Internet Connectivity in a Northern Setting: A Churchill Case Study

Final Report

September 2005

Rural Development Institute, Brandon University

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Submitted to:
Manitoba Research Alliance on Community
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Executive Summary

Prior to the establishment of federal broadband programs and initiatives to promote Internet connectivity in rural and remote areas of Canada, a small group of citizens from Churchill started their own community based Internet business. Initially, the incentive for the community members to start the Internet service provider was to reduce the fees associated with long distance phone and service charges. However, through the process of researching and applying for funding for the initiative, the members of the group realized that an Internet connection could bring social and economic benefits to the entire town.

The group, all volunteers, worked tirelessly to research the business start up, seek funding, organize training sessions for other community members, and ensure community access to the Internet through computers in the public school and library. In 1997, they formed the Churchill Community Network Inc. (CCNet). The start up of this business was an especially remarkable achievement as CCNet was established at a time when Internet connectivity was just gaining momentum, especially in rural, remote and northern areas of Canada.

Through the start up period, the volunteer group faced huge barriers such as a lack of trained computer technicians in Churchill, the need to generate funds to start the business, and the huge task of researching and purchasing appropriate technologies. They managed to overcome these challenges and make dial up Internet connectivity available to citizens and businesses in Churchill. The members of the CCNet were proud of their accomplishments and empowered to learn about new technologies. Dial up Internet brought economic benefits to local businesses in Churchill that had a new tool to use to market their products, attract tourists, and communicate cheaply with other businesses and customers in other parts of Canada. Also, ordinary citizens in Churchill were able to access email and the Internet for research, educational and entertainment purposes. The community-based business paid back its start up loans and broke even after three years, which is an accomplishment for any business. From a community economic development perspective, CCNet was not only economically viable but was able to stimulate both social and economic returns for the individuals and businesses in Churchill.

Then members of CCNet decided to pursue broadband connectivity. The implementation of a broadband connection led to higher expenses and the need to update equipment due to rapid technology changes. As CCNet switched its operations to focus on broadband, a competing company offered cheaper dial up services to Churchill.

Now, eight years into running the business, CCNet still has no full time employees. The task of continuously developing new marketing strategies, keeping up with the book keeping and receivables, researching new Internet technologies and providing maintenance services to members has become too heavy a load for volunteers on an on-going basis.

Churchill town council and residents have identified potential broadband Internet applications using telecommunications services such as video-conferencing, Voice Over Internet Protocol to cell phones, but because CCNet is no longer turning a profit, it is difficult to pursue new business ventures. In addition, the volunteers have become burned out.

In 2005, rather than feeling empowered, CCNet's core group of volunteers are feeling frustrated. While the citizens of Churchill continue to reap social and economic benefits from broadband connection, the community-based business is not sustainable in its current structure. As anticipated, Internet connectivity has brought new opportunities for economic competitiveness and social development in Churchill. However, how to provide broadband services on a sustainable basis to a remote location such as Churchill is a challenge. As a community economic development strategy, CCNet is faltering.

Introduction – Researching Connectivity in Churchill

If you type "Churchill Manitoba" into your search engine, you find that you can book a tour, read articles from the Hudson Bay Post newspaper, read the minutes of Town Council meetings and reserve a room in a hotel. Thus, the Internet connects Churchill to people around the world despite its status as Manitoba's most northern community.
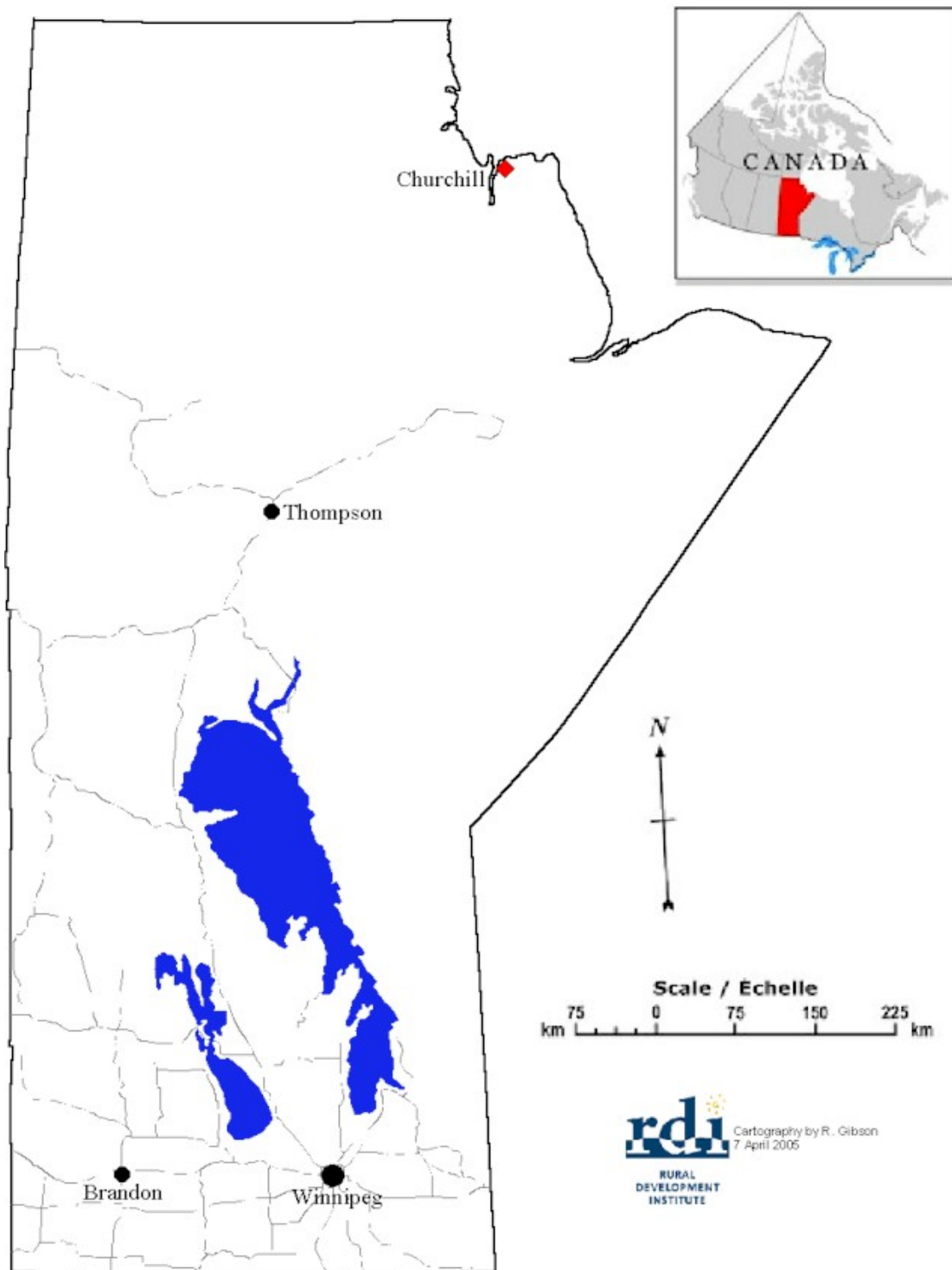
This case study of a community based Internet business located in Churchill, Manitoba demonstrates how one remote community has achieved Internet connectivity.

