of community self-reliance – hinged on the acquisition, ownership and strategic deployment of Information and Communication Technologies (ICT). First Nation after First Nation across Canada, working with post-secondary institutions, governments and private firms, has taken hold of ICT as a development 'pivot' – a way of turning things around.

This counter-story is valuable in the work of reconciliation. On one hand, the book gives additional weight to the criticism that Canadians are beneficiaries of a capitalist/colonial relationship that tends to keep rural and remote First Nations communities in a state of dependency. On the other hand, it is clear that First Nations and diverse Canadian organizations have been able to generate effective collaboration on ICT to secure significant advances in areas such as education (Internet schooling in the communities), health care (tele-health), and language revitalization (video-conferencing across isolated communities).

This resource-filled volume is a testament to the insights and dedication of those working within the First Mile Connectivity Consortium and the First Nations Innovation research team.

Ottawa, Ontario
Craig McNaughton is a retired former director with the Social Sciences and Humanities Research Council of Canada who was closely involved in the Council's work on Aboriginal/Indigenous research and reconciliation.

Creating digital content. Published with permission from The Native Communications Society of the NWT.

List of abbreviations

Canadian Internet Registration Authority (CIRA)
Canadian Radio and Telecommunications Commission (CRTC)
community Electronic Medical Record (cEMR)
Community Engagement Hubs (CEH)
Converged Management Application (CMA)
Department of Innovation, Science and Economic Development (ISED)
Fibre to the Home (FTTH)
First Nations Education Council (FNEC)
First Nations Innovation research project (FNI)
First Nations and Inuit Health Branch (FNIHB)
First Mile Connectivity Consortium (FMCC)
First Nations Technical Institute (FNTI)
First Nations Technology Council (FNTC)
Geographic Information Systems (GIS)
Global Positioning System (GPS)
Gwich'in Tribal Council's Department of Cultural Heritage (GTC)
high speed data transmission line (T1)
Indian/Indigenous and Northern Affairs Canada (INAC)
Information and communication technologies (ICT)
Internet Service Providers (ISPs)
Innovation, Science and Economic Development, Canada (ISED)
Keewaytinook Internet High School (KiHS)
Keewaytinook Mobile (KM)
Keewaytinook Okimakanak (KO)
Keewaytinook Okimakanak Telemedicine (KOTM)
Kuhkenah Network (KNET)
Manitoba Telecom Services (MTS)
Mi'kmaw Kina'matnewey (MK)
Northern Indigenous Community Satellite Network (NICSN)
Ownership, Control, Access and Possession (OCAP)
Research on ICT with Aboriginal Communities (RICTA)
Social Sciences and Humanities Research Council of Canada (SSHRC)
Tripartite First Nations Health Plan (TFNHP)

Introduction

Winter road, Published with permission from Western James Bay Telecom Network (Ontario).

Introduction

Until a century ago, Canada was mostly rural. Now most Canadians live in cities and are often unaware of the innovative contributions of rural and remote communities and regions. The Indigenous people living in these areas and their representative organizations have been developing, building and operating their own telecommunication networks for many decades as new telecommunications technologies became available. They understand the critical importance of these networks for their communities - for holistic well-being, learning, economic development, justice, policing and emergency services, cultural and social services and activities, and basic communications among and between community members.

In December 2016, the federal telecommunications regulator made official what everyone living and working in isolated, remote and rural Indigenous communities already understood: broadband internet is an essential service for all Canadians. The Canadian Radio-television and Telecommunications Commission (CRTC) issued its landmark decision after a series of interventions and consultations with multiple organizations, including the First Mile Connectivity Consortium (FMCC).

This publication is a collection of the research and stories that capture and celebrate the innovation and creativity of the Indigenous people, their leaders, their communities, their representative organizations, and their work with partners to build broadband internet networks and services addressing basic needs and local priorities. The First Nations Innovation (FNI) research project (2006-2018) studied broadband internet activities with remote and rural First Nations. In 2013, the FNI partners and researchers launched the First Mile Connectivity Consortium (FMCC), a national non-profit organization to intervene in related policy and regulatory issues.

The FNI project spans 13 years, and the FMCC organization is ongoing. Given the scope and breadth of our work, it is impossible to capture it all in a short book. The authors decided to avoid referencing specific articles and policy and regulatory submissions in this publication; instead, we encourage readers interested in specific topics to look at the publication appendix and visit our website: http://firstmile.ca and search for more information on whatever interests them.

FNI is built on a strong and long-standing foundational relationship between researchers and a unique group of First Nation technology and intermediary organizations. The design of the project was rooted in a shared understanding from the beginning of our work together on the 2005 research cluster development project, Research on Information and Communication Technology

with Aboriginal Communities (RICTA). From the start we recognized that for research to be effective, it had to move beyond consultation to meaningful and direct involvement with First Nations individuals, communities and representative organizations.

The RICTA research cluster evolved into a research partnership in 2006 between the University of New Brunswick Department of Sociology in Fredericton and the Keewaytinook Okimakanak First Nations council in Northern Ontario. The partnership quickly grew to include the Atlantic Canada's First Nation Help Desk, a division of the Mi'kmaw Kina'matnewey educational organization in Membertou, Nova Scotia serving all the First Nations in the Atlantic provinces. Next to join was the First Nation Education Council in Wendake, Quebec, serving 22 First Nations in Quebec. Together, the partners applied for research funding from the Social Sciences and Humanities Research Council of Canada (SSHRC) to study how Indigenous organizations are designing and using digital communication technologies.

The funded research project, Videocom (2006 to 2011), studied First Nations networks to support video conferencing and other video resources. The Videocom research project demonstrated the importance of broadband communication networks, facilities and resources in these remote and rural regions across Canada. In 2012 the Videocom project partners successfully secured additional SSHRC funding, and transitioned to become The First Nations Innovation (FNI) project, with an expanded research focus including all digital networks and applications used by remote and rural First Nations. Other partners joined the original three - Université Laval Faculty of Education, University of Alberta Faculty of Extension, the Technical Services Advisory Group serving First Nations in Alberta and the Mi'kmaq-Wolastoqey Centre in the Faculty of Education at the University of New Brunswick.

The research work attracted many graduate students from the partner universities and other universities and resulted in many academic publications and presentations co-written with community research partners and collaborating Indigenous communities. As the work evolved, the importance of the people and communities in any broadband internet development became obvious. When the opportunity to contribute to the policy and regulatory activities on broadband internet became available, the FNI team stepped up.

The First Mile project began in 2010 as a SSHRC-funded knowledge synthesis partnership between Simon Fraser University, the University of New Brunswick and the three FNI Indigenous organization partners. Together, they identified and described a First Mile approach to telecommunication planning, development and operation. The First Mile perspective challenges the traditional colonial model of broadband development. Indigenous communities

have demonstrated their ability to be the producers and managers of broadband networks, which also generate economic and employment opportunities in communities and regions.

The original First Mile partnership evolved into a broader scope of activities aimed at challenging and then helping to develop policy and regulatory frameworks for broadband development in remote and rural regions of Canada. In 2013, key people and organizations in the FNI and First Mile work at work started the national, non-profit First Mile Connectivity Consortium (FMCC) organization. Since then many more Indigenous organizations have joined FMCC. Since its formation, the FMCC has been an active contributor to federal policy development and regulatory frameworks. FMCC presents the perspectives of Indigenous broadband network and service providers to policy and regulatory officers in Ottawa and elsewhere. Through our work, new policies and regulations can reflect the views of Indigenous organizations and the users of broadband networks and digital technologies in remote and rural Indigenous communities.

During the 13 years of producing many research publications and presentations, training many graduate students, working with dozens of First Nation communities, and engaging in public outreach, policy and regulatory activities, FNI and First Mile work have contributed a wealth of information and artifacts. The work consistently highlights the effective use of digital information and communication technologies in remote and rural Indigenous communities across Canada. This book collection is intended to celebrate the stories of Indigenous innovation and struggles against systemic and circumstantial obstacles, like political silos, isolation and challenging environments, and encourage others to continue this important effort.

Near Fort Severn First Nation. Published with permission from Keewaytinook Okimakanak KNET Services (Ontario).

Membertou Trade and Convention Centre, Membertou First Nation, Una'maki (Cape Breton), Nova Scotia.

First Mile: Regional networks and community hubs

Cover of the report that marked the start of the journey for the First Mile Connectivity Consortium, available in French and English from our website: http://firstmile.ca

Introduction

Broadband networks support internet traffic and all other digital services and applications, including mobile phones. Broadband networks are essential in the daily lives of people living in remote and rural Indigenous communities. Vibrant and growing, the communities depend on the networks to meet their current and projected future needs. Community organizations and individuals actively plan, build, manage, and use broadband networks and applications for a range of services and activities.

The “First Mile” is about building broadband networks in a way that challenges the concepts of “city as centre” and “remote as periphery.” Most broadband networks are built out from the cities with rural and remote communities considered “the end of the road.” Instead, First Mile means recognizing that remote and rural communities are also centres, building local networks in these communities and from there building networks to other communities, across regions and to urban areas. Remote and rural communities need to control the building of these networks and own the essential infrastructure and the services using it. With ownership and control, the communities can manage the broadband effectively to meet community needs now and into the future.

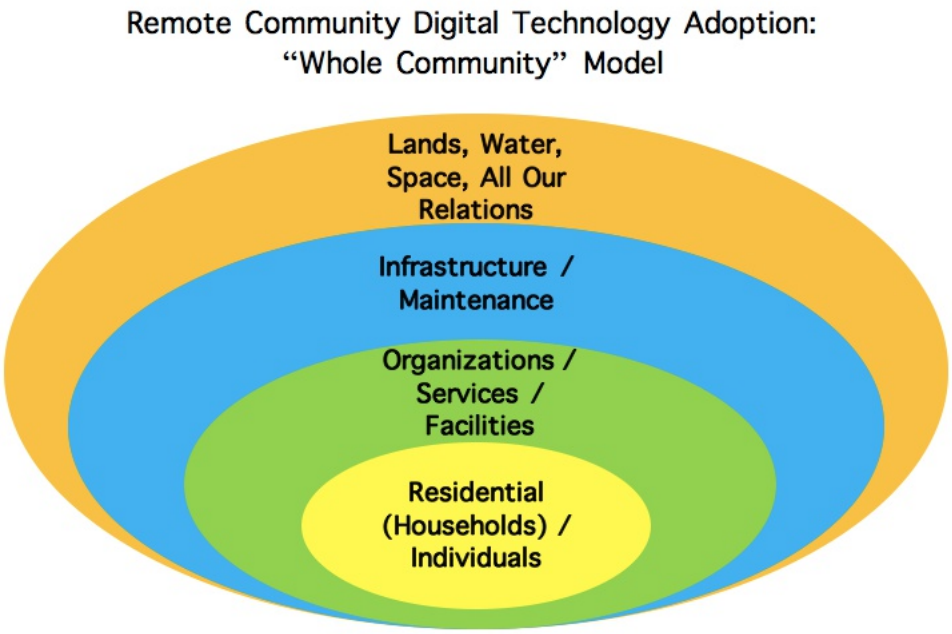
Ontario: Mohawks of the Bay of Quinte Fibre to the Home network

After using a T1 broadband line supplied by KNET for a number of years, in 2012 the Mohawks of the Bay of Quinte set up a Fibre-To-the-Home (FTTH) network in Tyendinaga Mohawk Territory. The first project of its kind, this First Nations-owned and -operated broadband network provided a high-speed, low cost and locally managed service. The Tyendinaga Mohawk Council recognized the importance and opportunities provided by reliable high-speed connectivity. Services from the commercial corporate service providers were expensive, and financial support from the federal government was not forthcoming. Obstacles to the project included some resistance within the community, vandals, and vendors, but the Council followed through on its commitment to fully fund the project with Casino revenue.

Our research on and at the First Mile

A central focus for our research on the First Mile is the “whole community” model of community digital technology adoption. The First Nations Innovation (FNI) project developed this model to explain the different ways that many remote and rural Indigenous communities use their broadband networks.

At the level of individual households, the FNI project has studied how community residents use digital technologies for everything from social media to distance education. At the next level, we have examined how community organizations and facilities are using broadband networks to deliver services that are necessary and vital for community residents, such as health services. Our research has focused in particular on the broadband network infrastructure: how it is developed and deployed and particularly the political and policy contexts of network builds. Finally, our work has touched on the link between broadband networks and digital technologies and lands, waters and space, including the need for safety and security when people are out on the land.



First Mile activities by and for our partners

Each of the First Mile Connectivity Consortium (FMCC) members is involved in building regional broadband network infrastructure, supporting e-learning and e-health services, creating new innovative partnerships and solutions, and responding to the needs and desires of their members as the resources, technologies and capacity is developed and becomes available. FMCC members have gathered many stories over the years, sharing them on their regional and local websites as well as the FirstMile.ca site. New First Mile stories will unfold as communities and individuals finally gain equitable and affordable access to the digital networks that people who live in urban centres typically take for granted.

First Mile telecommunication developments in this book include a wide variety of ongoing economic and social opportunities. First Mile stories highlight the work and innovation undertaken by the individuals, communities and their partners. In contrast, the broadband infrastructure projects undertaken by corporate telecommunication providers are often simply noted as revenue in their annual reports.

Poster for Idle No More national videoconference. Published with permission from Atlantic Canada's First Nation Help Desk.

British Columbia: Ktunaxa Nation Network

The Ktunaxa Nation, six bands with territory in south-eastern British Columbia and the United States, has a plan to create a self-sufficient, self-governing First Nation. Their plan is based on five pillars including Language Training, Land and Resource Management, and Economic Investment. Finally, “Finding Your Roots” supports young Ktunaxa parents by connecting them with experienced Ktunaxa parents and grandparents. The Ktunaxa Nation Network was created by member communities in the Ktunaxa Nation through a community-based, First Mile-driven process. The Network has 23 communication towers and Fibre-to-the-home (FTTH) in two communities. The Network was initially set up to revitalize and disseminate the Ktunaxa language. The Nation developed online resources, including real-time and pre-recorded language classes, a digital grammar book and an expanded digital dictionary. FlexiNeT Broadband Inc. is a Ktunaxa Nation Network-owned ISP and one of the largest First Nation owned networks in B.C. In 2007, it launched a hybrid network of FTTH and wireless in four First Nation communities.

Ontario: Slate Falls First Nation Infrastructure Development

Prior to 2012, Slate Falls had only been accessible by plane or winter road. In the summer of 2011, the Ontario Ministry of Natural Resources set up a communications centre for forest firefighting in the area and a year-round road was built that connected the community to regional centres like Sioux Lookout. Before the internet, the community only had a single rotary pay phone. The band then developed, owned and operated its satellite internet and Voice-Over-IP network and later connected to the high-speed fibre broadband through the Northwestern Ontario Broadband Expansion Initiative. Wes Angees was the Band Technician Slate Falls First Nation. Self-trained, Wes managed and maintained the local network, internet and VOIP phone systems. The bandwidth for the satellite network was managed by the Northern Indigenous Community Satellite Network (NICSN) partnership.

Our First Mile policy and regulatory activities

The First Mile Connectivity Consortium (FMCC) is a growing national non-profit association of Indigenous telecom regional intermediary organizations. FMCC provides a remote and rural, Indigenous whole community-focused perspective to the development and delivery of telecommunication policies and programs by government and regulatory agencies. The three founding members of FMCC are Atlantic Canada's First Nation Helpdesk (Mi'kmaw Kina'matnewey) in Nova Scotia, the First Nations Education Council in Quebec, and Keewyatinook Okimakinak KNET in Ontario, with academic partners. FMCC has expanded since its formation in 2013 and now includes ten member Indigenous organizations across the country as well as research associates based in New Brunswick, Quebec, Ontario and Alaska.

FMCC's primary focus is to provide expert advice and to document the experiences of Indigenous communities and organizations related to broadband infrastructure and digital technologies in remote and rural Indigenous communities. We have pro-actively made presentations and submissions to policy makers in the federal government as well as provided in-depth analysis to the Canadian Radio-television and Telecommunications Commission (CRTC) and Industry Canada (now Innovation, Science and Technology Canada – ISED) when these organizations called for submissions concerning telecom policies, programs and services. FMCC members and their partners continue to conduct this advocacy work within an inclusive, growing, respectful and engaging environment with Indigenous communities across the country and policy-makers who are open to learning from them.

Lodges. Published with permission from First Nations Technology Council, BC.

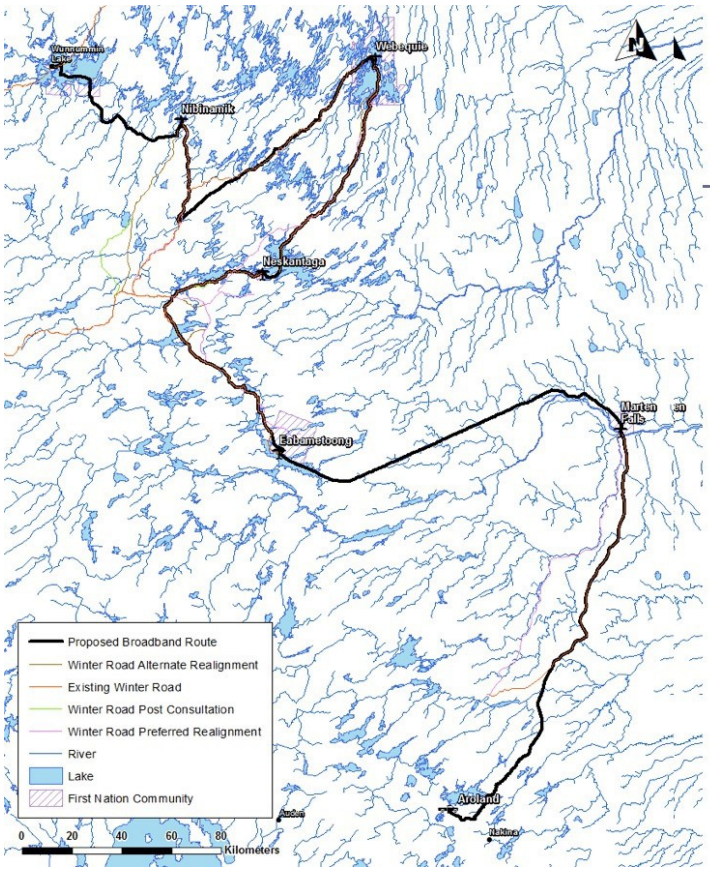
Northwest Territories: K'atlodeeche First Nation Fibre Network

The K'atlodeeche First Nation's Fibre Network is a locally-owned and -operated fibre optic network built in 2011. Prior to the build, the community had been using ADSL Internet, but the service was expensive and poor. The new network provides a much faster and more reliable connection to local homes, business and services. The project was funded by the federal agency CanNor for $275,000. Local students and community members documented the project with photographs and videos.

Henry Tambour, a member of the K'atl'odeeche First Nation and the band's network technician, helped replace the copper infrastructure that had been in place since the early 1980s with fibre. He set up local wireless connections and software and a local system that broadcasts over a community radio signal and records proceedings so people outside the community could participate in community meetings. Anyone who was hard of hearing had access to special headsets.

Hunting camp. Published with permission from The Native Communications Society of the NWT.

Broadband infrastructure

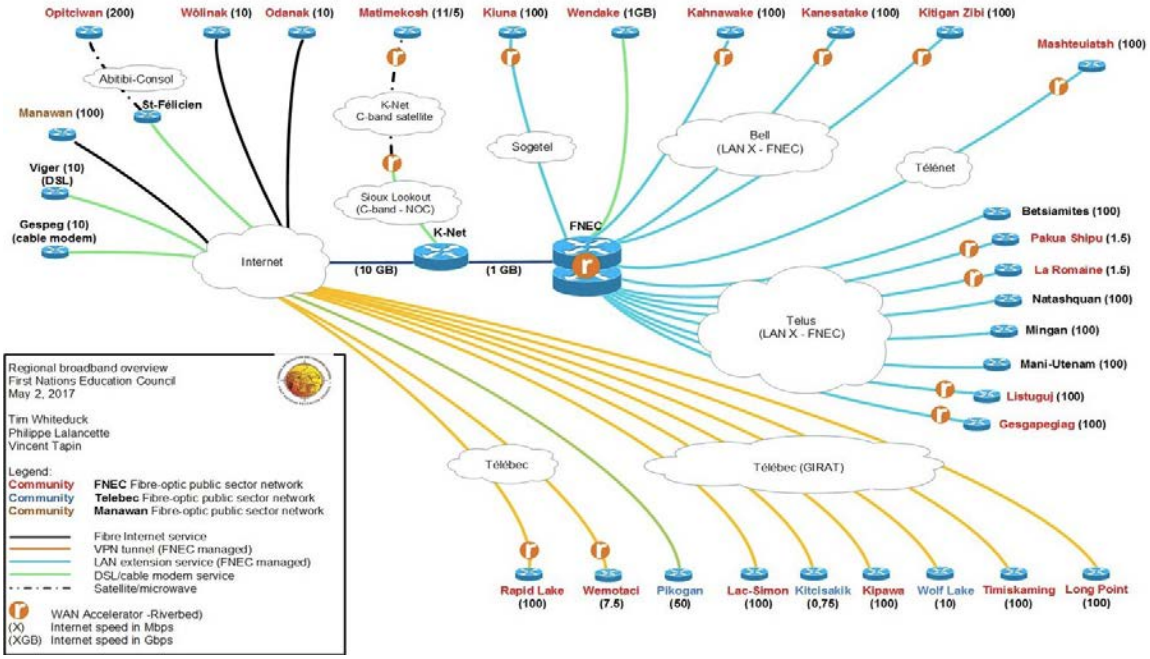


RAPID LYNX PROJECT

Fibre to the Home Project

- 881 KM
- Over 600 Houses
- Over 35 Community Organizations / Anchors
- Rapid Lynx Telco will design, build and operate the network
- Rapid Lynx Owned by the 6 First Nations
- Funding approved for $68.1 million
- Design Phase currently underway (Sept 17 to June 18)
- Construction Fall – 2018
- First communities connect late 2018 / early 2019

Matawa Fibre to the Home project map. Published with permission from Matawa First Nations Management (Ontario).