Churchill is a town located in the northern part of the province of Manitoba in Canada. It has a population of approximately 1100 and is located on the southwestern shores of Hudson Bay at the mouth of the Churchill River. While Churchill is a small town and there is no road acess, it is a hub for tourism, research, and transportation in Canada' north. The town of Churchill is described on the *Manitoba Community Profiles* website.

> "As a transportation hub for the north, the town has a busy rail line and airport. Churchill also has the only inland saltwater port in Canada. Air or rail brings in goods from the south, then shipped by barge or sea going vessels to numerous points through the north. The area has a strong research presence. Many scientific professionals use The Churchill Northern Studies Centre and the Institute of Arctic Ecophysiology, as a home base for their studies. The Port of Churchill is a fully functioning seaport, capable of shipping most bulk commodities and many other import and export products" (www.communityprofiles.mb.ca/cgi-bin/csd/index.cgi?id=4623056).

Tourists come from all over the world to visit Churchill to see the Northern Lights, birds, whales and polar bears. Small businesses in Churchill include hotels, restaurants, bakeries and tour operators to serve the year round influx of tourist.

Map of Churchill, Manitoba

This case study examines the potential for a community-based business located in a remote part of Canada to respond to the opportunities and obstacles presented by the emergence of the New Economy. The Manitoba Research Alliance on Community Economic Development in the New Economy "is investigating how disadvantaged communities might share in the benefits of the New Economy. Where the transition to a New Economy has erected new barriers, it is identifying how these might be overcome.

The Research Alliance has identified Community Economic Development (CED), a development strategy that emphasizes local self-sufficiency, local decision-making and local ownership, as a strategic response to assist communities in taking up the opportunities and meeting the challenges created by the transition to a New Economy" (www.manitobaresearchallianceced.ca).

Given the challenges and opportunities associated with Internet connectivity in rural, remote and northern areas, a research team from the Rural Development Institute was interested in pursuing research to understand the role of local residents, municipal governments and the private sector in addressing these challenges.

Why this case study?

The Churchill Community Network (CCNet) was chosen as a case study because the organization was established at a time when Internet connectivity was just gaining momentum, especially in rural, remote and northern areas. CCNet members successfully established broadband connectivity in Churchill prior to nationwide initiatives to address bandwidth needs. A second reason for research in Churchill lies within the relationship among Internet connectivity, CCNet, the local government and Churchill's residents. This is especially relevant considering the linkage between connectivity, community economic development and local council decision-making processes.

The case study thus contributes to an understanding of connectivity barriers, decision-making processes, government involvement, and economic opportunities for a northern community through connectivity infrastructure. It demonstrates the way in which one community achieved connectivity on its own, illustrates the reasoning behind it, and shows why it is important. The research also provides a basis for comparison to other communities as they address Internet connectivity.

The case study is written using a community economic development perspective. However, it should be noted that the community members who started up the Churchill Community Network did not initially come together because they were interested in community economic development as a strategy.

Audience for the Research

This case study will be of interest to residents of other communities facing similar access barriers, policy-makers attempting to address these issues, private sector investors and academics working in the field. Churchill's connectivity story will also be a record for the community's residents.

Research Partners

This research is a joint initiative between the Rural Development Institute and the Manitoba Research Alliance on Community Economic Development in the New Economy, an initiative funded by the Social Sciences and Humanities Research Council of Canada (SSHRC). The Manitoba Research Alliance on Community Economic Development in the New Economy is a three-year research project to examine how Manitoban communities might overcome obstacles and share in the benefits created by the New Economy.