Network map. Published with permission from First Nations Education Council (Quebec).

Introduction

Broadband infrastructure includes different technologies used to share digital information over networks: cable, fibre, wireless, microwave, satellite and cellular. All these different ways of carrying information have specific characteristics and requirements that reflect challenges and opportunities to network designers and users. When considering the diverse situations of remote and rural communities, it is clear the one-size-fits-all model for telecommunications development is inappropriate. Technologies are changing constantly as new needs arise and new applications are developed.

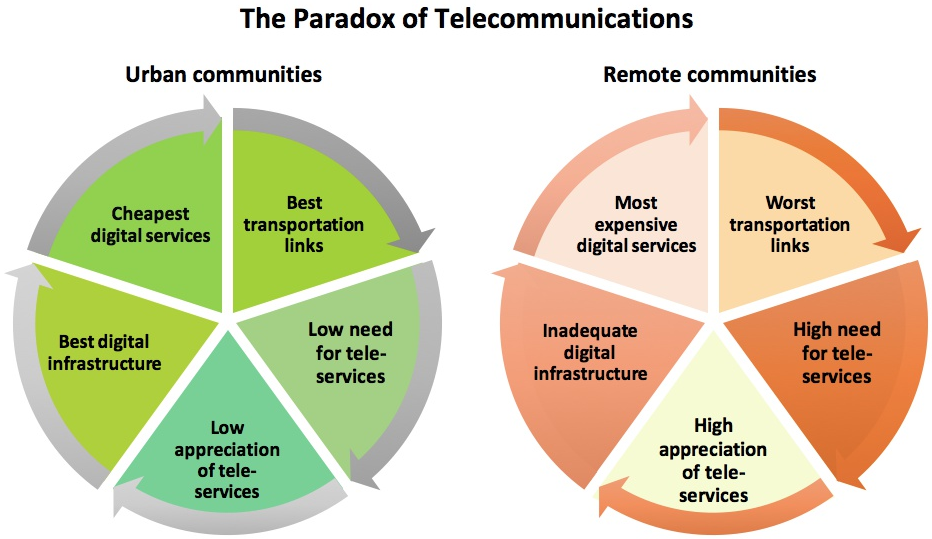
Many remote and rural Indigenous communities are located in some of the most challenging and beautiful terrain on our planet. The engineering, volume and quality of technology required to develop, deliver and maintain broadband networks in these areas are complex and costly. There is a “transport” network layer connecting remote and rural communities to central networks, and a “local loop” network layer within the communities themselves. The ownership and control of both the transport and the local loop broadband networks are issues that require close attention. The management, ownership and control of the infrastructure influences its economic viability and its potential to improve the sustainability of these communities.

Manitoba: Fisher River Cree Nation Community WiFi Network

A community-managed WiFi network created in 2016 provides broadband connections for residents of Fisher River Cree Nation in Central Manitoba that rivals speeds available in Winnipeg. The Band used a start-up grant of $120,000 from the federal government in 2010 to buy equipment to connect the community with a 2MB backhaul to the main Manitoba Telecom Services (MTS) line in nearby Peguis. Although the community network can be affected by bad weather and does not reach far into the woods, it offers many benefits. Smart board technologies were installed in the school, enabling remote learning opportunities, electronic medical charts and telehealth services are available, and the community now has access to communication tools and entertainment services. Affordable access makes it possible for Fisher River to build up capacity for running its own networks. The Fisher River Internet Company was set up as a non-profit business, so most of the revenue is used to cover operational, replacement and upgrade expenses.

Our research on infrastructure

The First Nations Innovation project has been a pioneer of studies on broadband infrastructure and digital technologies in remote and rural Indigenous communities. Our critical analysis has focused on the political and economic contexts of broadband infrastructure, particularly the links between infrastructure, settler-colonialism and self-determination. In developing our analyses we have been guided by the work of many Indigenous academics in Canada working to shed light on these political, economic and social processes. We have analyzed how broadband infrastructure supports the resilience and resurgence of remote and rural Indigenous communities. Community resilience is necessary given the extreme pressure placed on these communities by settler-colonial forces, particularly by corporate, profit-driven extraction industries. In the context of this complex political, economic and social system where power and wealth is unevenly distributed, corporations in the telecommunications sector have a fiduciary legal responsibility to maximize profits for their owners and shareholders.



A so-called “market failure” exists when not enough people live in a region to generate the business and profits required by telecommunications companies.This is presented as not supporting an adequate ‘business case’ to justify investment in infrastructure and services. In this situation, corporate telecommunication companies secure public funds (taxpayer dollars) to build infrastructure and recover operations and maintenance costs by charging high prices for telecommunications services. The result is higher prices and lower quality services in remote and rural regions compared to urban centres. We describe this disparity between urban and remote the “paradox of telecommunications infrastructure,” illustrated in the diagram. Understanding how Indigenous communities have been challenging these practices has been a central element of our research.

Ontario: Northern Indigenous Community Satellite Network

After years of accessing health, education and government services remotely, the Chief and Council of Fort Severn First Nation began planning and working toward a community-based broadband network in 1998. KNET's regional satellite hub in Sioux Lookout provided the broadband, and local staff installed and tested hardware and developed approaches to network administration and bandwidth management. By 2001, Fort Severn was a member of the SMART community demonstration project and a member of the Northern Indigenous Community Satellite Network (NICSN). The example of KNET convinced the NICSN that communities should retain control and ownership of their local networks.

Sacred fire gathering. Published with permission from Keewaytinook Okimakanak KNET Services (Ontario).

The infrastructure activities of our partners

Collectively, FNI and FMCC partner organizations recognize the importance and value of building and operating fibre cable networks to connect communities to other networks as well as to connect the buildings throughout a community. Reaching many remote and rural Indigenous remains a logistical challenge in many parts of the country, resulting in alternative digital connections to other networks using technologies such as satellite and microwave.

Working with these different technologies and environments requires a broad range of expertise that the FMCC partner organizations developed over the years. The skills and knowledge are continually being transferred to the communities so when the opportunities and resources become available, communities can upgrade their connections, technologies and services.

All the FNI Indigenous organization partners and almost all the FMCC members have been building broadband infrastructure in Indigenous communities for more than two decades. Many digital success stories highlighted on the FirstMile.ca website and in this book are a direct result of the work of FMCC members and their Indigenous communities. In many cases, the staff members of the Indigenous organizations worked for years to build the partnerships and relationships required to make a successful business case to attract government support and public funding for these projects. Years of in-kind contributions of labour from the Indigenous organizations have been required to get these projects up and running.

Some of the most recent developments are: in 2017 FMCC member Matawa First Nations Management in northwestern Ontario announced it would build a Fibre-to-the-home (FTTH) network in its member communities through funding from ISED; the newly-operational Mackenzie Valley Fibre Network in the Northwest Territories provides FMCC member, the Native Communications Society of the NWT, with the opportunity to build local broadband networks and digital applications to serve their member communities; in 2017, FMCC member Keewaytinook Okimakanak's KNET completed the upgrade of its K-Mobile regional cellular service to 3G, so mobile data services are now available in their partner communities (see image below); FMCC partner, First Nations Education Council in Quebec, worked with Opitciwan First Nation and their partners to replace their satellite broadband connection first with an interim microwave service and finally in 2017 with a fibre connection.

KNET mobile coverage map.

British Columbia: First Nations Digital Jam

The “First Nations Digital Jam” project in BC was supported by the First Nations Technology Council, Centre for Digital Media at Simon Fraser University, and the Public Guardian and Trustee of British Columbia. The Digital Jam, using the reliable network operated by the Namgis First Nation in Alert Bay, BC, brought together 15 First Nations youth, one faculty member and three Masters students. The goal was to use game-design to mentor First Nations youth in useful and transferable computer and money management skills, so teams had 48 hours to design a game on the theme of financial literacy using Photoshop and GameSalad.

Our policy and regulatory activities related to infrastructure

The federal agency that regulates broadcasting and telecommunications (CRTC) also creates guidelines for how broadband networks and services are developed and delivered. The CRTC holds hearings at which interested parties can contribute their views on what the guidelines and regulations should be. Another government department that shapes how broadband networks develops is the federal department, Innovation, Science and Economic Development (ISED). Among other activities, ISED provides funding support for broadband development initiatives in rural, remote and northern regions. Our FMCC organization is actively contributing to both CRTC hearings and ISED calls for policy submissions. Most the FMCC presentations to the CRTC have been made on the public record through public proceedings and are available online.

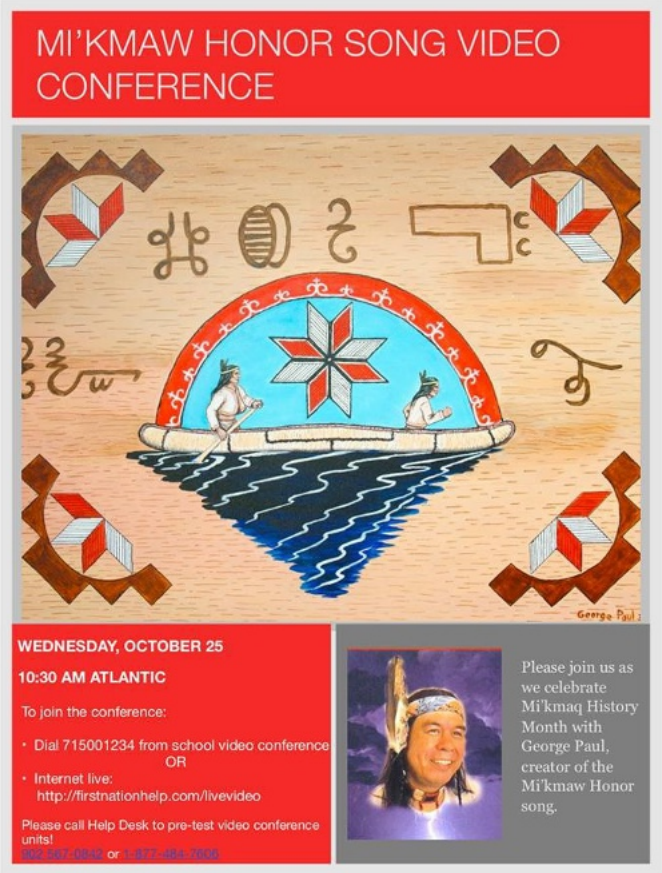
The list of all FMCC's policy and regulatory interventions is an appendix in this book. One recent and very significant intervention was FMCC's response to the CRTC Basic Service Objective (BSO) hearings. These hearings were to help the CRTC to determine if the internet should be a basic service and what that service should look like. The FMCC team prepared for the BSO hearings well before the CRTC call for submissions in the spring of 2015. FMCC's submissions were a series of documents outlining the perspectives of the Indigenous FMCC members and an in-person presentation to the CRTC board by FMCC members and research associates. When the CRTC released its decision in December 2016, FMCC members were pleased that it recognized many of their desires and reflected the analyses and proposals in the FMCC submissions.

Ensuring access and affordability of broadband connections as a basic right is now understood, with broadband recognized as an essential service. The FMCC is now contributing to the CRTC process to establish a funding mechanism to build and operate broadband networks serving remote and rural Indigenous communities. Our participation in current and future CRTC hearings will continue to highlight the experiences and challenges facing FMCC members.

Ontario: Ochiichagwe'Babigo'Inig Ojibway Nation community network

Before 2015, internet service in the Ochiichagwe'Babigo'Ining Ojibway Nation in Ontario consisted of either slow dial-up, expensive satellite, or unreliable service from a provider in a nearby town. In 2015, a group of five young people led by Chad Henry, some in their teens, formed a youth council to build and control a high-speed internet network in their community.

Language and culture



Poster, Mi'kmaw Honor Song Videoconference, Published with permission from Atlantic Canada's First Nation Help Desk.

Introduction

Over the 13 years of FNI, the team visited many Indigenous partners and remote communities. Across the country, the first issue often brought to our attention has been the revitalization of Indigenous language and culture. Communities understand that digital technologies can support language and cultural resurgence. Broadband networks and digital technologies are empowering Indigenous peoples with many different opportunities to learn, practice and share Indigenous languages. They are enabling new ways of expressing Indigenous cultures and practices.

Indigenous language and cultural resurgence is important for everyone in Canada. Indigenous peoples hold traditional knowledge about shared lands and waters and how to sustain and protect our environment for many generations to come. Much of this knowledge is embedded in Indigenous languages and cultural practices. Sustaining and protecting Indigenous ways of being may be the key for future survival for all of us.

Eskasoni First Nation Mi'kmaw Immersion School, Nova Scotia.

National: Beat Nation: Hip Hop as Indigenous Culture

Aboriginal art is alive and well online. The website, "Beat Nation: Hip Hop as Indigenous Culture" (Beatnation.org) is a virtual community that features a wide variety of artistic mediums. Young Indigenous artists from across Canada, the US, South America interpret traditional culture through hip hop, rap and music, painting and sculpture. The website was designed as a piece of living hip hop art by Cree artist Archer Pechawis from Mistawasis First Nation, SK. An artist-run centre in Vancouver called 'grunt gallery', has been providing a forum for First Nations to express their artistic visions since 2005. Artists can connect with the wider contemporary art community without having to leave their communities.

Our research on language and culture

All our studies with remote and rural Indigenous communities have touched on Indigenous culture. Culture is the way that people live their daily lives. Our work highlighted that remote and rural Indigenous communities have always used and shaped technologies to meet their daily needs - from canoes to radio to television and on to digital networks. Many of our studies have described how as broadband networks and digital technologies change and develop, Indigenous people living in rural and remote communities use the technology in ways that support their evolving cultures and cultural expressions.

Some of our most recent work has focused specifically on how remote and rural Indigenous communities are using digital technologies to support language revitalization and resurgence. These studies include how an Indigenous language immersion school is using technologies, and a synthesis of knowledge on current uses of technologies to support Indigenous language revitalization.

Hunting camp. Published with permission from The Native Communications Society of the NWT.

Northwest Territories: Gwich'in Department of Cultural Heritage

The Gwich'in Department of Cultural Heritage (formerly the Gwich'in Social and Cultural Institute) has offices in Aklavik, Fort McPherson, Inuvik and Tsiigehtchic in the Northwest Territories, researching and preserving the Gwich'in language and culture online. Since 1993, this group has been creating maps and a large database of traditional knowledge about plants. In 2011, the Institute worked with the Canadian Museum of Civilization to expand its resources and add both a media-rich online atlas and an online exhibit of cultural artifacts.

The language and culture activities of our partners

Northern school. Published with permission from Manitoba First Nations Education Resource Centre Inc.

All FMCC partners are finding ways to support the protection, resurgence, and revitalization of local and regional Indigenous languages and cultural practices. Atlantic Canada's First Nation Helpdesk team is working with community teachers to produce i-books for their students. The First Nations Education Council in Quebec supports the schools in their member communities with digital tools and education resources, so students are working together to share language and cultural learning materials. In Alberta, the three-day Piikani Cultural and Digital Literacy Camp held in July 2017 explored the themes of "Past, Present and Future" through classes, online instruction, hands-on activities and field trips that blended Piikani cultural traditions with digital literacy development for its grade nine attendees.

As access to these the tools and platforms expands, individuals are building capacity to collaborate, create, and produce a continual stream of new digital innovations and resources, providing opportunities to celebrate Indigenous languages and culture. Community groups are working with local language speakers and using their local networks to broadcast programs to homes and businesses. Indigenous organizations, communities, services and individuals are creating podcasts, websites, video resources and digital programs that highlight local and regional language activities and cultural practices. Local and regional networks provide the means for creating, sharing, protecting and archiving these language and cultural resources across the country.

Manitoba: Ogoki Learning Systems Inc.

In 2012, Darrick Baxter, President of Ogoki Learning Systems Inc., developed an open source application to help his daughter learn Ojibway vocabulary and history. It was designed to work offline to preserve bandwidth, and the source code could be adapted to other First Nations languages. Baxter, originally from Marten Falls First Nation, believes that new technologies offer innovative opportunities to preserve First Nations heritage, culture and language, so his company offers training workshops to First Nations youth interested in working in the technology sector.

Our policy and regulatory activities related to language and culture

Indigenous language and culture protection, maintenance and development are central themes for the FMCC policy and regulatory interventions. Access to appropriate broadband networks and digital technologies is necessary for community members to be producers, rather than simply consumers, of content. In our submissions to CRTC hearings, FMCC referenced the importance of protecting and maintaining Indigenous languages and culture with the effective use of digital technologies, broadband networks and programming. To make this happen infrastructure and services must support the required upload (as well as download) speeds, data caps need to be reduced, and costs lowered for digital innovators in rural and remote regions.

When FMCC team members appear before the CRTC Commissioners or federal government policymakers, the team recognizes and supports Indigenous community members and regional Indigenous organizations as contributing members of the FMCC presentation. CRTC Commissioners commented on several occasions about the importance of having Indigenous representation available to answer their questions and clarify the desires and needs of remote and rural communities. We organize our presentations and reports to federal government departments and program officials to ensure everyone understands the importance of Indigenous languages and culture in remote and rural communities.

Stretching hide. Published with permission from First Nations Education Council (Quebec).

Quebec: Permanent Studios

Permanent Studios provides short films and documentaries produced by young filmmakers from different communities on its website, which educators can use to raise awareness and promote First Nations cultures in Quebec.

Telecommunications

Poster for Christmas videoconference. Published with permission from Atlantic Canada's First Nation Help Desk.

Introduction

As analog and now digital communications have become widespread across Canada, Indigenous peoples and communities continue to develop their skills and capacity to engage with these technologies. Indigenous voices are finding a place on all digital communications platforms, from broadcast media like radio and television, to streaming audio and video. Videoconferencing is now central to the way that Indigenous peoples in rural and remote communities share their stories with each other and with communities across the country and the around the globe.

With the rapid convergence of digital communication platforms, tools, technologies and networks globally, rural and remote Indigenous communities have new opportunities to share their unique perspectives with the wider world. Indigenous people living in these communities can share their languages and vital teachings to address global issues such as health and wellness, climate change, and sustainable development, as well as about living with respect for the land, waters and all our relations.

Language app. Published with permission from Atlantic Canada's First Nation Help Desk.

Our research on telecommunications

The FNI project began with several studies about the unique ways that regional intermediary organizations were developing visual digital communication technologies and networks with their partner First Nations. We conducted numerous studies about their innovative uses of the videoconferencing networks they developed, built, operated and maintained to support activities and services in remote and rural Indigenous communities. We looked at how people and organizations in these communities were active producers of videos for sharing information in the days before sharing online videos became popular on YouTube and other platforms.

Over the years, our research broadened to include examination of the present-day settler colonial structures that shape telecommunications. We looked at how the public funding regime for telecommunications in rural, remote and Northern regions provided huge subsidies to corporations and often failed to support sustainable infrastructure and services. We explored how these same colonial structures created significant obstacles for the Indigenous regional organizations were operating on shoestring budgets to develop telecommunication services for and with remote and rural partner communities. In many ways, our research stimulated the team to think about how to change telecommunications policies and regulatory frameworks to be more inclusive of the needs of remote and rural Indigenous communities and the organizations they have set up.

Ontario: Videos from KiHS students

Students at Keewaytinook Internet High School in Fort Severn First Nation produced videos on topics ranging from documentary to humour for the First Mile project. Isaiah Koostachin went on the land to interview Canadian Rangers about technology, Chad Bluecoat explained the need for a new school in Fort Severn, and Levius Miles and his friends were visited by the Sasquatch. As part of the Youth ICT Workshop in 2012, Desiree McKay shot a video with Mishkeegogamang First Nation Chief Connie Gray-McKay. They discussed how using new technology to communicate with the Council was helping Mishkeegogamang community members to feel safer, better connected, and more informed.

The telecommunications activities of our partners

Building broadband networks capable of supporting two-way video conferencing became an early rallying cry for all the Indigenous regional technology organizations working with their remote and rural member communities. Communities built high quality videoconferencing systems and networks through programs designed to improve remote access to essential health and education services.

Starting in 2000, KNET in northern Ontario was supporting multi-site video conferencing connections using its own staff and bridging equipment. About ten years later, most of the other FNI and FMCC partner organizations had purchased their own bridging equipment to serve the communities in their region. With two-way video communications, patients and clients in Indigenous communities were able to access a range of telemedicine services, which reduced the number of people forced to fly to urban centres to receive health services.