Research Team

A research committee was established bringing together Churchill community members and academics from Brandon University to ensure the research design included both local knowledge and outsider's objectivity. The team included Churchill's mayor, Mike Spence and a CCNet board member, Mike Iwanowsky who both live and work in Churchill. From Brandon University, the team included Dr. Robert Annis, Dr. John Everitt, research assistant Deatra Walsh and research affiliate Susannah Cameron.

Research Questions

Four major research questions are addressed:
- ♦ How has connectivity has been approached in Churchill (the structure and nature of access and the broadband evolution)?
- ♦ What is the role that local residents, local government officials and the private sector play in addressing challenges and opportunities associated with Internet connectivity?
- ♦ What is the role and relative value that Internet infrastructure plays in assisting new community socio-economic development opportunities in the new economy in Churchill?
- ♦ What lessons have been learned that other northern and remote communities that wish to address Internet connectivity can use?

Research Methodology

The research team arranged a trip to Churchill, designed interview questions, and booked meetings with interviewees. The research team conducted interviews with each of the original Board members of the Churchill Community Network and Churchill Council members in June 2004. The eight interviews were tape- recorded and notes were taken. The interviews were then transcribed. This research team also conducted an exhaustive review of all background documents related to CCNet including meeting notes, contracts, media coverage and reports.

As originally designed, the research would have included household and business surveys if it made sense in terms of CCNet's evolution. As the CCNet board did not pursue market research in 2004, the survey of CCNet users has been put on hold. The history of CCNet was written using the interview transcripts and background documents. Interviewees received copies of the story of CCNet and were asked to send corrections and feedback to ensure CCNet's evolution was recorded correctly.

What is the New Economy?

The Manitoba Research Alliance has defined the New Economy as being characterized by three major structural changes:

- • a rise in general education levels;
- • the development and availability of new information technology; and
- • an increase in "invisible" trade in services, mergers and acquisitions, and the flow of information (www.manitobaresearchallianceced.ca).

Churchill's remote location has not stopped its economy from changing over the past twenty years in ways that are characteristic of the New Economy. The case study of the Churchill Community Network specifically examines the development of a community based Internet company and how that new technology and associated improvement in information communication, have changed the town.

The Internet is often associated with recreational activities such as video games, downloading music, chat rooms and web surfing. But the recognition of the potential for social and economic benefits from broadband infrastructure in rural, remote and northern areas is well documented.

The report *Stronger Communities for a Stronger Canada: the Promise of Broadband* (2004) identifies the need for Broadband services in northern and remote areas to enhance these communities' ability to "compete in the new markets being opened up by electronic commerce, to enhance local education and health cares through distance education and tele-health, to access the incredible range of public and private information resources now available on-line, and to strengthen the Canadian community by participating in e-government." (p.15) Access to the Internet is also a tool for individuals who use it build networks with others with common interests and keeping contact with friends and family.

What is Community Economic Development?

As an alternative paradigm to mainstream economic development, Community Economic Development is a strategy taken by people within a community to create sustainable economic opportunities that improve their social conditions. The Manitoba Research Alliance defines Community Economic Development (CED) as a "development strategy that emphasizes local self-sufficiency, local decision-making and local ownership, as a strategic response to assist communities in taking up the opportunities and meeting the challenges" (www.manitobaresearchallianceced.ca).

The Gap in Broadband Internet Access in Canada

The federal government has increased Internet access by two national initiatives: The Community Access Program and the Broadband Program.

The Community Access Program (CAP), a program of Industry Canada, "aims to provide Canadians with affordable public access to the Internet and the skills they need to use it effectively. With the combined efforts of the federal, provincial and territorial governments, community groups, social agencies, libraries, schools, volunteer groups and the business community, CAP helps Canadians, wherever they live, take advantage of emerging opportunities in the new global knowledge-based economy." CAP computers are located in urban and rural Canada. (http://cap.ic.gc.ca/pub/about_us)

For rural and remote locations that do not have the infrastructure to support broad-band Internet, there is the federal government's Broadband for Rural and Northern Development Pilot Program. According to the Industry Canada website *Broadband – High Capacity for All Canadian Communities*, "the Pilot Program has been created to assist those communities that are currently without broadband access. Most often, improved access is necessary in First Nations, northern, rural and remote communities in

order to provide services in the area of health and education, as well as to augment economic opportunities." (http://broadband.gc.ca/pub/faqs/faqscomplete.html#program)

According to Industry Canada (2005), 64% of Canadians, the percentage of the population that lives in or near major metropolitan areas, are able to access broadband through commercial network operators. As explained in the previous paragraph, some of those Canadians living in rural and remote parts of the country are able to have access to broadband Internet via the federal government's Broadband for Rural and Northern Development Pilot Program. However, there are about 4200 Canadian communities (average population 1500) that do not have access to broadband (http://broadband.gc.ca/pub/faqs/index.html). Therefore, a gap still exists for Canadians in towns and rural areas that have not been served by the Broadband Program and are not served by the commercial broadband market.

Internet Access in Churchill through CCNET

To analyze CCNet's impact on Churchill's citizens and businesses, the story of the community based internet provider is presented in two sections. The first part of the story details the quest for dial up connection and the second is the quest for broadband.
As a community controlled and operated business, the Churchill Community Network (CCNet) fits the definition of a Community Economic Development strategy. The Churchill Community Network has its roots in a group of Churchill community members who met informally in the mid 1990s to discuss computers and Information Communications Technologies (ICT). Calling themselves the Churchill Computers Users Group, the ten members all had computers and used them to access the Internet through CompuServe, a service provider, using long distance phone lines.