Telehealth and telemedicine has brought a range of improvements to health services in the communities, including increased rates of diabetes and retinal screening. The story of the tele-babies in northern Ontario is a celebrated development in the communities. When bad weather or other circumstances prevent expectant mothers from flying out of their communities to deliver their baby, the baby is now welcomed into their own community at the local Health Centre with the assistance of a doctor coaching the local nurses and patient through the birthing procedure using a broadband video connection on the local network. According to the Keewaytinook Okimakanak e-Health website, more than a dozen babies have been delivered in Northwestern Ontario using this method over a ten-year period.

Quebec: First Nations Education Council installs video conferencing in public buildings

FNEC installed video-conference equipment in public buildings in 2006 to connect its 22-member communities. The equipment has been used extensively by different groups and individuals for a wide range of purposes. When fibre was installed in 2011, FNEC adopted Converged Management Application (CMA) software that allowed users to connect over their computers. The system made it more convenient for people because they could connect over telephone, or with a webcam and computer.

Our policy and regulatory activities related to telecommunications

The FMCC team continues to participate in the CRTC and government telecom consultation efforts to help officials understand the importance of being able to access quality and affordable telecom services in remote and rural Indigenous communities. Our member Indigenous technology intermediary organizations are actively advocating for equitable, accessible and affordable telecommunication services capable of supporting community requirements. In isolated, remote and rural Indigenous communities, communication technologies are essential tools to being able to access the information, resources, services and opportunities most people in urban centres often take for granted.

In 2016, the FMCC team prepared a comprehensive report for the federal department, Innovation, Science and Economic Development Canada (ISED) entitled “Digital Technology Adoption in Northern and Remote Indigenous Communities.” The report highlights the importance of developing telecom programs and services that support the “whole community” rather than the traditional corporate model, which is focused on individual consumers and households. The principles of OCAP – Ownership, Control, Access, Possession – are always emphasized in our publications to celebrate the opportunities available in Indigenous communities when local individuals and groups can own and manage their networks and services in a manner that meets local needs and desires.

January. Published with permission from Manitoba First Nations Education Resource Centre Inc.

Atlantic: Project 60 to encourage youth vote

First Nation people only received the right to vote in Canadian federal elections in 1960. "Project 60" was mounted in 2011 to encourage First Nations youth to create social and multimedia content to educate and empower First Nations people about the importance of voting. Their work was shared with over 600 people as part of a live national video conference.

Economic development and digital innovation

Telecommunications tower. Published with permission from Manitoba First Nations Education Resource Centre Inc.

Introduction

Remote and rural Indigenous communities need strong local economies that generate and recycle funds and resources as much as possible within the communities. The history of broadband infrastructure development in remote and rural areas of Canada is largely one of private, corporate telecommunication companies receiving public funds and subsidies to build infrastructure, then charging remote communities high rates for access and services. In this dynamic, the cost of digital innovation is higher in rural areas than in urban centres. This situation exists because corporations are required to produce profits for their owners and shareholders. In contrast, the non-profit and community-run Indigenous intermediary organizations are focused on providing benefits to communities rather than profits.

The First Mile approach is premised on the concept that broadband infrastructure and digital services ownership should rest -- to the greatest extent possible -- with the remote and rural communities that use it. In this way the costs of accessing, maintaining and using the networks and services can be kept low in the communities. Local jobs can be created to maintain the local infrastructure loop and the services using the infrastructure. Building community capacity supports digital innovation and applications that meet community needs. As network resources and services become more widely available in the communities, the opportunity for innovation increases.

Telecom shelter servers. Published with permission from Western James Bay Telecom Network (Ontario).

Nova Scotia: Membertou Data Centre

Membertou First Nation in Unama'ki (Cape Breton) Nova Scotia owns and operates a Data Centre in their Membertou Trade and Convention Centre. The Data Centre operation is designed on OCAP principles to ensure that First Nations Own, Control, have Access to and Possess the data stored there. The building has a long-term energy supply and backups in case of power failure. The Centre stores the data of multiple clients and houses video conference and web servers. First Nations communities with fibre can use the Centre to back up their systems. The Centre relies on fibre-optic connectivity, and there are a number of systems to protect data and users.

Our research on economic development and digital innovation

Our research on economic development has focused primarily on the benefits to communities of owning and operating their own digital networks and services. The digital economy has a number of layers, all of which have potential economic impacts. One is building and operating infrastructure and services. Another is using that infrastructure and services for a variety of activities. For example, we have studied community-run telehealth services that employ local telehealth coordinators, and technology-enabled schools that can keep students, families and educational staff and their spending power in the communities rather than in regional urban hubs.

We also conducted studies highlighting how Indigenous rural and remote community networks are enabling small businesses. These community businesses range from making and selling online meals in the community, to developing online shopping websites for customers located elsewhere to purchase products developed by local entrepreneurs. Community members continue to build their skills with digital technologies, laying the groundwork for digital innovation in future.

Arrival in a remote northern community. Published with permission from Manitoba First Nations Education Resource Centre Inc.

The economic development and digital innovation activities of our partners

Many of our project partners, regional Indigenous technology intermediary organizations, were established by their partner communities to deliver second level support services. By collaborating together in this way, communities have created economies of scale. Their regional organizations can then aggregate users and resources across multiple communities and offer services and supports in communities that would not be possible otherwise. The regional organizations are building local capacity with appropriate training and support programs which in turn create local entrepreneurial and community enterprises that make effective use of digital technologies as well as the local and regional networks.

The rapid, 20-year migration of the local networks, often beginning in the community's school and the Health Centre moving to the administrative offices, police station, water and wastewater facilities, airport and then finally to the individual homes was supported by the community's regional organizations. Regional training programs designed and operated by our partners support local technicians to gain the skills required to build, maintain, and manage the community broadband networks.

Our FMCC partners are supporting the local Health Centres, schools and other service agencies in the communities in their work to hire and train staff to operate and support their networks and expand local services. Local entrepreneurs have opened internet cafes, stores, and businesses offering a variety of digital services. The growth in local enterprises and services is supporting people and communities to resist the contemporary colonial migration to urban centres and instead find innovative strategies for remaining in their communities and building the type of livelihood and environment where their children and future generations can prosper.

Ontario: KNET training

Trained technicians are essential to maintain the network hubs and manage the data and traffic in remote communities. The technicians in Keewaytinook Okimakanak (KO) communities ensure they stay connected to each other and the outside world, whether for educational, health-related, social or cultural activities. That is why KO's KNET created a resource website with forums, trouble-shooting tips and video to support local community cable plant technicians.

Our policy and regulatory activities related to economic development and digital innovation

The FMCC team members have been contributing their extensive experience with remote and rural Indigenous communities to government agencies to shape policies related to economic development and digital innovation. In the CRTC's Telecom Order CRTC 2017-164, the Commission stated:

… [FMCC members] were uniquely able to represent the views of First Nations community members with respect to the issues raised in the proceeding. The FMCC's submissions, especially regarding the importance of broadband Internet services for the social, cultural, and economic development of remote Indigenous residents, assisted the Commission in developing a better understanding of the matters that were considered.

Economic drivers creating new jobs, businesses, partnerships, investments and local infrastructure are important components for every FMCC submission or presentation to the government. Until recently, corporate telecom providers have been the primary voices in consultations about new policies and regulations. Now government is hearing directly from Indigenous communities and their regional organizations.

Government programs and their program officers tend to work at creating and maintaining their programs within their digital environments in larger, well-resourced urban facilities. The FMCC is committed to interrupting this settler colonial policy and regulatory practice by ensuring that the perspectives of remote and rural Indigenous communities are understood, recognized and supported by robust research and analysis.

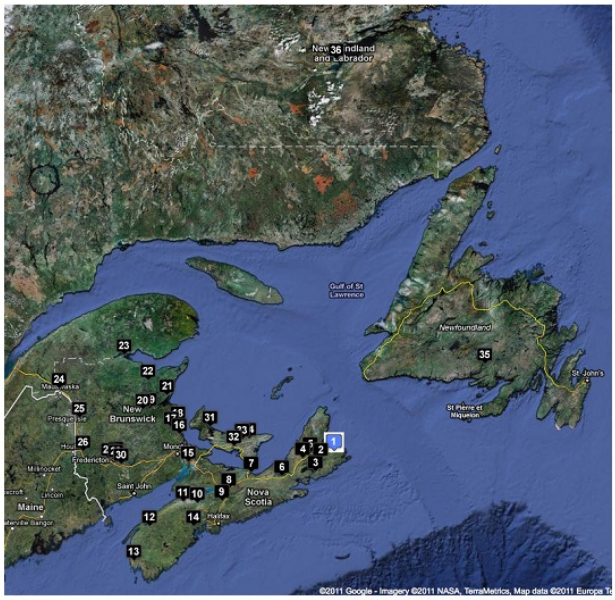
New Brunswick: Eel Ground First Nation GPS project

Natoaganeg (Eel Ground) First Nation is located on the South West Miramichi River in northern New Brunswick. They partnered with GeoConnections and acquired a Global Positioning System (GPS) in 2011 to map the nearly 7,000 acres of Acadian forest that make up their traditional lands. The forestry industry is very active in and around Natoaganeg, and the Acadian Forest, which covers most of the Maritimes into Maine, is endangered. The people of Natoaganeg have created an innovative approach to forestry that can be used by other First Nations to protect their traditional lands. It combines Geographic Information System (GIS) and GPS technologies with traditional knowledge of plant and animal life to produce highly accurate maps and monitor the impact of different forestry practices over the long term.

Health and wellness

Fibre Optic Project: First Nations Infrastructure Fund

Nova Scotia, New Brunswick, Prince Edward Island, Newfoundland and Labrador



One-time infusion of new infrastructure money to upgrade ICT (Information and Communications Technologies) Infrastructure: 2010-2012

Mi'kmaw Kina'matnewey Fibre project map. Published with permission from Atlantic Canada's First Nation Help Desk.

Community feast preparation. Published with permission from First Nations Education Council (Quebec)

Introduction

For many Indigenous people, staying healthy and well means a balance between the physical, spiritual, emotional, and mental dimensions of life, including the individual and community. Community wellness plays a central role in Indigenous perspectives of health. Individual health and wellness includes relationships with and within the family and the larger community, respect for one's culture and traditions, and respect for the environment and all relations.

Bush tea. Published with permission from Keewaytinook Okimakanak KNET Services, (Ontario).

Each Indigenous community in rural and remote areas across Canada has a distinctive culture and history and diverse healthcare needs. Most rural and remote communities have no resident clinicians or hospitals and only small health centres. For a remote community, a visit by a clinician may require a series of expensive flights on a small plane or a 10-hour, or longer, drive on a temporary winter road. A rural Indigenous community member travelling to their nearest regional Health Centre may take many hours by vehicle on rough or unpaved roads or an expensive flight where road connections are non-existing. For this reason, the delivery of health services in remote and rural Indigenous communities has very different requirements than health services delivery in urban locations with more 'brick and mortar' supports. It is obvious that technology that supports services such as telehealth and telemedicine are vital in rural and remote Indigenous communities.

Nova Scotia: Mi'kmaw Kina'matnewey Red Road project

In 2012, the Mi'kmaw Kina'matnewey community launched a unique project based on the Native American concept of the "Red Road". The project was completely youth-driven and focused on the dangers of substance abuse and how to deal with peer pressure. The concept of the Red Road is about following the right path through life and living in harmony with the creator. All of the content was designed by young First Nations people including the project logo, the music and videos, and it was shared online. These materials were used during videoconference sessions with youth in various locations to prompt discussion and provide information.

Our research on health and wellness

Our First Nation Innovation project conducted numerous studies about technologies supporting health and wellness in remote and rural Indigenous communities. These included how local community Health Centres use digital technologies for their daily operations. In 2010, we conducted and published the most comprehensive report to date on information and communication technologies to support health and wellness in remote and rural First Nations. In other studies we documented how community health centres are “anchor tenants” that can make local broadband networks economically viable and sustainable.

Our work on telehealth and telemedicine focused in particular on mental health. We published a unique study on the perspectives of remote Indigenous community members on telemental health services. We also published work on the perspectives of mental health professionals providing these services to remote Indigenous communities. Most of the team’s publications related to health were produced in partnership with KO e-Health Telemedicine Services staff.

British Columbia: First Nation Health Council Community Engagement Hubs

The First Nation Heath Council in BC provided financial support that allowed 203 BC First Nations to be part of a coordinated and collaborative approach by creating Community Engagement Hubs (CEH) in 2011. The CEH were part of the implementation of the Tripartite First Nations Health Plan (TFNHP). CEHs develop planning and communication opportunities for member communities to collaborate with government and non-governmental agencies, based on tribal and geographical factors. They provide a mechanism that helps communities work together and resources to coordinate work done between communities. The hubs allow a group of communities to discuss issues to find common solutions and provide a space where health authority personnel can meet to identify ways of improving services. Hub members can share: innovations; new information; knowledge and expertise; resources and informational materials, like traditional food and medicine fact sheets; and best practices of traditional wellness models. Healthcare providers in isolated communities can provide and receive support from each other. Collaboration, sharing resources and joint planning can increase efficiency and improve the health services BC First Nations people receive.

Our partners' activities related to health and wellness

Support for the provision of health services in most Indigenous communities is a negotiated treaty right dating back to when these internationally-recognized nation-to-nation agreements were first signed. The levels and types of health and wellness services available vary between the different regions and communities across the country. Digital networks and technologies have introduced innovative delivery strategies that support a long-distance relationship between health service providers and the patients or clients located in remote and rural communities.

Almost all of the FMCC partner organizations are working directly with federal government health officials, such as those at the First Nations and Inuit Health Branch (FNIHB) of Health Canada. The FMCC partners are identifying strategies for introducing and sustaining the required local and regional broadband networks capable of supporting the digital equipment and connections for the effective delivery of health and wellness services and programs. In the Atlantic, Quebec, Manitoba, Alberta and B.C. regions, FMCC partners work with local Indigenous community Health Centres to build and operate the local connections and digital technologies. The costs for operating these local connections contribute to local economy and ensure the local network and technical support is available to other groups, businesses, organizations and households.

Forest. Published with permission from First Nations Technology Council (British Columbia).

Clear Sky Connections, Manitoba

Clear Sky Connections has a mandate to build and operate a fibre optic cable backbone that would support affordable, dependable and sustainable broadband in Manitoba First Nations. Connectivity is the most critical enabler of technology. In urban areas, we have the luxury of focusing on technology because robust communications networks underpin our communities. However, outside of urban areas, many First Nations and northern communities in Canada are at a significant disadvantage. These communities do not have access to basic broadband connectivity and are missing out on economic and social opportunities currently enjoyed by other Canadians. The lack of broadband access has severely hindered the sustainable long-term development of these communities. Clear Sky Connections is committed to bridging this gap for 63 Manitoba First Nations Community.

Training Poster. Published with permission from First Nations Technology Council (British Columbia).

Our regulatory and policy activities related to health and wellness

Just as it is an ongoing challenge for most health professionals to adapt and accommodate remote delivery of their services, it is equally difficult to convince most policy and program officials to provide adequate resources and support for the development and sustained provision of appropriate e-health services. In all their submissions to the federal policy and regulatory processes, FNI and FMCC partner organizations are continuing to present analysis and success stories that demonstrate the capacity of remote and rural Indigenous communities to build and operate their digital networks and services to deliver quality health and wellness programs.

As federal policies change and re-shape the delivery of health care to and with remote and rural Indigenous communities, the success of these digital delivery methods are demonstrated. As the successes build, the hearts and minds of health care providers are slowly changing as they realize the future potential of these digitally-supported services. Similarly, as with most professions, change can be a long, slow process. Very few health and wellness training programs in colleges and universities include content about the challenges and opportunities involved in properly delivering and serving Indigenous people who live in remote and rural communities, and the effective delivery of services using e-health technologies. Many health care facilities in cities refuse to invest their limited resources in telemedicine equipment or the delivery of health services using digital technologies – they consider it easier to have the patients travel to the cities for all their healthcare needs. Considerable work, technical and human resources, and learning is still needed before remote and rural Indigenous communities will be able to access equitable health and wellness programs and services in their communities.

Ontario: KO Telemedicine
In northern Ontario beginning in 2000, the Northern Chiefs Tribal Council, Keewaytinook Okimakanak (KO), built the largest Indigenous owned and operated e-health network in the world. The KO e-Health network continues to deliver a variety of health and wellness programs. KOTM is a community-led and community-driven telehealth initiative that uses videoconferencing to provide a wide range of services. KOTM's telepsychiatry system offers a broad array of monitoring, treatment and follow-up services to support mental health, community wellness, and community engagement. KOTM services provide what communities want and need, and the telemedicine programs are designed to be holistic, community-driven and culturally appropriate.

National: Mustimuhw Electronic Medical System

Since 2012, a community electronic medical record (cEMR) system called Mustimuhw has been used by First Nations across B.C., Saskatchewan, Manitoba, and Atlantic Canada. Mustimuhw is a Coast Salish word meaning “all of the people.” The system was developed by Cowichan Tribes on Vancouver Island and designed to work within First Nations Health Centres by allowing collaboration and more personal interaction between the health care team and community members. The system is designed to fulfil OCAP principles so First Nation communities maintain ownership and control over health data. It provides training online and over videoconference so workers can stay in their communities. The system was designed to work within the technical limitations that are common in many rural and remote First Nations communities, including limited or unstable bandwidths.

Spring goose hunt, flock of swans near the Hudson Bay coast. Published with permission from Keewaytinook Okimakanak K-Net Services (Ontario).

Education and learning centres

Poster for adult distance education. Published with permission from First Nations Education Council (Quebec).

Introduction

Education and learning have always been a core focus for the leadership in Indigenous communities. Community members want to be able to learn from Elders and community knowledge keepers and to have access to new knowledge from members of other communities and around the world. As broadband networks become available in remote and rural Indigenous communities, they are using digital technologies to access and create new education and learning opportunities.

Schools and distance learning centres are important in remote and rural Indigenous communities. The buildings and spaces are also places for community gatherings to share knowledge and for general social exchange. Digital technologies can support all community learning activities. Until the program was discontinued by the federal government, many remote and rural communities had Community Access Centres (CAP) to support community members to use computers and digital technologies. Now some communities are considering how they can design and build Community Learning Centres for both community access to new technologies and new opportunities for training and education.

Ontario: Keewaytinook Internet High School

Since 1999, the Keewaytinook Internet High School (KiHS) has made it possible for First Nations students across northern Ontario to stay in their home communities while they complete high school and prepare for university. Courses are delivered over the KNET broadband network, and teacher mentors are on-site to provide guidance. The ability to stay in the community allows students to have the support of their families and Elders. The school has a unique model that builds on success with input and feedback from students, teachers, parents and administrators.

PEI: Video from Lennox Island

In Lennox Island First Nation, Prince Edward Island, students produced videos for the First Mile project about the importance and need for high speed connection in their communities.

Our research on education and learning centres

Our FNI project has conducted many studies with collaborating remote and rural Indigenous communities related to education and learning. Our studies included how teachers and school administrators use technologies in schools, how community adults use distance education options to improve their qualifications without leaving their communities, and a guide for using videoconferencing for remote learning in First Nations. We have also documented the role and importance of internet high schools in remote First Nations. These schools give students access to a larger course catalogue and give their families the option to stay in their home communities, rather than move to an urban centre while the children complete their high school education.

Our work has also documented how connecting community schools to broadband networks is part of the whole community approach to broadband development, mentioned earlier in this book. Schools and Health Centres are “anchor tenants” on the local broadband loop, making the local networks economically viable for community ownership and operation. Schools are necessary for communities, and broadband networks that connect schools can also connect the other community services and facilities to make the entire network sustainable.

Ontario: Tyendinaga Mohawk Council First Nations Technical Institute

Chief Earl Hill had a vision: to provide education and training within First Nations communities. That dream was partially realized when the post-secondary First Nations Technical Institute (FNTI) was established in 1985 through a collaboration between the Tyendinaga Mohawk Council, the FNTI Board of Directors, Indian and Northern Affairs Canada, and the Ontario Ministry of Education & Training. As long as internet links are reliable, the Institute provides a variety of accredited programs, grounded in traditional values and learning approaches, via videoconference to Aboriginal students all across Ontario.

Our partners' activities related to education and learning centres

For more than two decades, FNI partners have been developing, building, maintaining and innovating with digital networks and technologies for schools in their partner Indigenous communities. Indigenous schools and learning environments are a strategic component for each of the FNI and FMCC partner organizations. Beginning in 1995, the First Nations SchoolNet program at Industry Canada contracted different First Nation regional organizations to support community schools to get connected to the internet. Over the next twenty years, these regional Indigenous technology intermediary organizations worked with government partners, community and education leaders to introduce new digital technologies and networks into the communities. The same work continues today as the digital technologies and networks evolve to address current learning and training requirements.

Most of the partner organizations are also directly supporting community schools with the acquisition and operation of a variety of digital technologies such as Smart boards, videoconferencing, voice-over-IP telephones, tablets and other learning tools. The development of appropriate teaching strategies and content resources is also an important part of the work of our partners.