Members of the group discussed the toll charges and long distance fees needed to access the Internet via CompuServe and realized they were each spending up to $400 to $500 a month in access fees. There seemed to be no alternative to paying monthly access fees until a member of Churchill's Town Council introduced the group to a representative of the Blue Sky Community Network.

The Blue Sky Community Network was a Manitoba based volunteer organization with a mission of facilitating locally based Internet access solutions to allow Manitobans open access to the information highway. While not a program of Industry Canada, the federal government department encouraged Blue Sky Community Network to help build locally based Internet solutions by informing communities about the Community Access Program and helping local groups fill out application forms.

In discussions with Blue Sky Community Network, the members of the Churchill Computer Users Group realized they could meet their own individual needs by accessing cheaper Internet access while benefiting members of the greater Churchill community.

With guidance from the Blue Sky Community Network, the Churchill Computer Users Group submitted an application to Industry Canada in October 1995. Their mission, as stated in their *Community ACCESS Program Application* (1995), was "to provide the community of Churchill with free public access to the Churchill Community Network and to bring the Information Highway to Churchill at a low cost" (p. 1).

The Churchill Computer Users Group received approval for a grant from Industry Canada in January 1996. The organization became known as the Churchill Community Network (CCNet). CCNet held a founding meeting for 45 members later that same month and elected a president, secretary, a treasurer, two community representatives and two members at large.

As Mike Iwanowsky, the founding President of CCNet explained
> "That's when every one of us started realizing that this isn't something that's self serving anymore, this is something that needs to happen if Churchill wants to grow… at that time it was a successful community in the tourism side of things with the polar bears and stuff like that but the port was going through very difficult times. The Health Centre had been struggling as well so this was the way to go and we realized that very early on that this really was an important project." (Iwanowsky, personal communication, June 21, 2004)

Starting in January 1996, the executive of CCNet met at least once a week for the next year to discuss progress. They divided themselves into working committees to accomplish the activities necessary to start up the Internet business. This included incorporating as a not for profit, writing a charter and by-laws, opening a bank account, conducting market research by surveying Churchill businesses and government departments and agencies, writing a business and a financial plan. The Internet was a relatively new concept and the group needed to compare the prices of appropriate hardware, research types of Internet access, telephone lines, and examine the pros and cons of purchasing versus leasing a satellite dish. (Iwanowsky, personal communication, June 21, 2004)

The CCNet executive held community meetings to explain how people in Churchill could use this technology to their benefit. As Churchill does not have a daily newspaper, CCNet held community meetings to promote anticipated benefits of Internet access. The Internet would provide quick and easy exchange of information and for the arts council, service organizations, aboriginal groups, the hospital board, the library, religious organizations, the town council and the schools and ordinary citizens. It would also reduce Churchill's physical isolation by giving its citizens a low cost link to Canadian and global organizations, and make large amounts of research and information readily available. Internet and email access would facilitate self-learning and would make taking a long distance education course possible.

Churchill businesses planned to use Internet connection to promote their products and services, to market tourism opportunities globally and to increase the potential for the export of goods. The federal, provincial, local government and social services agencies would be able to make their services available to Churchill's citizens. CCNet also expected that exposure to the Internet would enable Churchill residents to learn more about computer and information technologies and therefore make them better able to find employment.

In the mid 1990s, as elsewhere in Canada, there were many people in Churchill who did not know how to browse the World Wide Web or use email applications. CCNet organized volunteer trainers to help the public get online through training session held at the community college and the high school. CCNet also started the process of setting up a public access terminal that would be available to the community free of charge.

CCNet's executive realized that they would not be able to cover costs of Internet access through Industry Canada's grant. Working together with the Town of Churchill and other organizations, CCNet identified their financing needs and applied for loans. In addition to the grant from Industry Canada's Community Access Program, CCNet received a donation from the Churchill Northern Studies Centre, a no interest loan from the Town of Churchill and a loan from the Churchill Community Development Corporation to purchase equipment and start up the business.

While CCNet was not originally born out of a Community Economic Development process, it took on the characteristics of a social enterprise. Unlike a commercial enterprise, CCNet did not just aim for a financial bottom line. The reason commercial companies have yet to provide broadband Internet to Churchill is precisely because it is a remote community with a limited market and lacks people with the technical skills to maintain equipment. Residents, government, business and the community as a whole benefited from the community based Internet company.

The Quest for Dial Up

By April 1996, the volunteers working to start up CCNet had ordered the hardware; the server, the modem bank, the Ethernet hub, the router and the public access terminal. A Community Access centre was set up at the Duke of Marlborough high school with computers and printers. By June, over 100 people had participated in eight training sessions covering basic Internet usage and community networks.

After an extensive process of examining options, CCNet chose to develop their network thought a satellite link with CanCom Satellite Networks, a southern Ontario ISP.

CanCom offered Churchill an Internet backbone with email, web space hosting and domain name control with one limitation: these services would be administered through CanCom taking away some of CCNet's control over its own services. CCNet did own the satellite and equipment in Churchill. Telephone services for the dial up service came through Manitoba Telecom Service Inc. (MTS). The server was housed in the high school located in the same building as the library.

In November 1997, CCNet started operating with a dial up Internet service with 15 access lines and a simple modem pool offering three different rates to members for three levels of service ranging from $35.00 to $60.00 per month. Members paid a one-time membership fee of $25.00. The goal set out in the business plan was to operate a viable business and repay debt by signing up 35 to 50 dial up service members.