July. Published with permission from
The Native Communications Society of the NWT.

British Columbia: Tszil Learning Centre

The Líl̓wat Nation invested $100,266 in addition to $7.21-million of federal funds through the 2016 Post-Secondary Institutions Strategic Investment Fund from the Department of Innovation, Science and Economic Development in a new learning centre. The new Tszil Learning Centre replaced 20-year-old teaching portables. Students from Líl̓wat Nation, N´Quatqua, Skatin, Samahquam, Douglas/Xa'xtsa, and Whistler/Pemberton would now have access to a state-of-the-art facility that supports lifelong learning, skills training, research, accredited post-secondary courses and industry-certified training programs.

Our policy and regulatory activities related to education and learning centres

The field of education has experience significant changes within a relatively short period of time. Many changes are a result of the introduction of digital technologies and broadband connections within community learning environments. Since the closure of residential schools and its colonial legacy on Indigenous communities, local schools and learning facilities are being constructed to accommodate many of these innovative educational opportunities. With new facilities and infrastructure, the gap between what is available in urban and remote and rural community learning facilities is slowly getting smaller.

FMCC reports, publications and interventions highlight the economic and social opportunities properly connected and resourced educational facilities provide in every community. Similar to the challenges experienced by the delivery of required health and wellness services, education and training services also require constant monitoring and support to ensure remote and rural communities have equitable learning opportunities and environments for all their citizens. Most of the FMCC partners have developed protocols, guidelines and policies for the use of digital technologies in education in Indigenous communities, including evaluating learning outcomes, language applications and many more.

Manitoba: First Nations Information and Communications Technology Diploma

In 2011, the First Nations Information and Communications Technology Diploma program was introduced at the University of Winnipeg with the goals of graduating 60 students by 2012, finding employment in First Nations communities for these graduates, and increasing the capacity and control of ICT resources by Indigenous communities and local First Nations IT Regional Networks. The program was to train First Nations students in the business and technical aspects of the ICT industry, in recognition that corporate suppliers were failing to provide the connectivity that remote and rural First Nations communities needed. The program was created through a partnership between the Assembly of Manitoba Chiefs, the University of Winnipeg, the Atoskiwin Training and Employment Centre of Excellence, Broadband Communications North, the Information and Communication Technologies Association of Manitoba, Clear Concepts, and the Federal Department of Human Resources and Skills Development Canada.

Digital skills and social media

Ontario: Sachigo Lake Cable Network

Sachigo Lake is a remote fly-in Oji-Cree community in northern Ontario that owns and operates a local cable network. The network relies on a C-Band satellite connection managed by First Nations and Inuit partner organizations. Sachigo Lake uses the network to stay connected with the rest of the world, communicate about local events, and deliver health services. It also provides a Keewaytinook Internet High School (KiHS) classroom, where students access course content through computers and an Internet connection.

Mi'kmaw language app. Published with permission from Atlantic Canada's First Nation Help Desk.

Introduction

Residents of Indigenous communities are active social media users. Digital platforms enable people to share information and knowledge on local, regional, national and international levels. As the capacity to use social media increases, community members have more opportunities to learn about, support and use a wider range of digital platforms and applications for a variety of purposes.

Remote and rural Indigenous community members are continuing to increase their knowledge, ownership and control of broadband networks, digital technologies and digital literacy addressing local desires. At the same time, they are building their capacity and skills to use digital technologies effectively to meet their needs and the needs of their communities and develop digital literacy resources and applications. Digital skills include knowledge at all levels about the technologies, including: how to maintain technical infrastructure, surveillance, and privacy. People are also becoming more knowledgeable about the political economy of infrastructure, including the dynamics of corporate ownership and control, and the ecological implications of digital networks and technologies.

Ontario: Myknet.org

Before there was Facebook, there was Myknet.org. In 1998, Keewaytinook Okimakanak launched MyKnet.ca, a free and open online social networking service developed especially for and by First Nation communities in northern Ontario. Its lean design meant it would still work over slow connections in low-bandwidth communities. The platform allows remote Indigenous community members to create individual homepages to share information and to link with other residents of remote communities and diverse community projects, events and activities. Pages provide health, education and business resources, as well as news, online dating, classified advertising, and e-learning services. MyKnet.ca also substituted for telephone and community radio in some locations. The site provides some basic features and allows users to share stories and pictures. The website design encouraged innovation in a safe and supportive learning environment. It was also designed to be easy to use, to encourage all age groups to get online. The coding was simple html, so users could design their own features. By 2010, there were 30,000 active MyKnet homepages and users in Ontario, Quebec, Manitoba and elsewhere in Canada. At its peak, up to 2,000 pages were updated daily and there were around 10 million visits each month. The site is still active, and some users prefer it to other social media sites because it reflects the First Nations' way of life.

Our research on digital skills and social media

Our research has highlighted the many ways that remote and rural Indigenous community members are using and increasing their digital skills to use, operate and maintain networks, platforms, and applications that support community needs. These include our studies with our research partners that documented how they were working with the communities on their networks to build regional and local broadband infrastructure.

We published some of the earliest studies on social media use in remote communities. Our analysis found that community members are innovating in their use of social media and increasing their digital skills in the process. Social media continues to support community connections and cultural resilience. More recently our First Nations Innovation (FNI) project in Quebec has worked with Timiskaming and Long Point First Nation to identify digital literacy requirements and priorities, and with Lac Simon First Nation to support digital skills development in the community school. In Alberta FNI has worked with Piikani First Nation to host a three-day cultural and digital literacy camp.

Promotion/Information display. Published with permission from First Nations Technology Council (British Columbia).

What our partners are doing about digital skills and social media

Professional development and training programs are an important component for each of the Indigenous technology intermediary organizations working with FNI and FMCC. Often these initiatives provide the organizations with the opportunity to recruit and employ qualified people to support the ongoing development, operation and maintenance of local and regional digital networks and services required by communities and their organizations. The ability to effectively communicate, create and support others using different online environments is a necessary skill as we serve remote and rural communities, organizations, services and residents.

The production of Indigenous language applications; appropriate online secondary and post-secondary programs and other training initiatives; digital online content using a variety of digital tools; distance teaching and learning skills using a variety of digital technologies; remote research and information resources; and applying the knowledge within challenging environments; are some of the digital skills being developed in remote and rural Indigenous communities. The effective use of different social media environments to support staff and organizations is only possible as adequate and appropriate local and regional network infrastructures are accessible, available and maintained.

Seasonal Camp. Published with permission from The Native Communications Society of the NWT.

First Mile

Videoconference meeting. Published with permission from First Nations Education Council (Quebec).

NWT: Gwich'in Tribal Council workshop on Digital Content and Connectivity

In June 2017, the Gwich'in Tribal Council's Department of Cultural Heritage (GTC) piloted a day-long workshop on Digital Content and Connectivity in Gwich'in communities. The workshop introduced the 19 participants, including youth from Fort McPherson, Tsiigehtchic, Aklavik and Inuvik to key aspects of digital content and connectivity. It also showcased GTC projects and innovations, such as its online atlas and ethnobotany database. Participants provided helpful feedback for future community events and the project produced Creative Commons resources for use by other communities that want to conduct workshops. The workshop was supported by the Government of the Northwest Territories Department of Education, Culture & Employment and Department of Industry, Tourism and Investment, GTC, UAlberta North, and the School of Library and Information Studies at the University of Alberta. The team that designed the pilot included, from UAlberta, FMCC board member Dr. Rob McMahon and graduate student Hanne Pearce; and from GTC, Sharon Snowshoe, Executive Director Department of Culture Heritage; Alestine Andre, Researcher, Cultural Heritage, and IT Manager Suraj Chhetri. The project has received follow-up funding from CIRA, and is expanded to two-day community-based workshops in the four Gwich'in member communities in June 2018.

Our policy and regulatory activities related to digital skills and social media

FMCC members are developing new initiatives to support Indigenous community members to actively participate in policy and regulatory processes. Sharing the experiences of community members with the CRTC and federal policy people is intended to support the development of telecommunication and broadcast policies and regulatory initiatives addressing the needs and desires of all remote and rural Indigenous communities across the country. FMCC partner organizations continue to meet with officials, usually in urban locations, to provide information and present reports related to government policies and programs.

Inviting government and corporate program and policy officials to meet in the remote and rural Indigenous communities provides everyone to learn, experience, share, see and hear about the opportunities, desires and challenges being addressed by the people living and working in these environments. Meeting with local community leaders, health and education staff, community members, local network technicians and digital entrepreneurs in their own communities helps everyone understand the work they are doing. Being able to experience using local connections, seeing the learning environments and the various local digital skills and technologies has proven to be an effective strategy for influencing government policies and programs by the people directly creating these resources affecting remote and rural communities.

Ontario: KNET Video Boot Camp
In 2012, Cal Kenny and Angie Morris from KNET ran a video “boot camp” in Thunder Bay and mentored a group of youth from communities across northern Ontario in video production. The participants brainstormed, scripted, filmed and edited videos that told positive stories and provided insight into the role of information and communication technologies.

KNET technicians arriving for cable plant upgrades in North Spirit Lake First Nation, Ontario.

Afterword

Preparing this book generated many memories of times spent with research partners and community members. The strength of our project has been our relationships, many pre-dating our research work together. Our Indigenous organization partners have been building broadband networks for many decades to support the innovative work undertaken in remote and rural communities. This book is celebrating their achievements.

I am grateful for the many teachings I received over the years from Indigenous research partners and community members. One in particular: Tina Kakepetum-Shultz of Keewaytinook Okimakanak taught me the value of including Indigenous community co-authors in all our research publications. That teaching shaped our research publication policy, brought richness and depth to our work, and deepened relationships including co-presenting with community co-authors at research conferences across the country.

I also learned patience. Things happen when people are ready for them, and that includes research, policy work, and in particular, relationships. Early on, we tried several times with limited success to interest federal government policy-makers in our work. The right time was in 2013 when we formed the First Mile Connectivity Consortium. Since then the FMCC has grown to include 10 Indigenous organization members and has successfully shaped national telecommunications regulations and policy because of the strength of our relationships.

In 2016, the FMCC and the First Nations Innovation project received an Award of Excellence from the Canadian Race Relations Foundation (Aboriginal Category) for our work together. Our research and outreach work has been recognized by the Social Sciences and Humanities Research Council (SSHRC) through continuous grant awards that made our work possible. The FMCC also successfully secured grants from the Canadian Internet Registration Authority to support research leading to policy and regulatory submissions. Our Indigenous research partners have made considerable in-kind contributions to our work. To all our funders and supporters, a sincere thank you.

I smiled when reading Brian Walmark's foreword comments about our first trip to Deer Lake First Nation in 2005. I remember that the KO-KNET videoconference bridge coordinator Lyle Johnston connected remote sites across Canada to the meeting hosted by the Deer Lake community. The remote sites included Craig McNaughton in Ottawa, then working with SSHRC, who also wrote a foreword to this book, Brian Beaton then the coordinator of KO-KNET in Sioux Lookout

who later became a graduate student researcher at the University of New Brunswick, and many others. Since that meeting, our project has made many other visits to remote Indigenous communities over the years.

This book marks the formal end of the First Nations Innovation research project. The future work by the team will focus on policy and regulatory interventions by the FMCC. For this I am immensely grateful to FMCC Coordinator Rob McMahon, University of Alberta, a friend and colleague who will continue to play a central role going forward. What a journey, and it's only started!

Susan O'Donnell, PhD
Principal investigator, RICTA (2005-2006), VideoCom (2007-2012), First Nations Innovation (2013-2018); Co-investigator, First Mile (2010-2013)
Founding member and Vice-Chair, First Mile Connectivity Consortium (2013-ongoing)

Fredericton, New Brunswick, February 2018

The FNI-FMCC team from across Canada at a strategy meeting at the University of New Brunswick, Fredericton, October 2017.

First Mile Connectivity Consortium policy and regulatory interventions

Listed here are all the written policy and regulatory interventions made by the First Mile Connectivity Consortium that are available for download. For the complete list of FMCC policy and regulatory activities including other presentations to policy makers, please visit: http://firstmile.ca/category/fmcc/activities/

FMCC's response to the Governor in Council's request for a report on future programming distribution models (October 12, 2017) - Broadcasting Notice of Consultation CRTC 2017-359. The Governor in Council has issued an Order in Council requesting that the Commission make a report as soon as feasible, but no later than 1 June 2018, on the following matters:

• the distribution model or models of programming that are likely to exist in the future;
• how and through whom Canadians will access that programming; and
• the extent to which these models will ensure a vibrant domestic market that is capable of supporting the continued creation, production and distribution of Canadian programming, in both official languages, including original entertainment and information programming.

FMCC Participation:

December 1, 2017 - Initial Intervention
February 13, 2018 - Final Intervention

FMCC's response to the Study on Broadband Connectivity in Rural Regions (September, 2017) - The House of Commons, Standing Committee on Industry, Science and Technology. The House of Commons Standing Committee on Industry, Science and Technology is undertaking a study on Broadband Connectivity in Rural Canada and invited interested parties to submit a brief.

FMCC Participation:

October 10, 2017 - Letter & Brief

FMCC's response to the Development of the Commission's broadband funding regime (April 25, 2017) - Telecom Notice of Consultation CRTC 2017-112. The Commission hereby initiates a proceeding to examine matters related to the establishment of the broadband funding regime, including its governance, operating, and accountability frameworks, as well as eligibility and assessment criteria for proposed projects.

FMCC Participation:

June 27, 2017 - Initial Intervention
August 25, 2017 - Reply Comments
November 20, 2017 - Request for Information response
December 18, 2017 - Final Comments

First Mile

FMCC's response to Phase-out of the local service subsidy regime (April 6, 2017) - Telecom Notice of Consultation CRTC 2017-92. The Commission invites comments on its proposed approach to the phase-out of the local service subsidy regime, as well as on associated policies that could have an impact on the subsidy amounts.

FMCC Participation:

June 5, 2017	- Initial Intervention
July 13, 2017	- Interrogatories Questions
August 15, 2017	- Response to Questions
September 21, 2017	- Final Comments

FMCC's response to Part 1 application from Northwestel to CRTC (February 6, 2017) in which the company requested that the Commission refrain, pursuant to section 34 of the Telecommunications Act (the Act), from exercising its powers and performing its duties under sections 25, 27, 29, and 31 of the Act in relation to the Wholesale Connect service provided by Northwestel in the MVFL communities.

FMCC Participation:

March 9, 2017	- Intervention
August 24, 2017	- Telecom Decision CRTC 2017-300

FMCC's Report produced on contract with Innovation, Science and Economic Development Canada (ISED) (December 15, 2015). Addressing research on digital technology adoption in remote and northern First Nation and Inuit communities. Summarizing recommendations from the research, including a comprehensive literature review, identification of primary and secondary data sources, appropriate research methodologies with communities, strategies and research questions.

FMCC participation:

March 31, 2016: The final report includes six detailed appendices that are available online at http://firstmile.ca/report-digital-technology-adoption-in-northern-and-remote-indigenous-communities-in-canada/

FMCC's response to Review of basic telecommunications services (April 9, 2015) - Telecom Notice of Consultation CRTC 2015-134. The Commission will examine which telecommunications services Canadians require to participate meaningfully in the digital economy and the Commission's role in ensuring the availability of affordable basic telecommunications services to all Canadians. The Commission intends to conduct this review in two phases.In phase 1, the Commission will review its policies regarding basic telecommunications services in Canada. The Commission will also gather information from the industry to better understand which telecommunications services are being offered across Canada and whether any areas in Canada are underserved or unserved. The Commission invites interventions on the issues and questions identified in the notice. The deadline for filing these initial interventions is 30 June 2015.

In phase 2, which will be initiated in the fall of 2015, the Commission will ask Canadians to provide their opinions on the telecommunications services they consider necessary to participate meaningfully in the digital economy today and in the future. Specific details regarding the scope and procedure for this phase of the proceeding will be released at a later date. Following phase 2, the Commission will hold a public hearing, beginning on 11 April 2016 at 9:00 a.m., at the Conference Centre, Phase IV, 140 Promenade du Portage, in Gatineau, Quebec.

FMCC Participation:

July 14, 2015	- Initial Intervention
September 21, 2015	- Reply to Request for information
September 30, 2015	- Requests for further responses to interrogatories
November 2, 2015	- Requests for additional information
February 1, 2016	- Further Intervention
April , 2016	- Presentation at hearings
May 5, 2016	- Submission of Undertakings requested from FMCC
May 25, 2016	- Final Comments
June 13, 2016	- Final Reply Comments
December 21, 2016	- CRTC Telecom Regulatory Policy CRTC 2016-496

FMCC's response to Review of Telesat Canada's price ceiling for C-band fixed satellite services (April 9, 2015) - Telecom Notice of Consultation CRTC 2015-133.

Telesat Canada (Telesat) provides satellite services that enable the delivery of telecommunications services, such as voice, wireless, and Internet services, to Canadians. In Telecom Notice of Consultation 2014-44, the Commission initiated an inquiry to review matters related to satellite transport services, and is publishing the resulting Satellite Inquiry Report today. In light of the findings contained in the Satellite Inquiry Report, the Commission calls for comments on the continued application of a price ceiling, including its level, to Telesat's C-band services. These services are a major cost for providers of telecommunications services in delivering telecommunications services to Canadians in communities where terrestrial transport facilities are unavailable. The Commission also calls for comments on any associated regulatory measures that should be taken.

FMCC Participation:

August 21, 2015	- Initial Intervention
November 16, 2015	- Responses to Questions
January 11, 2016	- Response to CRTC C-Band Market Analysis
April 7, 2016	- Telecom Decision CRTC 2016-127

FMCC's response to Consultation on the Technical, Policy, and Licensing Framework for Advanced Wireless Services in the Bands 1755-1780 MHz and 2155-2180 MHz (AWS-3) (July 28, 2014) - Industry Canada. Through the release of this document, Industry Canada is hereby initiating a consultation on a technical, policy and licensing framework for Advanced Wireless Services (AWS) in the bands 1755-1780 MHz and 2155-2180 MHz (hereinafter referred to as AWS-3). Comments are being sought on all aspects related to the licensing of this spectrum.

FMCC Participation:

September 4, 2014 - Comments Submission

FMCC's response to Consultation on Policy Changes in the 3500 MHz Band (3475-3650 MHz) and a New Licensing Process in Rural Areas (August 19, 2014) - Industry Canada. In November 2013, Industry Canada published DGSO-004-13, Decisions Concerning the Renewal of 2300 MHz and 3500 MHz Licences (hereafter referred to as the Renewal Decision). The Renewal Decision indicated that the Department would launch a further consultation regarding certain aspects of the 3475-3650 MHz portion of the band (3500 MHz band). To address the demands for this spectrum by both fixed and mobile services, the Department is seeking comments on a number of proposals to enable both services to operate in the 3500 MHz band: (a) a new classification of Tier 4 areas to differentiate between urban and rural areas; (b) a new licensing process to be used for fixed wireless access (FWA) licences; (c) a fundamental reallocation of the 3500 MHz band to introduce mobile services; and (d) a transition policy that could take effect pending decisions made following this consultation.

FMCC Participation:

October 7, 2014 - Comments Submission

FMCC's response to Let's Talk TV: A Conversation with Canadians, Phase 3 (April 24, 2014) - Broadcasting Notice of Consultation CRTC 2014-190. The Commission launched Phase 3 of Let's Talk TV: A Conversation with Canadians. Phase 3 is a formal review of the television system that draws on the issues and priorities identified by Canadians in Phases 1 and 2. It will include an oral public hearing that began on 8 September 2014. In this notice, the Commission

• provides background information on the Canadian television broadcasting system;
• requests information regarding trends and future developments in television; and
• discusses and calls for comment on various issues and, in some cases, possible approaches for a revised framework for the television system.

The issues are organized according to three public interest outcomes:

• A Canadian television system that fosters choice and flexibility in selecting programming services• A Canadian television system that encourages the creation of compelling and diverse Canadian programming• A Canadian television system that empowers Canadians to make informed choices and provides recourse mechanisms in the case of disputes

FMCC Participation:

June 27, 2014	- Phase 3 Intervention
September 18, 2014	- Oral testimony via Skype (transcript available)
October 3, 2014	- Final Comments
March 19, 2015	- CRTC Decision 2015-96

FMCC's response to Appointment of an Inquiry Officer to review matters related to transport services provided by satellite (February 6, 2014) - Telecom Notice of Consultation CRTC 2014-44. The Commission announces the appointment of Commissioner Candice Molnar as an Inquiry Officer pursuant to section 70 of the Telecommunications Act. Commissioner Molnar will conduct an inquiry with respect to the Canadian marketplace for satellite services that are used by telecommunications service providers (TSPs) to provide telecommunications services to Canadians. Commissioner Molnar is expected to complete her review and report her findings to the Commission by October 2014.