Four CCNet volunteers went out and put in connections and system cards when residents or businesses signed on for Internet with CCNet. By March 1998, CCNet had easily surpassed the goals set out in its business plan as it had attracted over 130 members who signed up for Internet services. The business was generating sufficient revenue to cover the operating expenses such as the satellite transmissions and making loan payments. The treasurer ensured the books were up to date and worked with other Board members to develop payment methods and followed up with collections if members were not paying their monthly bills on time.

By continuing to operate a financially viable community based business, CCNet managed to pay off their debt well ahead of schedule making their final payments in November 1999.

Throughout 2000 and into 2001, the CCNet offered a dial up service to about 145 members. CCNet held regular meetings for its membership although often only a handful of members would attend. People interviewed for this report indicated that members perceived themselves to be "customers" receiving Internet service from CCNet rather than as active members of a not for profit community based organization.

Roxanne Chan, the treasurer of CCNet explained that CCNet was not operated like a "for profit" business as it had no staff, no fixed administrative office and no dedicated equipment like filing cabinets, computers, printers or accounting software. The organization was operated by board members working on a volunteer basis in the evenings and on weekends after finishing their paid jobs (Chan, personal communication, June 21, 2004). Despite a taxing volunteer workload, the members of CCNet's Board of Directors remained in place with only a few replacements being made when few board members moved away from Churchill and had to be replaced.

One of the major challenges CCNet faced and continues to deal with by operating in a rural and remote community is a lack of local computer technicians. CCNet members would call upon volunteer board members to fix their computer problems and tackle computer viruses, whether they were related to CCNet's Internet service or not.

As the years passed, volunteers grew wearier and CCNet's technology became outdated. However, CCNet continued to operate profitably with its dial-up services. The community members behind CCNet felt justifiably proud of their achievements.

The feeling of empowerment at that time is well summed up in the words of Mike Iwanowsky, chair of the CCNet Board. "I had a great job...and then I started doing CCNet and then like I said, getting it paid off in two years you know a huge sense of pride there and then all of a sudden I'm talking to my dad on the phone and I realize.. my dad at one time thought I was going to be flipping burgers or being a bum my entire life." (Iwanowsky, personal communication, June 21, 2004) Mike Iwanowsky went on to become a town council member in Churchill.

Overall CCNet's board emerged from the first six years of operation proud of their accomplishments but increasingly fatigued by working countless volunteer hours operating the community-based business.

Impacts of Dial Up Internet on Churchill

The impacts of CCNet providing dial up services to Churchill as articulated by CCNet Board members during the face to face interviews are summarized in this table. See the table below.

Impacts of Dial Up Internet on Churchill – Individuals, Business and Community

Target	Positive Impacts	Negative Impacts
Individuals	**Empowerment** - people running CCNet have a sense of pride in starting the business **Skills development, job readiness** – CCNet volunteers run free training sessions for the public so people learn how to use email applications and the Internet, CCNet Board upgrade ICT skills **Education** – Churchill's 200 or so students have access to the Internet **Expanding social networks** – people running CCNet worked as a team to manage the business	**Lack of compensation** - lots of unpaid work for the CCNet Board of Directors
Business	**Strengthening local enterprise** - Churchill businesses use the Internet to advertise, find clients, communicate cheaply despite distance **Strengthening tourism sector** – Internet helps tourism industry in Churchill reach new markets outside of Canada and tourists in Churchill are able to use Internet from their hotels	**Time** - Dial up is slow inhibiting some forms of business
Community	**Access**– CCNet facilitated public Internet sites in schools and the library Promotion of community services – the Churchill town council, provincial, federal government, service clubs are able to promote their services and communicate with community members **Facilitates Arctic research and education** – Internet in the research centre **Over come remote location** - connect residents and businesses to services and markets in other parts of Manitoba, Canada and the world so they can play games, down load music, research, work	

As a community economic development strategy, the provision of dial up services was successful. Overall the benefits to Churchill are positive.

The Quest for Broadband

In 2001, as time went on and information community technology changing rapidly, pressure came from within CCNet's board, membership and from local businesses to keep pace with innovations in the rest of Canada. Access to broadband Internet would

give Churchill residents the ability to send or view large amounts of information over the Internet including live video and audio. People wanted broadband Internet service so they could download and upload music, games, movies, and large files, view websites and access the Internet more quickly.

Industry Canada (2005) defined broadband on its *Broadband – High Capacity for All Canadian Communities* website.

> "Broadband allows large amounts of information, like real-time, audio-visual applications and advanced multimedia, to be shared between devices, such as computers. Because some multimedia applications require large amount of data to be transmitted, high capacity communication channels need to be used… A broadband access infrastructure is needed to link the various institutions and dwellings to the communication network backbones carrying extremely high data capacities (multiple gigabits per second) over optical fiber. This infrastructure can be developed by using optical fiber, co-axial cable, or terrestrial or satellite radio-frequency links." (http://broadband.gc.ca/pub/faqs)

CCNet's board of directors started looking into options to increase bandwidth. In a community as remote as Churchill, satellite was the only practical solution. Unfortunately, Churchill did not qualify for the federal government's Broadband for Rural and Northern Development Pilot Program because the town already had internet access.

Initially, the board CCNet explored entering into a partnership with a local cable television provider. However, this solution was deemed too expensive requiring extensive upgrading of Churchill's cable network infrastructure.

At the same time CCNet was researching options, the Churchill Regional Health Authority was negotiating a contract with a company called Global Wireless Satellite Networks/Vancouver Teleport to provide it with broadband service.

This was as a result of the Manitoba government investment in infrastructure to facilitate high-speed telecommunications access in rural and remote areas of the province. The government's Provincial Data Network (PDN) was to be upgraded to improve broadband access for hospitals and provincial government buildings. The purpose of improving access for hospitals was to facilitate Telehealth, Oncology Outpatient and a Drug Program Information Network. Manitoba Telecom Service Inc (MTS) was awarded the contract for upgrading and expanding the capacity of the Provincial Data Network.

Unfortunately, CCNet could not act as an Internet provider to the Regional Health Authority due to strict patient privacy and security issues imposed on the RHA by the province of Manitoba. Global Wireless Satellite Networks received the contract with the Regional Health Authority to provide its network service and subsequently approached CCNet about assisting the community based Internet company to offer broadband to its members.

In the summer of 2001, Global Wireless Satellite Networks and CCNet prepared a business plan that would allow CCNet to offer broadband as well as dial-up Internet service. Given Churchill's small population and isolated location, CCNet has a limited number of potential users for any one service. Therefore, Global Wireless Satellite

Networks recommended CCNet use broadband to diversify its services to include video conferencing and/or cell phones to generate the increased revenues needed to offset the expenses of offering broadband.

The business plan required CCNet to modernize its facilities. CCNet needed to negotiate further financing in order to meet the upfront capital costs of upgrading its equipment and the existing network.

The town of Churchill would receive broadband Internet through a new wireless technology. This technology would be made available to CCNet for below market cost because Churchill would be a test site for the technology in a live environment.

The *Project Proposal for CCNet of Churchill*, *Manitoba* (2001) written by Global Wireless Networks explained that this new technology would make it possible for Churchill to expand into Voice Over IP telephony and video conferencing, something the board of CCNet anticipated would have useful applications for businesses, government and social services in Churchill in the future (p. 2). The Voice Over IP based system combines communication mediums into a digital signal and transmits the signal via satellite dynamically using the bandwidth.

The Project Proposal for Industry Trade and Mines (2001) describes how Churchill would receive broadband.

> "The services are landed in Churchill via a satellite signal. The signal is then converted to allow for the utilization of the local cable infrastructure, which in turn takes the services to the residential user. The business user will be serviced by a wireless solution deployed from the same receiver/ transmitter as the cable solution. The signals generated and transmitted from Churchill are terminated in Langley, British Columbia and tied into the Telus network via Vancouver Teleports earth station. GWSN provides T1 access to the Internet at 2kbs. Global transmits a 2mb pipe received by Churchill and is directed to each individual IP address. The signal back to Langley is a 356k pipe giving us the advantage of downloading from 2 Meg while we only pay for the 512k pipe." (p.9)

In 2002, a deal was struck between Global Wireless Satellite Network and CCNet. CCNet financed the new equipment and upgrades from revenue generated in the first five years of CCNet's operations, a loan from the Community Economic Development Fund, a loan from the North Central Community Futures and a loan from the Hydro Mitigation Trust Fund. GWSN contributed satellite equipment and the earth station.

CCNet was looking for grants and loans just ahead of the Government of Canada launch of the "Broadband for Rural and Northern Development Pilot Program." The program was created to assist rural and remote communities without broadband access by providing financial assistance. Ironically, be being ahead of the game and initiating its own broadband Internet access, Churchill found it was ineligible for funding through this program.

By September 2002, when the government announced the broadband program, CCNet already had everything was in place to launch a satellite/wireless solution to provide members with a 2Mbps high speed Internet service. The existing CCNet network using satellite and wireless technology was upgraded resulting in increased speed service.

The goals set out in the business plan were to secure a minimum of 50 commercial users, 150 residential users, and to create three full-time CCNet jobs in the short term to sell and to install Internet services. The plan outlined one and a half full time jobs in the long term to meet CCNet's staffing needs.

The Trouble with Broadband

While the switch to broadband led to increased speed and capacity, it also proved more difficult to maintain than the dial-up service. Members experienced periods when the server was down and they could not access the service. The CCNet volunteer board struggled to keep on top of maintaining and repairing the new network when it was too expensive to fly in computer and network technicians.

Then competition to CCNet arrived when Manitoba Telecom Service Inc (MTS), Canada's third largest communications provider, began offering a cheaper competing dial up Internet service. Whenever CCNet had a problem with their broadband service, they would lose a few members to MTS.

CCNet's membership continued to view themselves as users of the service rather than as members of an organization providing Internet service to the community. As a result of low member turn out at meetings and continued exhaustion at the board level, community meetings and were held less and less frequently during this time period.

Due to competition from MTS and interruptions in service, in 2003, CCNet did not meet its goal of increasing number of members signing up for service. As a result the Board of CCNet did not feel revenues were sufficient to hire staff.

CCNet faced a conundrum. It was not generating sufficient revenue to hire staff to drive marketing campaigns, provide customer service, manage and repair the network, and develop new services that would increase revenues. Yet with fixed monthly costs and no increase in revenues, CCNet would never be in a position to be able to hire staff. Meanwhile, the core people had been volunteering to run a business for eight years were burned out.

CCNet's Treasurer, Roxanee Chan described doing administration work without an office, without equipment and on a volunteer basis on top of her full time job.