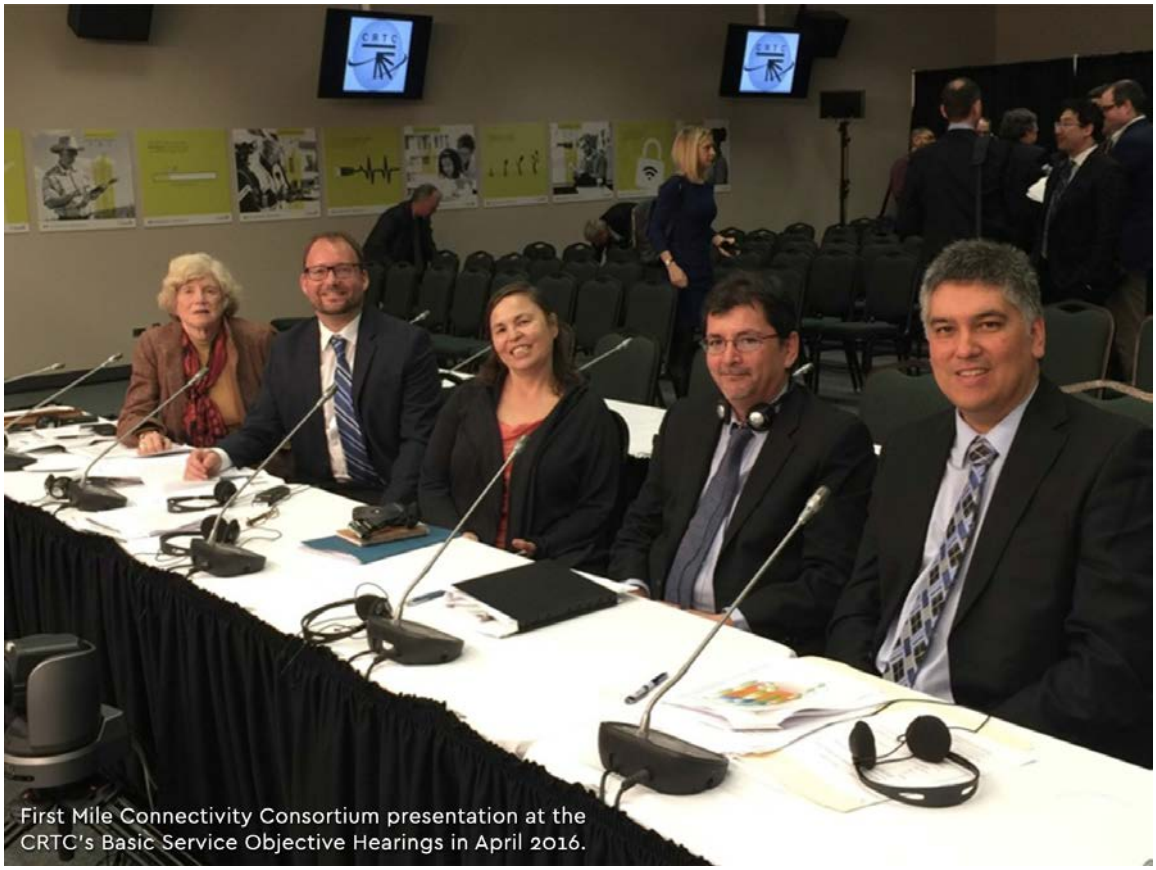
FMCC Participation:

February 19, 2014	- Letter introducing Commission to NICSN & research
July 8, 2014	- Initial Intervention
September 4, 2014	- Final Comments
October, 2014	- Satellite Inquiry Report
March 4 2015	- Northwestel Inc. – Tariffs for terrestrial retail Internet services - Telecom Decision CRTC 2015-78
March 4, 2015	- CRTC lowering rates for Internet services in northern Canada (CRTC News Release)

Review of Northwestel Inc.'s Regulatory Framework, Modernization Plan, and related matters (December 6, 2012) - Telecom Notice of Consultation CRTC 2012-669. The Commission initiates a proceeding to review the regulatory framework for Northwestel that will go into effect in 2014, as well as review other related matters, including the company's proposed Modernization Plan, the local service subsidy regime, the local service forbearance framework, and the services used by competitors. The Commission invites comments, with supporting rationale, on the issues raised in this notice by 6 February 2013. The proceeding will include a public hearing, which will begin on 17 June 2013 in Inuvik, Northwest Territories and will last no more than one day at that location. The public hearing will then reconvene on 19 June 2013 in Whitehorse, Yukon and is expected to last approximately two days. Further details will be provided in a follow-up to this notice.

FMCC Participation:

February 6, 2013	- Initial Intervention
March 27, 2013	- Response to request for information
June 18, 2013	- Presentation at CRTC hearings in Whitehorse, Yukon & via videoconference
July 8, 2013	- Final Comments



First Mile Connectivity Consortium presentation at the CRTC's Basic Service Objective Hearings in April 2016.

First Nations Innovation publications

Listed here are all the publications with abstracts from the First Nations Innovation project (2006-2018) that are available for download from the First Mile website: http://firstmile.ca/resources/publications/

91 (available in English)
Reference: Beaton, B., Seibel, F., Thomas, L. (2017). Digital technology adoption in resilient remote First Nations. In Brinklow, Laurie, Gibson, Ryan (eds.). *From Black Horses to White Steeds: Building Community Resilience*. Charlottetown, Canada: Island Studies Press at UPEI. 86-108.

Abstract: Our chapter explores how remote First Nations in northwestern Ontario are using digital technologies to create and support their social enterprises. We establish the link between digital infrastructure, social enterprises and resilient Indigenous communities in Canada. Out of necessity caused by scarce resources, the communities are challenging contemporary colonialism with their effective use of digital technologies to support their local social economy. Our analysis in part is based on a 2014 online community questionnaire that provides insights into the nature of the social economy in these unique remote communities and how their use of digital technologies is evolving as their local economy matures.

90 (available in English)
Reference: McMahon, R., Smith, T.J, Whiteduck, T. (2017). Reclaiming Geospatial Data and GIS Design for Indigenous-led Telecommunications Policy Advocacy. *Journal of Information Policy* 7(1). http://www.jstor.org/stable/10.5325/jinfopoli.7.2017.0423

Abstract: Geographic Information Systems (GIS) are important advocacy tools adopted by a range of users. However, without the means to reshape such platforms, reclaim the geospatial data they utilize, and generate the visualizations they produce, the increasing adoption of these resources threatens to disempower some users. In this paper we argue that the processes used to design such tools must transparently reflect these considerations. We ground this argument in a case study of a regulatory hearing on telecommunications infrastructure and services in Canada, and introduce a freely available online resource that documents our GIS design workflow in more detail.

89 (available in English)
Reference: McMahon, R., Hudson, H.E. & Fabian, L. (2017). Canada's Northern Communication Policies: The Role of Aboriginal Organizations. in N. Mulé & G. DeSantis (eds.), *The Shifting Terrain: Public Policy Advocacy in Canada*, Montreal and Kingston: McGill-Queen's University Press, 259-292.

Abstract: In this chapter, we examine how various institutions and policies have shaped the development of information and communication technologies (ICTs) in Canada's northern regions. We also outline how Aboriginal non-profits have mobilized to advance policy and regulatory reforms. This activity often arises from conditions of scarcity, reflecting this anthology's consideration of social justice as encompassing full and equitable participation among all citizens in society. Bringing reliable ICT infrastructures and services to the remote and sparsely populated North presents both technological and financial challenges. In these regions, the market alone cannot support the development and ongoing operations of ICT resources that support core public services and economic development initiatives. But over the past four decades, the activities of Indigenous and northern residents not only supported ICT development, but also led to the formation of non-profit ventures that contributed to that process in significant ways. These actors have worked to shape public policies in ways that govern the development of ICT infrastructures and services to provide a basis for long-term economic and community development.

88 (available in English)

Reference: McMahon, R., Whiteduck, T., Chasle, A., Chief, S., Polson, L. & Rodgers, H., (2016). Indigenizing digital literacies: Community informatics research with the Algonquin First Nations of Timiskaming and Long Point. *Engaged Scholar Journal* 2(1).

Abstract: Community-engaged digital literacies initiatives can greatly benefit from knowledge and practices developed by Indigenous peoples. In this paper, we describe a research project to develop digital literacies with two Algonquin First Nations in Quebec: Timiskaming and Long Point. This project reflects a First Mile approach to Community Informatics, informed by the theoretical framework of Indigenous resurgence and by engaged research methodologies. In telecommunications and broadband terminology, communities are typically framed as the 'last mile' of development. The First Mile approach challenges this situation by encouraging projects that emerge from the locally determined needs of collaborating communities, who gain ownership and control of processes and outcomes. Drawing on community-engaged research methodologies, university-based researchers facilitate this work while community-based researchers integrate data collection, analysis, and public outreach activities into the lived realities of community members.

87 (available in English)

Reference: Beaton, B., Perley, D., George, C. & O'Donnell, S. (2017). Engaging Remote Indigenous Communities Using Appropriate Online Research Methods. In N. Fielding, R. M. Lee & G. Blank (eds.), *The Sage handbook of online research methods* – 2nd edition, Sage. London, UK. Pages 563-577.

Abstract: Most people in Canada live in urban centres near the southern border with the United States. The Canadian north is dotted with small, remote, politically autonomous Indigenous communities. For millennia, the people and their ancestors have lived here surviving as hunters and gatherers with strong connections to the land and all that it provides. It is only since European colonization that they are living on small reserve lands with limited access to the resources needed to develop their communities. There is an ongoing need for respectful and collaborative research in partnership with remote Indigenous communities that supports their efforts to survive and thrive in their traditional homelands. In many northern areas there are no permanent roads and expensive flights on small planes are the only way to reach the small communities. Researchers, based in southern urban universities, have limited time and funds. Using online tools and online methods of conducting research is a requirement in this context. Finding ways to conduct appropriate and respectful online research with remote Indigenous communities is the focus of our proposed chapter.

86 (available in English)
Reference: Smith, T.J., McMahon, R., Whiteduck, T. (2017). *An Open Source GIS and Mapping Methodology for Internet Access in Remote and Rural Indigenous Communities.* First Mile Connectivity Consortium. February. 43 pages.

Abstract: In this report we discuss the efforts of the First Mile Connectivity Consortium (FMCC) to shape a Geographic Information System (GIS) platform into a tool for data-driven policy advocacy. This work took place in the context of a lack of robust, accurate data concerning broadband access in Canada's northern and remote regions. Given this challenge, we sought to develop a transparent methodology to (re)present the limited existing statistical data on broadband access and affordability in maps of remote and Northern Indigenous communities in Canada. This was done to outline a GIS design process that we can adopt and adapt as more accurate data from these regions becomes available, as well as highlight and reflect on the design choices we made throughout this project.

85 (available in English)
Reference: Blake, S., McMahon, R. Williams, D. (2016). *A Guide to Federal Funding for Indigenous Broadband in Canada. First Mile Connectivity Consortium*. April. 44 pages.

Abstract: This guide provides an overview of active and historical broadband funding mechanisms provided by government departments and funding agencies at the federal level. We are presenting this information to support the accessibility of these funds for community-based organizations, and specifically for Indigenous organizations. Many of these funds are also available to private-sector entities. While telecommunications companies have an important role to play in broadband initiatives, the FMCC advocates

for community-based Indigenous organizations to take a lead role in the decision-making leading to the administration of these funds, to support economic and community development in their member communities. To this end, this review is also intended to provide an overview of current and historical federal funding programs for broadband to support coordination efforts among funding agencies and the Canadian Radio-Television and Telecommunications Commission (CRTC).

84 (available in English)
Reference: Perley, D., O'Donnell, S., George, C., Beaton, B. & Peter-Paul, S. (2016). *Supporting Indigenous Language and Cultural Resurgence with Digital Technologies.* Fredericton: Mi'kmaq Wolastoqey Centre. University of New Brunswick, November.

Abstract: This report synthesizes knowledge about how digital technologies are supporting Indigenous language and cultural resurgence. The use of digital technologies supporting the transfer, preservation, sharing and protection of Indigenous languages and culture is evident in many innovative, exciting initiatives around the world. We focus in particular on knowledge, approaches and examples from Wabanaki territory where the authors are based. The report introduction begins by recognizing and honouring the unceded traditional territories of Wolastoqiyik within the Wabanaki Confederation as the place for the creation of this report as an essential initial step in positioning our work.

83 (available in English)
Reference: O'Donnell, S. & Perley, D. (2016) Toward a Sociology of the Reconciliation of Conflicting Desires (2016). *Canadian Review of Sociology*. 54(4) 474-481.

Abstract: Desire-based research provides people and communities the opportunity to share their dreams and hopes for a better future. However conflicting desires are difficult to reconcile. We suggest that sociological researchto understand conflicting desires is required to support reconciliation work by Indigenous and non-Indigenous people in Canada. Our contribution begins by identifying much of current and past sociological research about Indigenous people and communities as damaged-centred, i.e. identifying problems and obstacles in the hope that the knowledge will lead to change. This model of social change is flawed. We believe that most Canadians desire justice for Indigenous peoples while at the same time desiring land and access to resources, desires that deny that justice. How we as a society reconcile these desires will determine the extent to which true justice for Indigenous peoples will be achieved. We propose a sociology of the reconciliation of conflicting desires and suggest some practical ways that this type of research could move forward.

82 (available in English)
Reference: O'Donnell, S., Beaton, B., McMahon, R., Hudson, H.E., Williams, D., Whiteduck, T. (2016). *Digital Technology Adoption in Remote and Northern Indigenous Communities in Canada.* Canadian Sociological Association 2016 Annual Conference. University of Calgary, Calgary, Alberta, June.

Abstract: This paper is the most comprehensive review and analysis to date of the adoption and use of digital technologies in remote and northern Indigenous communities in Canada. It is based primarily on a literature review, supplemented by personal communications with key informants and the authors' analysis based on knowledge from extensive research and practical experience in the topic area. We begin by developing a "whole community" approach to understanding how remote Indigenous communities adopt digital technologies for community, social and economic needs. To extend technology adoption models that focus on "individual" and "household" metrics, we use a community informatics analysis: technology is adopted within a broad ecology of community support that makes it possible for these tools and the information they transmit to be available for community members. The whole community approach guided our review and analysis. The literature highlights the role of digital technologies in community organizations and services as well as the regional community intermediary organizations that support the development and sustainability of digital technologies and networks in Indigenous communities.

81 (available in English)
Reference: Julian, A. & Denny, I. (2016). Kina'muanej Knjanjiji'naq mut ntakotmnew tli'lnu'ltik (In the Foreign Language, Let us Teach our Children not to be Ashamed of Being Mi'kmaq). *In Education* 22(1), 148-160.

Abstract: Colonialism has assimilated and suppressed Indigenous languages across Turtle Island (North America). A resurgence of language is needed for First Nation learners and educators and this resurgence is required if Indigenous people are going to revitalize, recover and reclaim Indigenous languages. The existing actions occurring within Indigenous communities contributing to language resurgence include immersion schools. Eskasoni First Nation opened its doors in September 2015 to a full immersion school separate from the English speaking educational centers. This move follows the introduction of Mi'kmaq immersion over ten years earlier within the English speaking school in the community. The Mi'kmaw immersion school includes the Ta'n L'nuey Etl-mawlukwatmumk Mi'kmaw Curriculum Development Centre that assists educators in translating educational curriculum from the dominant English language to Mi'kmaq. In this paper, stories are shared about the Eskasoni immersion program's actions towards language resurgence through a desire-based lens, based on rich narratives from three Mi'kmaw immersion educators.

80 (available in English)
Reference: Beaton, B. & Carpenter, P. (2016). Digital Technology Innovations in Education in Remote First Nations. *In Education*, 22(1), 42-60.

Abstract: Using a critical settler colonialism lens, we explore how digital technologies are being used for new education opportunities and First Nation control of these processes in remote First Nations. Decolonization is about traditional lands and creating the conditions necessary so Indigenous people can live sustainably in their territories (Simpson, 2014; Tuck & Yang, 2012). Remote First Nations across Canada face considerable challenges related to accessing quality adult education programs in their communities. Our study, conducted in partnership with the Keewaytinook Okimakanak Research Institute, explores how community members living in remote First Nations in Northwestern Ontario are using digital technologies for informal and formal learning experiences. We conducted an online survey in early 2014, including open-ended questions to ensure the community members' voices were heard. The critical analysis relates the findings to the ongoing project of decolonization, and in particular, how new educational opportunities supported by digital technology enable community members to remain in their communities if they choose to, close to their traditional lands.

79 (available in English)
Reference: Beaton, B., McMahon, R., O'Donnell, S., Hudson, H., Whiteduck, T. & Williams, D. (2016). *Digital Technology Adoption in Northern and Remote Indigenous Communities.* Prepared for Innovation, Science and Economic Development Canada. First Mile Connectivity Consortium. March.

Abstract: This report prepared by the FMCC team for Innovation, Science and Economic Development Canada (ISED) addresses research on digital technology adoption in remote and northern First Nation and Inuit communities. It summarizes the major elements of our project, including the literature review, identification of primary and secondary data sources, methodologies, strategies and research questions, and recommendations from our research. It includes six comprehensive appendices that are linked to the appropriate report sections and are available online.

78 (available in English)
Reference: Beaton, B. & Carpenter, P. (2015). Creating appropriate participatory action research with remote First Nations. *Antistasis*, 5(2).

Abstract: Developing participatory action research strategies involves the inclusion of all the partners throughout the entire process, from the birth of the idea to the return of the results to the First Nation. Beginning in the fall of 2013, Keewaytinook Okimakanak Research Institute (KORI) and the KO First Nations worked with research partners

at the University of New Brunswick to develop and deliver an online survey. The survey of KO First Nations gathered information about their use of digital technologies and local programs using these tools. This article describes the entire research methodology successfully used to develop, collect and produce reports for use by the researchers and the First Nations.

77 (available in English)
Reference: Beaton, B., Burnard, T., Linden, A. & O'Donnell, S. (2015). Keewaytinook mobile: An Indigenous community-owned mobile phone service in northern Canada. In L. Dyson, S. Grant & M. Hendriks (eds.), *Indigenous People and Mobile Technologies*, Routledge. Sydney, Australia, 109-124.

Abstract: This chapter traces the development of the Keewaytinook Mobile (KMobile) service in northern Ontario, Canada. Keewaytinook Okimakanak's (KO) Kuhkenah Network (KO-KNET) Services supports many services requiring broadband infrastructure, including the Keewaytinook Mobile (KMobile) cellular service. The KMobile operations model is for partner First Nations to develop, own and operate local mobile services in partnership with KO-KNET. The community-based KMobile development occurs in the face of extreme challenges including geographical, technical challenges; small, dispersed populations; colonial federal policies; and social and organizational restraints. KMobile is a welcome service addressing critical safety and development requirements facing every remote community.

76 (available in English)
Reference: McMahon, R., Whiteduck, T., & Timiskaming First Nation (2015). First Mile Methodologies in Community Informatics Research: Learning from First Nations (Notes from the Field), *Journal of Community Informatics* 11(3).

Abstract: How can Indigenous research methodologies inform Community Informatics? In this paper we reflect on this question by considering the problematic history of researcher-Indigenous relations before exploring some innovative approaches. Applications of these research tools must emerge during the course of a project to ensure they meet the contexts and needs of community and university partners. Examples from an ongoing research partnership, the First Nations Innovation (FNI) project, show how this 'First Mile' work can support Community Informatics research more generally.

75 (available in English)
Reference: McMahon, R., LaHache, T., & Whiteduck, T. (2015). Digital data management as Indigenous resurgence in Kahnawà:ke. *International Indigenous Policy Journal* 6(3).

Abstract: Indigenous peoples are addressing the ongoing impacts of settler colonialism through a variety of expressions of community resurgence. Among these initiatives are those leveraging digital technologies. In the emergent network society, digital infrastructures, and information and communication technologies are powerful tools that can support self-government. In this context, we document the development of digital data management in the Mohawk community of Kahnawà:ke. Data is the digital information generated by a community, encompassing areas like research, education, finance, health, membership, housing, lands, and resources. As self-determining political entities, each First Nation determines how this data is interpreted and used, supported by tools like data management platforms and information-sharing protocols. In this article, we show how local practices regarding the collection, use, and sharing of digital data in Kahnawà:ke provides a clear example of Indigenous resurgence.

74 (available in English)
Reference: George, C. (2015) Nikma'jtut Apoqnmatultinej: Reclaiming Indigeneity via ancestral wisdom and new ways of thinking. *Canadian Sociological Association*, University of Ottawa, June.

Abstract: Settler colonialism continues to marginalize and threaten Indigenous epistemology, languages and ways of knowing. This eight week auto-ethnographic study details my use of Information and Communication Technology (ICT) to deconstruct the epistemological and ontological perspectives I have acquired during my lived experience immersed in settler society. My hope is to gain better insight into Mi'gmaw worldview through an introspective journey to learn my mother's language thus my own cultural identity.

73 (available in English)
Reference: Molyneaux, H., O'Donnell, S., Kakekaspan,C., Walmark, B., Budka, P., Gibson, K. (2014) Social Media in Remote First Nation Communities. *Canadian Journal of Communication* 39(2) 275-288.

Abstract: Community resilience in First Nations includes ties to people both inside and outside the community, intergenerational communication, sharing of stories, and family and community connectedness. This study, based on a survey of internet users in the Sioux Lookout region of Northwestern Ontario, explores the link between social networking sites (SNS) and community resilience. The region is home to some of the

most isolated First Nation (indigenous) communities in Canada. Cultural and familial links between these communities are strong, yet until the fairly recent widespread use of the internet, maintaining regular communications to strengthen cultural ties was challenging. This study examines the links between travel and communication online, how social media is used to preserve culture and maintain communication, and the implications of social networking for community resilience.