> "CCNet is actually a small business...the problem is I've got some of this stuff here where people bring in their sign-up forms. I've got the actual accounting software on my home computer so I'll go home if I forget one piece of paper. I can't do the books that night because I've got to come running back to get the paper, then go back home, then my printer died so now what I'll have to do is do the work at home on my printer, then run to the Trading Post, print it there, run back here and that bag gets heavy with all the files." (Chan, personal communication, June 21, 2004)

CCNet's challenges were exacerbated on April 10, 2004, when the Up/Down converter crashed on its satellite communication equipment. The equipment provided a satellite connection to the Internet for both the Province of Manitoba (RHA and the MHA) and the CCNet. This resulted in CCNet's members being without service for several weeks.

As a result of the crash, the province of Manitoba, which was responsible for ensuring the operation of the RHA, sped up the process of converting over to MTS fibre optic network. The supplier of the satellite equipment, the Global Wireless Satellite Network did not repair the system, as it was too expensive. In light of this, CCNet decided to change their Internet connection from the slower satellite connection over to MTS' land based fibre optic link. The fibre optic link resulted in a faster broadband connection.

President Mike Iwanowsky researched and wrote a report called *Churchill Community Network Inc.: Options Analysis* (2004a) to present to CCNet's Board of Directors. CCNet's executive made the decision to eliminate its dial up service by the end of May 2004 and switch over completely to a wireless service rather than maintain a dial up service that had to compete with MTS. CCNet held a public meeting in April 2004 to let members know about the move to wireless. New rates were developed for members. However over the following year, CCNet continued to lose members to MTS and so became less economically viable.

Opportunities for Churchill in the New Economy

Despite the difficulties for those volunteers operating CCNet and concerns about its financial viability, the broadband access is important to the town. Churchill's mayor summed it up when asked how important is the Internet? The Mayor of Churchill, Mike Spence said "I don't know how we'd survive without it whether it is promoting the community or attracting other businesses to the community, it is a must." (Spence, personal communication, July 6, 2004)

Businesses operating in the tourism sector use Internet sites to attract people from all over the world to visit Churchill, book transportation and tours to see wildlife and experience Canada's north. Hotels in Churchill offer guests Internet connection to stay in touch with their friends and families. The Churchill Northern Studies Centre offers researchers, students and eco-tourists email access and Internet research stations.

Like other businesses around the world, enterprises in Churchill use the Internet to interact with customers, to attract new customers, to make information available about products and services, to email, and to complete business transactions on-line. As the tourism industry is particularly important in Churchill, restaurants, guests shops and hotels have websites with photos and virtual tours of their facilities. Hotels advertise to attract tourist from all over the globe who come to experience Canada's north, whales, polar bears, birds, historic sights and parks.

CCNet Board member Bob Penwarden reflected on broadband saying that that "as a hotel person, it has given me a boost…we have every hotel wired now. We have a computer in our office and we have a computer out at the front desk for people to use...it makes a happier tourist. A business website is a way of introducing yourself." (Penwarden, personal communication, June 23, 2005)

Under its current mode of operation, the monthly payments CCNet needs to make include digital bandwidth, MTS phone line charges, and loan payments to cover capital outlay. These expenses are barely covered by current revenues. CCNet cannot continue to operate in this mode. Under its current structure, even if a marketing campaign were launched and new members were attracted, CCNet's board does not have time on a volunteer basis to manage the technical and administrative side of servicing new users.

Using key informant interviews, the researchers assessed the impacts of the broad band Internet business on Churchill's citizens, businesses and community as a whole. See table following.

Impacts of Broadband Internet on Churchill – Individuals, Business and Community and Local Government

Target	Positive Impacts	Negative Impacts
Individuals and business	**Speed** – fast transmission, ability to send or view large amounts of information over the Internet including live video and audio **Skills development, job readiness** – Individuals continue learn how to use email applications and the Internet	**Community based business not understood** – members view themselves as customers rather than members - very few volunteer to assist - some members are not loyal to a community business and switch over to competitor **Disempowered community leaders** - Board members are discouraged and burned out.
Community, local government	**Online information about Churchill**- Town council has website where it can share council meeting minutes, services and advertise upcoming events. Community newspaper is also online. **Support for Education -** Community access stations make it possible for members of the public to use the Internet at the library and for students to use it at school for research, and learning. **Support for Arctic Research -** The Churchill Northern Studies Centre (CSNC) is an artic research and educational centre organization that hosts researchers from all over the world, eco-tourists and students and has been a strong supporter for CCNet since the beginning.	**Lack of consistent support from government agencies** – no partnerships with CCNet formed to explore new CED opportunities **Not sufficient promotion of economic linkages** – no effort to teach local business to use the Internet to improve their businesses

CCNet's provision of broadband service is not economically viable. The social impact of CCNet's broadband service is mixed. The most negative consequences are for the volunteers running the business who were exhausted and discouraged. While there is a

potential for Internet applications that could be very beneficial to Churchill, CCNet is lacking the capacity to develop new products. Therefore, during this epoch, it has not been a sustainable community economic development strategy.

Summary of challenges faced by CCNet

It is important to contextualize the troubles CCNet has faced as an Internet provider. Worldwide the "dotcom" boom became known as dot.bomb when the market bottomed out in October 2000. The National Post (March 8 2005) reported that the Internet sector faced a downturn that devastated many Internet companies. (p. FP3)

The dotcom sector was characterized by many small players in the late 1990s. The market has now consolidated and is dominated by fewer, bigger players. In early 2005, the MTS (December 21, 2004) announced that it has made Digital Subscriber Line (DLS) service available to 83% of Manitoba. (www.mts.ca/portal/site/mts)

Obviously a company as large as MTS has many competitive advantages over a small community based business. These advantages are exacerbated in the ICT field where technology changes rapidly and capital costs are enormous.