72 (available in English)
Reference: McMahon, R., LaHache, T., and Whiteduck, T. (2014). *Digital Data Management in Kahnawà:ke.* Canadian Sociological Association. Brock University, St. Catherines, Ontario, May.

Abstract: Indigenous communities are addressing the ongoing impacts of settler colonialism through a variety of expressions of resurgence. Among these initiatives are those leveraging digital technologies. In the emergent network society, digital infrastructures and information and communication technologies are powerful tools that can support self-government activities. This paper documents the development of digital data management in the Mohawk community of Kahnawà:ke. Our study outlines how Kahnawà:ke supports community data management through an enabling environment that includes administration (policies, analysis, supervision), technical architectures (infrastructure, connectivity), data management systems, and personnel. Note: This publication was later revised and published as a journal article, publication #76.

71 (available in English)
Reference: McMahon, R., Gurstein, M., Beaton, B., O'Donnell, S., Whiteduck, T. (2014) Making Information Technologies Work at the End of the Road. *Journal of Information Policy* 4, 250-269.

Abstract: Marginalized remote and rural areas face many challenges, including the provision of telecommunications services. Regardless of universal service policies or other political promises, rural communities can be deemed unprofitable by service providers while government assistance is managed by faraway regulators who lack understanding of the affected communities and citizens. The authors assess these challenges in the context of the First Nations of Canada, via a decentralized "First Mile" framework. They find that these remote communities are capable of local innovation and can collaborate with intermediary organizations to build digital infrastructures, by bridging the gap between the public and private sectors.

70 (available in English)
Reference: McMahon, R., Hudson, H., Fabian, L. (2014) Indigenous Regulatory Advocacy in Canada's Far North: Mobilizing the First Mile Connectivity Consortium. *Journal of Information Policy* 4, 228-249.

Abstract: Marginalized groups such as Indigenous communities and residents of remote and rural areas face daunting challenges as they attempt to influence regulatory decision making. Can these under-resourced groups hope to have their voices heard in regulatory proceedings, in the face of well-funded corporate interests? Applying a participatory research method to regulatory hearings regarding telecommunications services in Canada's far north, the authors argue that they can, and identify specific strategies and tactics that they can employ when doing so.

69 (available in English)
Reference: Beaton, B., Seibel, F. & Thomas, L. (2014). *Valuing the social economy and information and communication technologies (ICT) in small remote First Nations.* Association of Social Economy and Non-Profit Research, Brock University, St. Catherines, Ontario, May.

Abstract: Remote First Nations (Indigenous communities) in Canada are challenging contemporary colonialism with their effective use of information and communication technologies (ICT) supporting their local social economy. Out of necessity caused by scarce resources, the social economy in First Nations uses innovative ICT solutions to support required services, economic opportunities, and sustainable communities. The analysis of a 2014 online survey provides insights into the nature of the social economy in these unique remote communities and how their use of ICT is evolving as their local economy matures. A critical examination of local social enterprises and entrepreneurs through an Indigenous lens supports the resurgence of a healthy Indigenous economy in small, remote communities in Canada's far north. Emerging from 500 years of oppressive and racist colonial regimes, policies, and attitudes, First Nations remain resilient. They are determined to live their lives with dignity, respect, strength, and determination in their traditional territories. Following the teachings and wisdom found in thousands of years of a rich and vibrant history merged with and supplemented by modern communication tools, First Nations are sharing and protecting all their relationships with their natural environment and others.

68 (available in English)
Reference: Beaton, B., Carpenter, P. (2014) *A critical understanding of adult learning, education and training using information and communication technologies (ICT) in remote First Nations.* Canadian Association for Study of Indigenous Education. Brock University, St. Catherines, Ontario, May.

Abstract: Through a critical settler colonialism lens we explore how information and communication technologies (ICT) supports learning, education and training and First Nation control of these processes in remote communities. The central theme of the current study is that decolonization is about land and creating the conditions necessary so Indigenous peoples have the opportunity to connect with and live sustainably on their traditional territories. Remote First Nations across Canada face considerable challenges and opportunities related to adult learning and quality education and training programs for local citizens. Our study, conducted in partnership with the Keewaytinook Okimakanak (KO) tribal council, explores how community members living in five remote First Nations in northwestern Ontario are using ICT for informal learning and education and training opportunities. KO and the researchers conducted an online survey of residents of the KO First Nations in early 2014 that included many open-ended response questions to ensure the voices of community members are heard. The critical analysis considers how the survey findings relate to the ongoing project of decolonization, and in particular, how these new ICT opportunities support the ability of community members to stay on the land.

67 (available in English)
Reference: McMahon, R., Philpot, D., O'Donnell, S., Beaton, B., Whiteduck, T., Burton, K., Gurstein, M. (2014) Introduction to the Special Issue: The First Mile of Broadband Connectivity in Communities. *Journal of Community Informatics*, 10 (2).

Abstract: This special issue of the Journal of Community Informatics profiles First Mile projects and efforts that are as innovative, unique and vibrant as the communities from which they emerge. Several contributions in this issue deal with Canadian cases and others with remote and rural contexts around the world. "First Mile" refers to broadband infrastructure development that puts the needs of local communities first and ahead of the needs of private sector telecommunication corporations. Around the world, broadband infrastructure and networks are rapidly being developed in communities marginalized in the network society. The relationships, structures and agreements put into place at this early development stage will shape how broadband systems are created and managed in the future. First Mile strategies include developing locally owned and managed telecommunication structures and networks

66 (available in English)
Reference: Kakekaspan, M., O'Donnell, S., Beaton, B., Walmark, B., Gibson, K. (2014) The First Mile Approach to Community Services in Fort Severn First Nation. *Journal of Community Informatics*, 10 (2).

Abstract: Fort Severn Washaho Cree Nation is a small, remote northern community on the Severn River near Hudson Bay in Ontario. The community services delivered in Fort

Severn are managed and controlled by the local leadership, working in collaboration with their regional tribal council Keewaytinook Okimakanak and other strategic partners. The First Mile is both an emerging policy approach and a framework that supports holistic and community-centred broadband development and use by First Nations. First Mile focuses on community management and control of local broadband infrastructure and services. The article discusses how Fort Severn First Nation is putting First Mile concepts into action.

65 (available in English and French)
Reference: Whiteduck, T., Beaton, B. (2014) Building First Nation Owned and Managed Fibre Networks across Quebec. *Journal of Community Informatics*, 10 (2).

Abstract: In Canada, small rural and remote communities continue to struggle to access equitable and affordable high speed internet connections that address local priorities and needs. The First Nations Education Council (FNEC) is working with their community partners across Quebec to plan and operate a First Nation owned and managed fibre network to deliver broadband connections throughout each community. Public and private partnerships were established by FNEC to fund and construct the regional and local networks connecting these rural and remote communities. The paper describes the history of this development along with its future goals. Sharing infrastructure and network support services with all the other service providers (health, education, administration, justice, policing, homes, etc.) in each of these communities helps to sustain the ongoing operation and maintenance of the network.

64 (available in English)
Reference: Beaton, B., Campbell, P. (2014) Settler Colonialism and First Nations e-Communities in Northwestern Ontario. *Journal of Community Informatics*, 10 (2).

Abstract: Across Canada First Nation community leaders are adopting the e-Community approach for their local broadband development. E-Community is fueled by the desire of First Nations to own, control, and manage their local infrastructure and online services. The article develops the concept of the importance of locally owned and managed telecommunication infrastructure supporting First Nation e-Community and local resilience. The First Nations e-Community framework provides choices for local people to remain in their communities and contribute to the growth and positive development in these challenging environments. The First Nations' struggle against settler colonialism to access their lands and resources by the colonial governments and their corporate partners continues today. Strong, resilient First Nations are now in a position to influence and support outcomes that benefit themselves, the lands and others in a positive manner.

63 (available in English)
Reference: McMahon, R., Mangiok, T. (2014) From the First Mile to Outer Space: Tamaani Satellite Internet in Northern Quebec. *Journal of Community Informatics*, 10 (2).

Abstract: Across Canada, discrepancies of access to broadband exist between urban centres and rural and remote Aboriginal communities. Government, public and private sector organizations are partnering to address these digital divides. Some employ a 'First Mile' approach that foregrounds how community-based institutions are driving development. This article provides a First Mile case study from the Inuit territory of Nunavik. We describe the cultural, social and political contexts the people of Nunavik and their government navigated to establish broadband in the region's 14 northern villages. The Kativik Regional Government s building and administering infrastructure that delivers public services and encourages economic development, balancing centralized efficiencies with the needs of residents in villages like Ivujivik.

Note: This article, led by First Nations Innovation Postdoctoral Fellow Rob McMahon, is based on his PhD thesis research at Simon Fraser University and was supported by a PhD scholarship from SFU. Rob's full thesis can be accessed from this link: http://summit.sfu.ca/item/13532

62 (available in English)
Reference: Whiteduck, G., Tenasco, A., O'Donnell, S., Whiteduck, T., Lockhart, E. (2014) Developing an e-Community Approach to Community Services in Kitigan Zibi Anishinabeg First Nation. *Journal of Community Informatics*, 10 (2).

Abstract: Kitigan Zibi Anishinabeg First Nation is a leader in community and social services. This rural First Nation – the largest Algonquin community in Canada - has since 1980 successfully supported community members to take ownership of service development and delivery. They have made many services and programs available to community members, including: an elementary and secondary school, a day-care, a community hall, a community radio, a health centre, a police department, a youth centre, and others. Their community services are led and staffed by fully trained and qualified community members. As computers, broadband 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. However they face many challenges in their efforts to remain innovative and plan for future delivery of services using technologies. Our study, based on qualitative analysis from interviews with 14 community services staff in Kitigan Zibi, will explore their current successes, challenges, and future potential for integrating information and communication technologies (ICT) into services that promote community and social development. The analysis discusses the eCommunity approach advocated by the Assembly of First Nations.

61 (available in English)
Reference: Philpot, D., Beaton, B., Whiteduck, T. (2014) First Mile Challenges to Last Mile Rhetoric: Exploring the Discourse between Remote and Rural First Nations and the Telecom Industry. *Journal of Community Informatics*, 10 (2).

Abstract: Solving Canada's digital divide remains a significant issue, particularly considering how broadband networks have an impact on remote and rural areas politically, economically, socially, and culturally. Attached to this, as well, are the politics of the historical relationship between remote and rural First Nation communities, corporations, and the government. The way in which the relationship between remote and rural First Nations, the federal and provincial governments and the telecommunications industries is reproduced is largely through discursive means. One of the consequences of this is that many outsiders to this issue are largely misinformed through documents and press releases. These documents frame remote and rural First Nations as helpless and dependent upon government and telecom industry intervention in order to secure their dependence upon their services. We argue that this is another form of political colonialism; a form of colonialism which seeks to create dependence upon the service economy for its own survival. In this article, we examine the discourse surrounding the issue of remote and rural broadband connectivity as a means of exploring the reproduction of established narratives of First Nations dependence upon aid and service.

60 (available in English and French)
Reference: Lockhart, E., Tenasco, A., Whiteduck, T., O'Donnell, S. (2014) Information and Communication Technology for Education in an Algonquin First Nation in Quebec. *Journal of Community Informatics*, 10 (2).

Abstract: Kitigan Zibi Anishinabeg First Nation is an innovative rural community in Quebec. Located 130 kilometers north of Ottawa, it is the closest First Nation to the Canadian capital. In both population and territory, Kitigan Zibi is the largest of the ten Algonquin communities. Broadband connectivity and information and communication technologies (ICT) are important to the community and incorporated into everyday operations. This paper explores the use of technology in the education sector in Kitigan Zibi, in particular the situation of having technology readily available at school and less so at home. This transition from a technology-filled classroom to limited or no ICT access at home is a challenge, not only for individual students and their families but also for the community as a whole.

59 (available in English)
Reference: Simon, J., Burton, K., Lockhart, E. & O'Donnell, S. (2014) Post-Secondary Distance Education in a Contemporary Colonial Context: Experiences of Students in a Rural First Nation in Canada. *The International Review of Research on Open and Distance Learning.* 1(15), 1-19.

Abstract: Post-secondary distance education gives students and their families living in remote and rural regions the option to stay in their communities while they study instead of moving closer to the universities in cities. Post-secondary distance education is an option in many rural and remote First Nation (Indigenous) communities in Canada; however there are many challenges to successful adoption in these communities. There are also many opportunities for post-secondary institutions to expand their abilities and capacity in developing and delivering appropriate content supporting these unique self-governing environments in Canada. We explore the experiences of students from a rural First Nation in Canada with post-secondary distance education, focusing on how different delivery methods offer both opportunities and challenges for community-based students. The study is situated in the context of contemporary colonialism in Canada.

58 (available in English)

Reference: Gray-McKay, C., Gibson, K., O'Donnell, S., People of Mishkeegogamang (2014) An Inquiry into Community Members' Use and Attitudes toward Technology in Mishkeegogamang Tepacimowin Networks. *The Journal of Community Informatics*, 10 (1).

Abstract: Mishkeegogamang First Nation is a rural Ojibway community in Northwestern Ontario. Mishkeegogamang community members of all ages use a wide array of information and communication technologies (ICT) as tools in daily life, and as a means to support individual and community goals. This collaborative paper tells the story of how Mishkeegogamang uses ICT for community development, drawing on 17 interviews with community members, and several community member profiles. A basic descriptive quantitative analysis is also provided, giving information on frequency of use of a wide variety of technologies. Community informatics theory guides the interpretation of the findings. A broad range of ICT use by community members is explored, including the Mishkeegogamang website, the busy yet invisible use of social networking sites, youth and ICT, ICT for health and education, and ICT to support traditional activities. Finally, a section on challenges and needs for facilitating ICT use is also provided.

57 (available in English)

Reference: Carpenter, P., Gibson, K., Kakekaspan, C., & O'Donnell, S. (2013). How Women in Remote and Rural First Nation Communities are Using Information and Communications Technologies (ICT). In W. Ashton & A. S. Carson (Eds.), [Special issue]. *The Journal of Rural and Community Development*, 8(2), 79-97.

Abstract: First Nations women have a strong role guiding the success of their family and their community. In the past, women nurtured their family, ensuring their food and safety. These responsibilities are still true today with the added challenges and opportunities of modern day life. In Northern Ontario, many remote and rural First Nation communities

are connected to integral services via broadband. The current study explores how First Nations women are using information and communication technology (ICT) and if the technology can address some of their challenges and open up new opportunities. Two hundred and thirty one women living in remote and rural First Nation communities in Northern Ontario completed an online survey, sharing their thoughts and experiences with regard to: ICT use in daily life, ICT for health and wellness, ICT for cultural preservation, and what is needed to support their effective use of ICT. The findings suggest that the women in these remote communities are active users of ICT, using the internet for frequent communication with people living in their own communities along with other communities and elsewhere in Canada. The women are also familiar with telemedicine, use the internet in a variety of ways to preserve their culture, and identified many strategies for supporting their effective use of ICT. Finally, we explore a case-study of how women in Slate Falls First Nation are using ICT.

56 (available in English)
Reference: Whiteduck, T., Beaton, B. (2013) *Building First Nation Owned and Managed Fibre Networks Across Quebec.* World Social Science Forum, Montreal, QC, Canada. October.

Abstract: In Canada, small rural and remote communities continue to struggle to access equitable and affordable high speed internet connections that address local priorities and needs.The First Nations Education Council (FNEC) is working with their community partners across Quebec to plan and operate a First Nation owned and managed fibre network to deliver broadband connections throughout each community. Public and private partnerships were established by FNEC to fund and construct the regional and local networks connecting these rural and remote communities. The paper describes the history of this development along with its future goals. Sharing infrastructure and network support services with all the other service providers (health, education, administration, justice, policing, homes, etc) in each of these communities helps to sustain the ongoing operation and maintenance of the network.

Note: This publication was later revised and published as a journal article, publication #65.

55 (available in English)
Reference: McMahon, R., Whiteduck, T., Beaton, B. (2013) *Shaping First Nations broadband policy in Canada: Indigenous community intermediary organizations in the age of austerity*. World Social Science Forum, Montreal, QC, Canada. October.

Abstract: Politically autonomous First Nations have set up organizations that mediate their relationships with federal and provincial governments. These regional organizations have a broad mandate that includes technology as one component of their work.

In this paper, we frame these organizations as ‘community intermediaries’ and demonstrate how one of their functions is to act as a bridge between remote First Nations and various federal and provincial government agencies. These intermediary organizations operate complex digital networks and applications while supporting their First Nation constituents to assert self-determined development goals in a complicated and dynamic multi-stakeholder environment.

54 (available in English)
Reference: Beaton, B., Campbell, P. (2013) *Settler Colonialism and First Nations E-Communities in Northwestern Ontario.* World Social Science Forum, Montreal, QC, Canada. October.

Abstract: Across Canada First Nation community leaders are adopting the e-Community approach for their local broadband development. E-Community is fueled by the desire of First Nations to own, control, and manage their local infrastructure and online services. The paper develops the concept of the importance of locally owned and managed telecommunication infrastructure supporting First Nation e-Community and local resilience. The First Nations e-Community framework provides choices for local people to remain in their communities and contribute to the growth and positive development in these challenging environments. The First Nations' struggle against settler colonialism to access their lands and resources by the colonial governments and their corporate partners continues today. Strong, resilient First Nations are now in a position to influence and support outcomes that benefit themselves, the lands and others in a positive manner.

Note: This publication was later revised and published as a journal article, publication #64.

53 (available in English)
Reference: McMahon, R., Hudson, H., Fabian, L. (2013) *Indigenous Broadband Policy Advocacy in Canada's Far North. The Role of Advocacy in Media and Telecom Policy: A by-invitation experts' workshop.* New America Foundation. Washington, September.

Abstract: In 2012, Canada’s communications regulator, the Canadian Radio-television and Telecommunications Commission (CRTC), initiated a consultation on infrastructure and services in the northern territories. The consultation included the CRTC’s first public hearings in the far North, where remote and sparsely populated communities are currently served by a single terrestrial incumbent and a few satellite operators. A national group of indigenous broadband policy advocates seized on this opportunity to intervene in the broadband development process. The First Mile Connectivity Consortium, a nonprofit coalition of academic researchers and First Nations technology

organizations, argued that Aboriginal organizations themselves could provide telecommunications services in many northern communities. This case study demonstrates how research and advocacy can be introduced in regulatory proceedings.

Note: This publication was later revised and published as a journal article, publication #70.

52 (available in English)
Reference: Philpot, D., O'Donnell, S., Kenny, C. (2013) *Face-to-Faces Work: Audience Response to First Nations Social Movement Videos*. Canadian Communication Association, University of Victoria, June 5-7.

Abstract: There has been considerable public interest in the role of alternative media in protest movements and social movements in general. Virtually all of the commentary has focused on the production and dissemination of these alternative media forms by social movement actors rather than the reception of these alternative messages by audiences. The current study begins this discussion by applying a critical analysis tothe results of an exploratory study of the reception by the general public of online videos about First Nations. The methodology includes an empirical study of how people viewed and responded to two online videos about First Nations culture. Although both our study and analysis is very exploratory we believe it is an important contribution because of the lack of previous research on this topic.

51 (available in English)
Reference: Gurstein, M., Beaton, B., O'Donnell, S., Whiteduck, T. (2013) *Making Information Technologies Work at the End of the Road: Using Broadband to Build Sustainable Remote and Rural Communities. Theory of Broadband: Regulation, Networks and Applications.* A By-invitation Experts Workshop, The Columbia Institute for Tele-Information, Columbia University, New York City, USA. May 30-June 1.

Abstract: In this paper we discuss both how the Internet and broadband networks generally are supporting a centralization of power and also how they have become the basis for a very significant decentralization of power. We document the development of this decentralizing counter-trend within the context of a "first mile" approach to telecommunications - specifically, the case of First Nations (indigenous) people living in small, jurisdictionally autonomous communities in remote parts of Canada. The paper will further examine how a community-based (community informatics) approach to the institutional management of the telecommunications infrastructure and applications has in turn supported and enabled the development of a range of community-based semi-autonomous institutions and services -- including in education, health and governance -- developed and managed and responding to specific local requirements at the "edge."

Note: This publication was later revised and published as a journal article, publication #72.

50 (available in English)
Reference: O'Donnell, S., Johnson, L., Katepetum-Schultz, T., Burton, K., Whiteduck, T., Mason, R., Beaton, B., McMahon, R., Gibson, K. (2013) Video conferencing for First Nations Community-Controlled Education, Health and Development. *The Electronic Journal of Communication*. 23 (1&2)

Abstract : Video conferencing is a powerful tool that First Nations in Canada are using to create communication spaces for local control of community services and community development. For First Nations in Canada, video conferencing sessions are alternative public spheres for engagement and interaction outside of mainstream control. This article discusses how First Nations are using video conferencing to create and support community-controlled education and training, health services, and other community development activities. Perspectives of a video conferencing bridge coordinator and a case study from Keewaywin First Nation are discussed. Challenges for video conferencing in First Nations are reviewed, followed by some thoughts about the future of video conferencing in these unique communities.

49 (available in English)
Reference: First Nations Innovation (2013) *First Nations Innovation Licence to Publish: A template for a form used to retain the copyright of publications by First Nations.* First Nations Innovation Project: March.

Abstract: This licence template is used by the First Nations Innovation project. The purpose of the licence is to retain copyright for First Nations for articles published in journals, books and other publications. The licence can be used instead of signing over copyright to a publisher for works produced by authors working with First Nations. We have made this licence template available in Word format so that it can be modified and used by other First Nation authors, organizations and projects. Our template is based on the licence used by the Government of Canada to retain copyright for the Crown for articles published by authors who are government employees - we believe that by using this licence the copyright is retained by First Nations for articles published by authors working with First Nations.

48 (available in English)
Reference: Carpenter, P., Gibson, K., Kakekaspan, C., O'Donnell, S. (2012). *How women in remote and rural First Nation communities are using information and communication technologies.* Connecting the Future: Rural Broadband Technology, Policy and Impact. Queens University School of Business, Kingston, Ontario, December.

Abstract: First Nations women have a strong role guiding the success of their family and their community. In the past, women nurtured their family, ensuring food and safety for their family. These responsibilities are still true today with the added challenges and opportunities of modern day life. After elementary school, many First Nations children living in remote and rural communities move to urban areas for high school education, and with the adoption of information and communication technologies (ICT) there are sometimes fewer community interactions as people stay at home more instead of meeting in person. The study explored how First Nations women are using ICT and if the technology can address some of their challenges and open up new opportunities. Two hundred and thirty one women living in remote and rural First Nation communities in Northern Ontario completed an online survey, sharing their thoughts and experiences with regard to: ICT use in daily life, ICT for health and wellness, ICT for cultural preservation, and what is needed to support their effective use of ICT. The findings suggest that the women are active users of ICT, using the internet for frequent communication with people living in their own communities along with other communities and elsewhere in Canada. The women are also familiar with telemedicine, use the internet in a variety of ways to preserve their culture, and identified many strategies for supporting their effective use of ICT. Recommendations for ways forward are discussed. Note: This publication was later revised and published as a journal article, publication #57.

47 (available in English)
Reference: Whiteduck, T., Beaton, B., Burton, K., & O'Donnell, S. (2012) *Democratic Ideals Meet Reality: Developing Locally Owned and Managed Broadband Networks and ICT Services in Rural and Remote First Nations in Quebec and Canada*. Keynote paper for the Community Informatics Research Network (CIRN) Conference, Prato, Italy, November.

Abstract: This paper is based on a keynote presentation at the 2012 Community Informatics Research (CIRN) conference in Prato, Italy by Tim Whiteduck, Technology Director at the First Nations Education Council (FNEC). The paper was co-written with the FNEC research partners. First Nations in Canada are part of a complex web of relationships and networks that share information, resources and learning related to broadband and Information Communication Technologies (ICT). First Nation community leaders, through their national organization the Assembly of First Nations (AFN),

have adopted the e-Community as an overarching approach for broadband development. This development is fueled by the desire by First Nations to own, control, and manage their local infrastructure. Regional organizations, including the regional management organizations (RMOs) for the First Nations SchoolNet program, are key players collaborating with communities to support their use of broadband and ICT. In particular, the video conferencing network built by the RMOs in collaboration with the communities was and continues to be a catalyst for increased broadband development. FNEC, the RMO for Quebec is discussed in detail, including its technology development and related activities. FNEC works with partner organizations across Canada, notably the Keewaytinook Okimakanak (KO) tribal council in northwestern Ontario and Mi'kmaw Kina'matnewey (MK) in the Atlantic region. Together the three organizations are also partners with the University of New Brunswick and Simon Fraser University on several research and outreach projects, two of which - First Mile and VideoCom / First Nations Innovation- are briefly discussed.

46 (available in English)

Reference: McKenzie, O., Kakekaspan, C., Gibson, K., O'Donnell, S., Kakepetum-Schultz, T. (2012) *Perspectives of Rural and Remote First Nation Community Members Toward Telehealth Services: The Case of Keewaytinook Okimakanak Telemedicine (KOTM).* Reported presented at the Canadian Rural Health Research Society - Rural and Remote Health Research Conference – Creative Approaches, Levis, Quebec, October.

Abstract: This report and presentation is based on an online survey of K-Net email account holders in communities in Northwestern Ontario, conducted in November 2011, and their responses and perspectives toward telehealth services.

45 (available in English)

Reference: Molyneaux, H., O'Donnell, S., Kakekaspan, C., Walmark, B., Budka, P., Gibson, K. (2012) *Community Resilience and Social Media: Remote and Rural First Nations Communities, Social Isolation and Cultural Preservation.* Paper for the 2012 International Rural Network Forum, Whyalla and Upper Spencer Gulf, Australia, 24-28 September.

Abstract: Community resilience in First Nations includes ties to people both inside and outside the community, Intergenerational communication, sharing of stories, and family and community connectedness. This study, based on a survey of internet users in the Sioux Lookout region of Northwestern Ontario, explores the link between social networking sites (SNS) and community resilience. The region is home to some of the most isolated and rural First Nations (indigenous) communities in Canada. Cultural and familial links between these communities are strong, yet until the fairly recent

widespread use of the internet, maintaining regular communications to strengthen cultural ties was challenging. This study examines the links between travel and communication online, how social media is used to preserve culture and maintain communication, and the implications of social networking for community resilience.

Note: This publication was later revised and published as a journal article, publication #74.

44 (available in English)

Reference: Whiteduck, G., Tenasco, A., O'Donnell, S., Whiteduck, T. & Lockhart, E. (2012) *Broadband-Enabled Community Services in Kitigan Zibi Anishinabeg First Nation: Developing an e-Community Approach.* Paper for the 2012 International Rural Network Forum, Whyalla and Upper Spencer Gulf, Australia, 24-28 September.

Abstract : Kitigan Zibi Anishinabeg First Nation, the largest Algonquin community in Canada, is recognized as a leader for their community services. For our collaborative study, we conducted 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 developing a strategy to integrate communication infrastructure and information, and communication technologies (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.

Note: This publication was later revised and published as a journal article, publication #62.

43 (available in English)

Reference: Gibson, K., Thomas, L., O'Donnell, S., Lockhart, E., & Beaton, B. (2012). *Co-creating community narratives: how researchers are engaging First Nation community members to co-write publications.* Paper presented at the Qualitatives Analysis Conference, St. John's, NL.

Abstract: Researchers working with First Nations have heard: "We have been researched to death." Given this reputation for research, how can researchers working with First Nations turn this situation around? How can we collaboratively conduct respectful research and engage First Nations meaningfully? How can we ensure that the narratives we weave in research publications from interview transcripts strongly reflect the voices of community members, and that our publications meet the needs of communities? One way is for members of First Nation communities collaborating in the research to co-write research publications. The paper discusses some practical ways

that researchers can do this, based on our experiences with conducting research about technology with rural and remote First Nation community collaborators. We discuss what has been successful and where we need to work harder to be more inclusive of the experiences and situations of community members.

42 (available in English)
Reference: Lockhart, E., Tenasco, A., Whiteduck, T. & O'Donnell, S. (2012) *ICT Use Between School and Home in Kitigan Zibi Anishinabeg First Nation: Challenges and Opportunities for Moving Forward Collectively.* Canadian Communication Association Conference, University of Waterloo, Ontario, May 30.

Abstract: Kitigan Zibi Anishinabeg First Nation is an innovative rural community in Quebec. Located 130 kilometers north of Ottawa, it is the closest First Nation to the Canadian capital. In both population and territory, Kitigan Zibi is the largest of the ten Algonquin communities. Broadband connectivity and information and communication technologies (ICT) are important to the community and incorporated into everyday operations. This paper explores the use of technology in the education sector in Kitigan Zibi, in particular the situation of having technology readily available at school and less so at home. This transition from a technology-filled classroom to limited or no ICT access at home is a challenge, not only for individual students and their families but also for the community as a whole.

Note: This publication was later revised and published as a journal article, publication #60.

41 (available in English)
Reference: Walmark, B., Gibson, K. Kakekaspan, C., O'Donnell, S., & Beaton, B. (2012). *How First Nation Residents in Remote and Rural Communities in Ontario's Far North are using ICT and Online Services Supported by Keewaytinook Okimakanak.* Paper presented at the Canadian Communication Association (CCA) Annual Conference, University of Waterloo, Ontario, May 30.

Abstract : For the isolated and rural communities in the Sioux Lookout region of Northwestern Ontario, communication links are vital. They connect community members with each other, with members of other communities, and with people living elsewhere in Canada and around the world. Broadband networks support many of the community and social services in this region. Keewaytinook Okimakanak (KO), Northern Chiefs in Oji-Cree, is a tribal council supporting and providing broadband-enabled services to many of the region's remote and rural First Nations. In late 2011, an online survey was conducted of community members in the region. Participants responded to questions about how they are using ICT in their daily lives, how they are using KO's broadband-enabled services - specifically KO Telemedicine (KOTM)

and the Keewaytinook Internet High School (KiHS) - and what supports they need to use these technologies and services more effectively. This paper discusses some of the survey findings.

40 (available in English)
Reference: Simon, J., Burton, K., Lockhart, E. & O'Donnell, S. (2012) *Post-Secondary Distance Education: Experiences of Elsipogtog First Nation Community Members*. Presented at the Atlantic Native Teachers Education Conference (ANTEC), Cape Breton, Nova Scotia, May 17.

Abstract: Post-secondary distance education is an option for community members living in many Atlantic First Nations. This paper includes preliminary results from research based on interviews with community members of Elsipogtog First Nation in New Brunswick. Most community members interviewed had taken post-secondary courses by distance education while living and working in their community. The focus is their experiences of distance education, in particular with video conferencing and online web-based course delivery systems.

Note: This article was later revised and published as a journal article, publication #59.

39 (available in English)
Reference: Beaton, B., Gibson, K., Kakekaspan, C., & O'Donnell, S. (2012) *KO/K-Net Report: Survey of Community Connectivity Northwestern Ontario.* Online presentation from Sioux Lookout, Ontario and Fredericton, New Brunswick, April 2012.

Abstract: This report and presentation is based on an online survey of K-Net email account holders in communities in Northwestern Ontario, conducted in November 2011.

38 (available in English)
Reference: Beaton, B., Kakekaspan, C., & O'Donnell, S. (2012) *KO/K-Net Report: Survey of Connectivity in Keewaytinook Okimakanak Communities.* Online presentation from Sioux Lookout, Ontario and Fredericton, New Brunswick, April, 2012.

Abstract: This report and presentation is based on an online survey of K-Net email account holders in KO communities, conducted in November 2011.

37 (available in English)
Reference: Gibson, K., Kakekaspan, M., Kakekaspan, G., O'Donnell, S., Walmark, B., Beaton, B., and the People of Fort Severn First Nation (2012) A History of Communication by Fort Severn First Nation Community Members: From Hand Deliveries to Virtual Pokes. *Proceedings of the iConference 2012*, Toronto, Ontario, February.

Abstract: Fort Severn Washaho Cree Nation is the most northern community in Ontario. Without road access for most of the year, Fort Severn community members have always found innovative and useful ways to communicate and share information. This paper traces the history of everyday communications from the analogue era to the current day. The focus is on how Fort Severn community members communicate and use technology in a community-centered and holistic way. Information was gathered for this paper over the course of three visits to the community and 59 interviews with Fort Severn community members. Community members reflect on their history of communications, and their current use of a broad range of technologies that use broadband. Critical thinking about technology use, and what is needed to support continued innovative and community-centered use, are explored.

36 (available in English)
(This article is from the First Mile project that proceeded First Nations Innovation)
Reference: McMahon, R.,O'Donnell, S., Smith, R., Walmark, B., Beaton, B., Simmonds, J. (2011). Digital Divides and the 'First Mile': Framing First Nations Broadband Development in Canada. *The International Indigenous Policy Journal*,2(2).

Abstract: Across Canada, rural and remote First Nations face a significant 'digital divide'. As self-determining autonomous nations in Canada, these communities are building broadband systems to deliver public services to their members and residents. To address this challenge, First Nations are working towards a variety of innovative, locally driven broadband development initiatives. This paper contributes a theoretical discussion that frames our understanding of these initiatives by drawing on the paradigm of the 'First Mile'. We argue that broadband development policy in Canada must be re-framed to address the specific needs of First Nations. The First Mile position foregrounds community-based involvement, control, and ownership: a consideration we suggest has particular resonance for First Nations. This is because it holds potential to move beyond the historical context of paternalistic, colonial-derived development policies, in the context of broadband systems development. We argue First Nations broadband projects offer on-the-ground examples of a First Mile approach, and call for more research in this area. This article was produced by the First Mile project, a collaboration led by Simon Fraser University.

5 (available in English and French)
(This report is from the First Mile project that proceeded First Nations Innovation)
Reference: McMahon, R., O'Donnell, S ., Smith, R., Woodman Simmonds, J., Walmark, B. (2010) *Putting the 'last-mile' first: Re-framing broadband development in First Nations and Inuit communities.* Vancouver: Centre for Policy Research on Science and Technology (CPROST), Simon Fraser University, December.

Abstract: This report is from the First Mile project, a collaboration led by Simon Fraser University. The report paints a picture of First Nations and Inuit community-based broadband networks and information and communication technologies in Canada. It highlights the very different levels of broadband infrastructure and connectivity that exist across the country. Even at the end of the first decade of the 21st century, many of these communities remain unserved or underserved when compared to their neighbours in urban Canada. But despite a lack of abundant broadband infrastructure and robust connectivity services, in many cases these communities are planning, administering, managing and, sometimes, owning digital networks and technologies. They are also applying these technologies to deliver broadband-enabled public and community services in areas like health, education, government, culture and language. Despite decades of innovative, community based work in this area, to our knowledge this is the first comprehensive study and record of these activities.

34 (available in English and French)
Reference: O'Donnell, S., Kakekaspan, G., Beaton, B., Walmark, B., Mason, R., Mak, M. (2011) A New Remote Community-Owned Wireless Communication Service: Fort Severn First Nation Builds Their Local Cellular System with Keewaytinook Mobile. *Canadian Journal of Communication*, 36 (4) 663-673.

Abstract: Fort Severn First Nation is a remote fly-in community on Hudson Bay. The lifestyle reflects a deep respect for and connection to the land. The Keewaytinook Okimakinak (KO) Tribal Council has developed the Keewaytinook Mobile (KM) service in remote First Nation communities in Northern Ontario. In November 2009, Fort Severn and KO established the KM service in the community. This study traces the history of KM and its implementation in Fort Severn and describes how and why community members are using the service. The analysis is based on interviews and discussions with community members during three research visits from March 2010 to March 2011.

33 (available in English)
Reference: O'Donnell, S., Kakekaspan, M., Beaton, B., Walmark, B., Gibson, K. (2011) *How the Washaho Cree Nation at Fort Severn is Using a "First Mile Approach" to Deliver Community Services.* Paper presented at the Telecommunications Policy Research Conference, George Mason University School of Law. Arlington, Virginia, USA, September.

Abstract: Fort Severn Washaho Cree Nation is a small, remote northern community on the Severn River near Hudson Bay in Ontario. The community services delivered in Fort Severn are managed and controlled by the local leadership, working in collaboration with their regional tribal council Keewaytinook Okimakanak and other strategic partners. The First Mile is both an emerging policy approach and a framework that supports holistic and community-centred broadband development and use by First Nations. First Mile focuses on community management and control of local broadband infrastructure and services. The paper discusses how Fort Severn First Nation is putting First Mile concepts into action.

Note: This publication was later revised and published as a journal article, publication #57.

32 (available in English and French)
Reference: Gibson,K., Coulson, H., Kakepetum-Schultz, T., O'Donnell, S. (2011) Mental health professionals' perspectives of telemental health with remote and rural First Nations communities. *Journal of Telemedicine and Telecare* 2011; 17: 263–267.

Abstract: We conducted an online survey and interviews of mental health workers in Canada who reported experience in working with rural and remote First Nations (although not necessarily telemental health). Sixty-three respondents (of the 164) to the online survey reported experience in working with clients in remote and rural First Nations. Only 16 of the online survey respondents with remote and rural First Nations experience reported having received training in video conferencing use. A quantitative data analysis was used to explore their perceptions of usefulness and ease of use of telemental health, as well as the relationships among these constructs. Advantages, disadvantages and challenges in using the technology were identified from the qualitative data. Promising ways forward include incorporating traditional practices and the Seven Teachings into telemental health services.

31 (available in English and French)
Reference: Gibson KL, Coulson H, Miles R, Kakekakekung C, Daniels E, O'Donnell S. Conversations on telemental health: listening to remote and rural First Nations communities . *Rural and Remote Health 11* (online), 2011: 1656.

Abstract: Telemental health involves technologies such as video conferencing to deliver mental health services and education, and to connect individuals and communities for healing and health. In remote and rural First Nations communities there are often challenges to obtaining mental healthcare in the community and to working with external mental health workers. Telemental health is a service approach and tool that can address some of these challenges and potentially support First Nations communities in their goal of improving mental health and wellbeing. Community members' perspectives on the usefulness and appropriateness of telemental health can greatly influence the level of engagement with the service. It appears that no research or literature exists on First Nations community members' perspectives on telemental health, or even on community perspectives on the broader area of technologies for mental health services. Therefore, this article explores the perspectives on telemental health of community members living in two rural and remote First Nations communities in Ontario, Canada.

30 (available in English)

Reference: Gibson, K., Gray-McKay, C., O'Donnell, S., and the People of Mishkeegogamang. (2011). *Mishkeegogamang First Nation Community Members Engage with Information and Communication Technologies*. Canadian Communication Association Conference, Fredericton, June 1-3.

Abstract: Mishkeegogamang First Nation is a rural Ojibway community in Northwestern Ontario. Mishkeegogamang community members of all ages use a wide array of information and communication technologies (ICT) as tools in daily life, and as a means to support individual and community goals. This collaborative paper tells the story of how Mishkeegogamang uses ICT for community development, drawing on 17 interviews with community members, and several community member profiles. Community informatics theory will help guide the interpretation of the findings. A broad range of ICT use by community members will be explored, including the Mishkeegogamang website, the busy yet invisible use of social networking sites, youth and ICT, ICT for health and education, and ICT to support traditional activities. Finally, a section on challenges and needs for facilitating ICT use is also provided.

Note: This publication was later revised and published as a journal article, publication #58.

29 (available in English)

Reference: O'Donnell, S., Kakekaspan, G., Walmark, B., Mason, R., Mak, M. (2011) *Keewaytinook Mobile in Fort Severn First Nation*. Canadian Communication Association Conference, Fredericton, June 1-3.

Abstract: Fort Severn First Nation is a remote fly-in Cree community on Hudson Bay. About 400 people live in the community, and their lifestyle reflects a deep respect for and connection to the land. In November 2009, Fort Severn and its tribal council, Keewaytinook Okimakanak, established Keewaytinook Mobile (KM) service in the community. KM, an innovative community-owned and managed GSM cellular and data service, is an example of self-determination applied to telecommunications. It is also the result of a number of strategic partnerships that came together to address local needs and priorities. This paper includes a review of the history of Keewaytinook Mobile and its implementation in Fort Severn First Nation, and a study of how and why community members are using or not using the service. The analysis is based on interviews with 42 community members conducted in March 2010 and a follow-up discussion with community members in November 2010. The paper discusses the challenges, opportunities and ways forward for KM in Fort Severn.

Note: This publication was later revised and published as a journal article, publication #34, which is also available in French.

28 (available in English and French)

Reference: Gratton, M-F., O'Donnell, S. (2011) Communication Technologies for Focus Groups with Remote Communities: A Case Study of Research with First Nations in Canada. *Qualitative Research.* 11(2): 159-175.

Abstract: Communication technologies offer qualitative researchers more options for conducting research with remote communities. It is not always possible for researchers to travel to conduct focus groups and interviews in person, especially when travel is prohibitively time-consuming and expensive. This reason is often given to explain the lack of qualitative research with participants living in remote First Nations (Aboriginal) communities in Canada. This manuscript presents a case study of a research method developed in collaboration with our research partner K-Net and KORI (Keewaytinook Okimakanak) in northwestern Ontario. The specific study investigated preferences for online health information for First Nations people living in remote communities. Working with K-Net, we developed a method to use multi-site video conferencing for focus groups – live visual and audio exchange between the researcher in Ottawa and participants in multiple remote First Nations communities. Our conclusion encourages other researchers to try this innovative method to include more remote First Nations community members in participatory research projects.

27 (available in English)
Reference: Woodman Simmonds, J., Wasacase, T., Ward, S., O'Donnell, S. (2011) *Video conferencing User- Guide for Teachers and Students Participating in Post-Secondary Education Courses in Remote and Rural First Nations Communities*. Fredericton: The VideoCom Project

Abstract: This user-guide is for teachers and students involved in post-secondary distance education (especially in remote and rural First Nations communities) who are considering using video conferencing technology to communicate. It assumes that some people will have little or no experience with video conferencing and might also have objections to the technology itself or to the ways it is often marketed as an absolute solution to accessing quality education.

26 (available in English)
Reference: Woodman Simmonds, J., Wasacase, T., O'Donnell, S. (2010) *Post-Secondary Distance Education for First Nations, Métis and Inuit Learners Living in Remote and Rural Communities: An Annotated Bibliography.* Fredericton: The VideoCom Project

Abstract: This report was prepared to assist educators and people involved in education and learning in First Nations, Métis and Inuit communities. It is, to our knowledge, the most comprehensive annotated bibliography available on this topic. The bibliographic search focused on literature that discusses 1) best practices employed in post-secondary distance education in First Nations, Métis and Inuit communities, 2) funding for post-secondary distance education, and 3) policy issues related to ICT in the First Nations and Inuit contexts. Our report includes both peer-reviewed publications and grey literature.

25 (available in English)
Reference: Gibson, K., Coulson, H., Miles, R., Kakekayskung, K., Daniels, B., O'Donnell, S. (2010) *Listening to the Communities: Perspectives of Remote and Rural First Nations Community Members on Telemental Health*. Rural Health Conference: Connecting Research and Policy. Fredericton, Canada, September 23-25.

Abstract: Telemental health involves technologies such as video conferencing to deliver mental health services and education, and to connect individuals and communities for healing and health. In remote and rural First Nations there are often challenges both to obtaining mental healthcare within the community and to working with external mental health workers. Telemental health is a service approach that can address some of these challenges and potentially support First Nations in their goal of improving mental health and well-being. This paper explores the perspectives on telemental health of community

members living in two rural and remote First Nations communities in Ontario: Mishkeegogamang and Fort Severn. Using a participatory research design, we interviewed 59 community members, asking about their experiences with and thoughts on using technologies and their attitudes toward telemental health specifically. A thematic analysis of this qualitative data, and a descriptive quantitative analysis of the information reveal the diversity of attitudes among community members.

Note: This publication was later revised and published as a journal article, publication #31, which is also available in French.

24 (available in English)
Reference: O'Donnell, S., Milliken, M., Chong, C., Walmark, B. (2010) *Information and Communication Technologies (ICT) and Remote and Rural First Nations Communities: An Overview*. Presented at the Canadian Communication Association Annual Conference (CCA 2010) Montreal, June 1-3.

Abstract: Information and communication technologies (ICT) are valuable tools used to establish and maintain connections within and between remote and rural First Nations communities across Canada, and between urban centres and these communities. For the past decade, various research projects have investigated different aspects of ICT use by and with these communities. However, an overview of this research has not been published. This paper, a literature review, explains: the history of ICT and First Nations communities, policies and partnerships for broadband services in First Nations, how remote and rural First Nations are accessing and using ICT, and how to make the broadband networks and ICT sustainable.

23 (available in English)
Reference: O'Donnell, S., Molyneaux, H., Gorman, E., Milliken, M., Chong, C., Gibson, K., Oakley, P., Maitland, J. (2010) *Information and Communication Technologies to Support Health and Wellness in Remote and Rural First Nations Communities: Literature Review.* Fredericton: National Research Council, May, 136 pages.

Abstract: This report is a comprehensive overview of how remote and rural First Nations and their partners and collaborators are using information and communication technologies (ICT) to support health and wellness in their communities. The report authors hope it will be useful for evidence-based program and policy development. It may also spark ideas about how ICT can be improved and new technologies developed to meet community needs.

22 (available in English and French)
Reference: O'Donnell, S., Walmark, B., Hancock, B-R. (2010) Video conferencing and Remote and Rural First Nations, in White, J., Peters, J., Beavon, D., Dinsdale, P. (eds) *Aboriginal Policy Research Volume 6: Learning, Technology and Traditions.* Toronto: Thompson Educational Publishing: 128-139.

Abstract: This article explores why visual communication is important for First Nations, the prevalence and purposes of video conferencing in non-institutional settings, and the challenges the communities experience using this technology. The central theme is that video conferencing is a vital tool for remote and rural First Nations and in order for it to become widely used, the technology has to be a part of everyday life in communities and not just restricted to telehealth and distance education.

21 (available in English and French)
Reference: McKelvey, F., O'Donnell, S. (2009) Out from the Edges: Multi-site Video conferencing as a Public Sphere in First Nations. *Journal of Community Informatics* 5(2).

Abstract: This study uses video analysis and semi-structured interviews to describe a case of community use of multi-site video conferencing. The event connected First Nation communities across Canada for simultaneous audio-visual exchange, hosted by K-Net Services in Ontario. The research project VideoCom organized the event to study the feasibility of public meetings through video conferencing and to document an example of community uses of the technology. Our report suggests video conferencing creates a public sphere in these First Nations communities. K-Net Services works to develop their video conferencing infrastructure to better support this public space. The public sphere is way of thinking about how media practices have a political effect and how they contribute to the well-being of the community. The case meeting shows a potential new opportunity to further integrate video conferencing into community development.

20 (available in English and French)
Reference: Milliken, M., O'Donnell, S., Gorman, E. (2009) How K-Net and Atlantic Canada's First Nation Help Desk are using video conferencing for community development. *Journal of Community Informatics* 5(2).

Abstract: K-Net, Keewaytinook Okimakanak (KO) in Sioux Lookout, Ontario, Atlantic Canada’s First Nation Help Desk in Membertou, Cape Breton, Nova Scotia, and the First Nation Education Council in Wendake, Quebec initially set up video conferencing networks for educational and health purposes. Since the mid-90s, the applications, reach and scope of these communication networks has expanded to include cultural, social, and community development activities. Interviews with the technical and

administrative staff reveal how the relationship-building approach taken by the organizations supports community development in the First Nations communities they serve.

19 (available in English and French)
Reference: Perley, S. (2009) Representation and Participation of First Nations Women in Online Videos. *Journal of Community Informatics* 5(1). Abstract: With the rise in websites for video sharing on the Internet and the increase in resources to create and upload videos, there is potential for First Nations women to make use of this alternate public sphere for representing issues they cannot normally address through mainstream media. A critical analysis of the representation and participation of First Nations women in online videos provides some insight into how First Nations women are currently using new information and communication technologies to question and challenge mainstream media assumptions and representations of First Nations women. The article explores the potential of online videos produced by First Nations women to provide an alternate public sphere to represent themselves and their perspectives and promote social change.

18 (available in English)
Reference: Gibson, K., Kakepetum-Schultz, T., Coulson, H., O'Donnell, S. (2009). *Telemental Health with Remote and Rural First Nations: Advantages, Disadvantages, and Ways Forward.* National Aboriginal Health Organisation (NAHO) Conference. Ottawa, November 24-27.

Abstract: Remote and rural First Nation communities have limited mental health services compared to urban communities yet their needs are similar and sometimes greater. Community members living in remote, isolated communities requiring mental health services are usually faced with two choices: having no service or leaving their community to access services in larger centres. Certain First Nation communities offer a third choice: using telemental health delivered via video conferencing to provide clinical mental health services. Like all technology uses, telemental health services have advantages and disadvantages for the individual and the community.

Note: This publication was later revised and published as a journal article, publication #32, which is also available in French.

17 (available in English)
Reference: Molyneaux, H., O'Donnell, S. (2009). *ICT and Health and Wellness in Remote and Rural First Nations Communities: A Social Determinants of Health Perspective.* Canadian Society of Telehealth Conference (CST 2009), Vancouver, BC, October 3-6.

Abstract: The topic of information and communication technologies (ICT) for health is generally framed as telehealth and other technology processes that enable delivery of mainstream health services. However First Nation communities are also using ICT for community development activities that contribute to improved health and wellness. Based on the preliminary results of a literature review on how ICT is being used in remote and rural First Nations, this paper uses a social determinants of health perspective to begin to create a broader understanding of how ICT can contribute to community health and wellness in remote and rural First Nations.

16 (available in English)
Reference: Gibson, K., Simms, D., O'Donnell, S., & Molyneaux, H. (2009). *Clinicians' Attitudes toward the Use of Information and Communication Technologies for Mental Health Services in Remote and Rural Areas.* Canadian Society of Telehealth Conference (CST 2009), Vancouver, BC, October 3-6.

Abstract: Little research exists regarding clinicians' attitudes towards the use of information and communication technologies (ICT) in clinical service provision – particularly within populations such as First Nations and Operational Stress Injury (OSI) clients. These clients may be particularly well served by technologies such as video conferencing which allow clinicians to service these clients, many of whom are located in remote and rural geographical locations. However, adoption of these services is dependent upon on clinicians' willingness to use these technologies. In this paper we discuss the results of qualitative and quantitative analysis of both survey and interview responses with a specific emphasis on clinicians' attitudes towards use of ICT in service delivery in the present and future. Further, we explore successes, challenges and barriers to the use of technology as well as suggestions for future directions for research.

15 (available in English and French - for the French version click here)
Reference: O'Donnell, S., Perley, S., Walmark, B., Burton, K., Beaton, B., and Sark, A. (2009) Community Based Broadband Organizations and Video Communications for Remote and Rural First Nations in Canada. In Stillman, L., Johanson, G., and French, R., editors, *Communities in Action.* Newcastle upon Tyne, UK: Cambridge Scholars Publishing. 107-119.

Abstract: This research demonstrates how two community-based First Nations' organizations use video communications on broadband networks to support socio-economic development. This study situates K-Net and the Atlantic Help Desk within a broader social movement, working toward self-determination for First Nations in Canada, through the use of video communications.Video communications within broadband networks include video conferences (live and archived) and online videos. The research methodology includes an analysis of hundreds of video conferences and videos archived by the two organizations as well as interviews with key informants.

14 (available in English and French)
Reference: O'Donnell, S., Perley, S., Simms, D., Hancock, B-R. (2009) Video Communication Roadblocks Facing Remote Indigenous Communities. *IEEE Technology and Society Magazine.* 28 (2) Summer. pp 16-22.

Abstract: For Canada's remote and rural communities, video communications provide a vital lifeline. This article discusses the challenges for video communications in remote and rural First Nation (Indigenous) communities. Central to our analysis are social andtechnical issues as well as the ICT experiences of community-based organizations and community members. We use an analytical framework to identify challenges in four categories: technical infrastructure, the interactions of the users with the technical infrastructure, the production and reception of audio-visual content, and the organizational and social relations. Our findings underline the need for community capacity building to address these challenges and use video communications to its full potential.

13 (available in English)
Reference: Milliken, M., O'Donnell, S. (2009). *Communication in Place: Video conferencing for First Nation Community Development*. Presented at the Canadian Communication Association Annual Conference (CCA 2009), Carleton University, Ottawa, May.

Abstract: One definition of globalization suggests that the social relations traditionally associated with specific territorial locations have been transformed, and that physical distance is less of an impediment to communication and exchange than it used to be (Held, McGrew, Goldblatt, & Perraton, 1999). However, when the costs associated with travel to and from remote and rural First Nation communities are calculated, social and geographic relations still restrict opportunities for face-to-face communication and access to resources. Technology such as video conferencing has been a powerful tool for overcoming these barriers; it enables people to stay where they are "from", and still engage in face-to-face audio and visual communication with people at one or more locations anywhere in the world.

Note: This publication was later revised and published as a journal article, publication #20, which is also available in French.

12 (available in English)
Reference: Gratton, M-F., O'Donnell, S. (2009). *Integrating New Media into Communication Research: Multi-site Video conferencing for Focus Groups with Remote First Nation Community Members.* Presented at the Canadian Communication Association Annual Conference (CCA 2009), Carleton University, Ottawa, May.

Abstract: New media offer social science researchers more options for conducting research. Many researchers have been using text-based exchanges on the Internet as a data collection method. However some situations do not lend themselves to text-only exchange; a prime example is interviews with research participants from a cultural or community background that is outside the researchers' daily frame of reference. In this situation, visual cues and face-to-face contact are essential for conveying information that will build trust and comfort levels between participants and the researcher. Conversely, it is not always possible for researchers to travel to conduct focus groups and interviews in person, especially when travel is prohibitively time-consuming and expensive. This reason – too expensive and time-consuming – is often given to explain the lack of qualitative research with participants living in remote First Nation communities. This paper presents an overview of a research method developed in collaboration with our research partner K-Net and KORI (Keewaytinook Okimakanak) in northwestern Ontario.

Note: this publication was later revised and published as a journal article, publication #28, which is also available in French.

11 (available in English)
Reference: Hancock, B-R., and O'Donnell, S. (2009). *New Media and Self-Determination: Publicly Made and Accessible Video and Remote and Rural First Nation Communities.* Presented at the Canadian Communication Association Annual Conference (CCA 2009), Carleton University, Ottawa, May.

Abstract: This working paper explores the potential for New Media to provide a means for members of remote and rural First Nations communities to challenge problematic mainstream representations of First Nations identity. Video on public access sites such as YouTube and Google Video, as well as on websites that act as hubs for First Nations internet users in remote and rural areas, allow for the accumulation of a critical mass of videos, providing complex, contemporary, and fluid images that "speak" to one another across distance and time. Such an accumulation may provide the means for a social movement—the public dissemination of self-determined identities by members of

remote and rural First Nations communities thus growing in power to become a counter-hegemonic practice that undermines the misrepresentations of First Nations culture and identities in mainstream media.

10 (available in English)
Reference: McKelvey, F., O'Donnell, S. (2009). *Multi-site Video conferencing as a Public Sphere in First Nation Communities: A Case Study.* Presented at the International Communication Association Annual Conference (ICA 2009), Chicago, May.

Abstract: The paper examines multi-site video conferencing as a public sphere. The theory of the public highlights the political effects of multi-site video conferencing and how the technology contributes to the well-being of the community. To analyze the political effects of video conferencing, the paper describes a case of community use of multi-site video conferencing based on video analysis and semi-structured interviews.The case occurred in 2007 and connected a number of First Nation communities across Canada for simultaneous audio-visual exchange. K-Net Services in Ontario hosted the meeting to gauge the feasibility of public meetings through video conferencing and to document an example of community uses of the technology. K-Net Services works to develop their video conferencing infrastructure as a public space. Our findings suggest K-Net's activities have developed a media institution best understood as a counter-public sphere for their service region. The case meeting shows a potential new opportunity to further integrate video conferencing into community development.

Note: This publication was later revised and published as a journal article, publication #21, which is also available in French.

9 (available in English)
Reference: O'Donnell, S., Walmark, B., and Hancock, B-R. (2009). *Communicating Visually: Video conferencing and Remote and Rural First Nations.* Presented at the Aboriginal Policy Research Conference, Ottawa, Canada, March.

Abstract: Video conferencing is usually perceived as something useful for institutional reasons – primarily telehealth and distance education. First Nations are using video conferencing not only for health and education but also in other ways for community, economic and social development. This paper discusses findings from a SSHRC-funded study of First Nations organizations that are supporting the use of video communications by rural and remote communities. The discussion explores why visual communication is important for First Nations, the prevalence and purposes of video conferencing in non-institutional settings, and the challenges the communities experience using this technology. The central theme of this paper is that video conferencing is a vital tool for remote and rural First Nations and in order for it to become widely used, the technology

has to be a part of everyday life in communities and not just restricted to telehealth and distance education. Further, if we can find ways to increase the use of video conferencing in non-institutional settings by everyone in First Nations communities, the technology will be used more often for institutional applications.

Note: This publication was later revised and published as a book chapter, publication #22, which is also available in French.

8 (available in English)

Reference: O'Donnell, S., Beaton, B., & McKelvey, F. (2008).Video conferencing and Sustainable Development for Remote and Rural First Nations in Canada. *Proceedings of the Community Informatics Research Network (CIRN 08) Conference*, Prato, Italy, October.

Abstract: Video conferencing can be used to connect remote and rural First Nation communities to work together on sustainable development priorities. This paper presents two case studies of video conferencing events. In both cases, a real-time high-bandwidth connection provided rich visual and audio data to be exchanged among communities separated by vast distances. The host communities for these video conference events are small First Nations with traditional lifestyles connected to the land. Despite their remoteness and traditional cultures, these communities have the capacity to use advanced high-bandwidth technologies in innovative ways to contribute to sustainable development of their communities.

7 (available in English)

Reference: O'Donnell, S., Perley, S., and Simms, D. (2008). Challenges for Video Communications in Remote and Rural Communities. *Proceedings of the IEEE International Symposium on Technology and Society (IEEE ISTAS 08)*. Fredericton, June.

Abstract: For Canada's remote and rural communities, video communications provide a vital lifeline. This study explores the challenges for video communications in remote and rural First Nation (Indigenous) communities. Central to our analysis are social and technical issues as well as the ICT experiences of community-based organizations and community members. We use an analytical framework to identify challenges in four categories: technical infrastructure, the interactions of the users with the technical infrastructure, the production and reception of audio-visual content, and the organizational and social relations. Our findings underline the need for community capacity building to address these challenges and use video communications to its full potential.

Note: This publication was later revised and published as a journal article, publication #14, which is also available in French.

6 (available in English)
Reference: Perley, S. (2008). *Representation and Participation of First Nations Women in Online Videos.* Presented at the International Communication Association Annual Conference (ICA 2008), Montreal, May.

Abstract: With the rise in websites for video sharing on the Internet and the increase in resources to create and upload videos, there is potential for First Nations women to make use of this alternate public sphere for representing issues they cannot normally address through mainstream media. A critical analysis of the representation and participation of First Nations women in online videos provides some insight into how First Nations women are currently using new information and communication technologies to question and challenge mainstream media assumptions and representations of First Nations women. The paper explores the potential of onlinevideos produced by First Nations women to provide an alternate public sphere to represent themselves and their perspectives and promote social change.

Note: This publication was later revised and published as a journal article, publication #19, which is also available in French.

5 (available in English)
Reference: O'Donnell, S. and Kakepetum-Schultz, T. (2008). Video conferencing Connects Remote Communities. *Sagatay*. April-May.

Abstract: This short article describes community uses of video conferencing by remote communities in Northwestern Ontario. It was published in the in-flight magazine of Wasaya Airways.

4 (available in English)
Reference: VideoCom Research Initiative. (2008). Encouraging Urban Organizations to Video conference with Remote and Rural First Nations. *VideoCom Research Update*. March.

Abstract: This one-page report summarizes recent research that underlines the need to encourage urban organizations to use video conferencing to meet the communication needs of remote and rural First Nation communities.

3 (available in English)
Reference: Simms, D., O'Donnell, S., & Perley, S. (2008). *Attitudes Toward and Use of Video Communications by Educators in First Nation Schools in Atlantic Canada.* Fredericton: National Research Council. January.

Abstract: This NRC report presents the results of a survey of teachers and other staff in First Nation Schools in the Atlantic Region. The study focus was to understand their attitudes toward and use of video communications. The study identified a need for more support and training for teachers to use video conferencing and share videos online.

2 (available in English)
Reference: O'Donnell, S., Perley, S., Walmark, B., Burton, K., Beaton, B., & Sark, A. (2007). Community-based Broadband Organizations and Video Communications for Remote and Rural First Nations in Canada. *Proceedings of the Community Informatics Research Network* (CIRN 2007). Prato, Italy, November.

Abstract: Our research is building understanding about how two community-based First Nations organizations in Canada are using video communications on broadband networks to support economic and social development in remote and rural First Nations. This study situates these two organizations within a broader social movement working toward self-determination for First Nations in Canada, exploring their use of video communications in this context. Video communications using broadband networks includes video conferences (live and archived) and online videos.The research methodology for this study includes a content analysis of hundreds of archived video conferences and videos on the servers of the two organizations as well as interviews with key informants using these technologies to develop remote and rural First Nations communities.

Note: this publication was revised and later published as a book chapter, publication #15, which is also available in French.

1 (available in English)
Reference: S. Perley and S. O'Donnell. (2006). *Broadband Video Communication Research in First Nation Communities*. Presented at the Canadian Communication Association Annual Conference (CCA 2006), York University, Toronto, Ontario, June.

Abstract: This paper provides an overview of policies and strategies for broadband infrastructure and access, and broadband video communication development and use in First Nation communities in Canada. Although using broadband for video communication remains underdeveloped in First Nation communities as a whole,

successful initiatives have been underway for many years, particularly in the areas of distance education and telehealth applications. The research conducted to date on broadband video in Aboriginal communities has focused almost exclusively on evaluations of distance education and telehealth applications, which have primarily been positive evaluations. There has been little research on other kinds of applications. The authors discuss approaches to doing research with Aboriginal communities. Clearly there are many opportunities for researchers to investigate and explore the possibilities of broadband video communication for First Nations across Canada. However researchers working on these projects in First Nation communities will face a number of challenges. The authors discuss these challenges and outline some ways forward. Before First Nation communities develop broadband video communication applications, concrete First Nation community-specific planning and development that looks at the needs, priorities, and long-term goals of the community and its members must be fully addressed.

Fibre cable crossing a northern river. Published with permission of the Western James Bay Telecom Network (Ontario).

Fishing camp, Ontario. Published with permission from Keewaytinook Okimakanak.

Community at the centre: word cloud generated from the text of the FNI project publication titles and abstracts.

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This book is dedicated to all those who have broken the trail with us over the years and have passed on. So many people have made our work today possible. We want to recognize the special contributions of:

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