In addition to facing challenges typical to start up ICT initatives, CCNet operates as a business and many of the obstacles experienced by CCNet are no different from any other social enterprises or businesses competing in the New Economy. See table below.

Challenge of Obstacles Faced by CCNet

These obstacles were identified during interviews with CCNet Board members.

Obstacles	
Social enterprise	No office space nor dedicated equipment such as filing cabinets, computers, accounting software, printers
	Run solely by volunteers; no dedicated book keeper, sales or computer technician
	Lacking a well administered collections procedure when members do not make timely payments
	Managing debt and maintaining payment schedules
	Outdated marketing materials
	Not generating sufficient profit to finance upgrades or improvements
New Economy/ ICT Industry	Rapidly changing technology – as technical complexity gets higher cost get higher too
	Dramatic advances in technology in this time period
	Infrastructure ages and falls into disrepair very quickly requiring big capital outlays
	Competition from another Dial Up Service Provider that can offer services more efficiently
Remote location	Limited local market in Churchill with little opportunity for market share increase or market growth
	Long distance to larger markets for goods and services
	Shortage of people with specific technical skills in Churchill Expensive to fly experts into the community

Conclusion

Community based organizations such as CCNet create community control and empower individuals. Unquestionably, CCNet has been a leader bringing Internet access to a remote part of Canada years before government programs or for profit Internet providers would have been able to do so. Everyone from the Town of Churchill to business owners to individual citizens benefited from learning and using broadband. When Penwarden spoke about the community volunteers who started CCNet, he said

> "The people that have tied themselves to providing the community with the service are really be commended and I think taking this extra project on just strengthens the community. I really don't know where the community would be without these people at this time" (Penwarden, personal communications, June 23, 2004)

However, communications technologies are advancing rapidly and the costs and technical knowledge associated with continuously upgrading a telecommunications organization like CCNet are overwhelming for a volunteer, community-based organization. CCNet is operating without subsidy except that provided by the volunteer labour. As such CCNet will not continue to operate long if it is unable to turn a profit and provide reliable service.

Recommendations

The Government of Canada website on *Broadband - High-capacity for all Canadian Communities,* lists the benefits of broadband for Canadian communities. Broadband can :

- provide improved health care and home care services

- facilitate online and distance learning

- improve access to government services

- encourage e-business with new broadband empowered applications and services

- encourage e-commerce through selling products and services on the Internet and sharing best practices

- improve the ability of citizens to participate in local, regional and national issues of interest" (http://broadband.gc.ca/pub/faqs/faqscomplete.html)
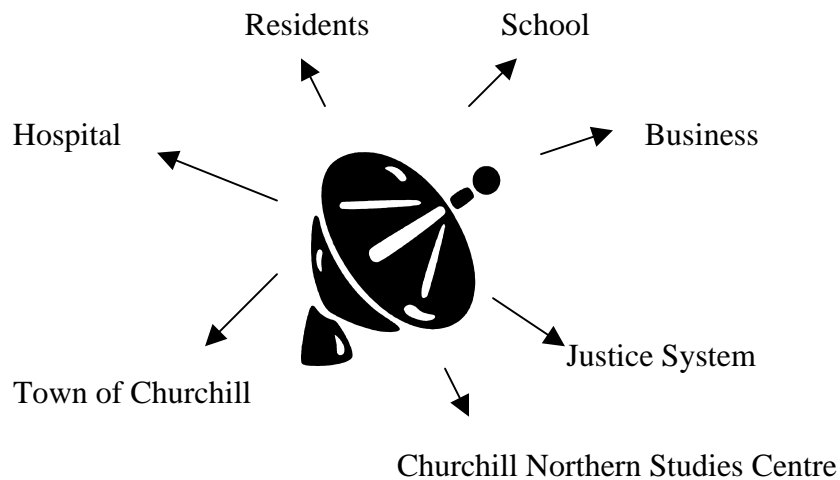
Through 2004 and 2005, the town of Churchill had two high-speed telecommunications systems; CCNet and the Provincial Data Network (PDN). In June 2005, the PDN was only be used by the Regional Health Authority and Manitoba Conservation. CCNet was used by businesses and individual community members. It seemed inefficient and unsustainable to have parallel sets of infrastructure for Churchill, a town of 1100 people.

The authors recommended that Churchill undergo a process of developing an Information Technology using a CED framework that strives to benefit the entire community. CCNet, a community based business, is a tremendous existing asset. The skills, energy and

experiences gained by the hard working people who have been managing CCNET for 8 years will need to be incorporated into a new strategy.

A comprehensive strategy would help many sectors of the community in Churchill explore how they might benefit from using Broadband applications such as Voice over Internet Protocol technology and teleconferencing. The Report of the National Selection Committee Broadband for Rural and Northern Development Pilot Project (2004) found that "experience has shown that one of the principal obstacles to the development of information networks and services is lack of awareness among key stakeholder groups of the benefits that can result in terms of socio-economic development and public services" (p. 9).

Diagram showing the different sectors that need to collaborate to ensure sustainable broadband access in Churchill, Manitoba

Residents   School

Hospital   Business

Town of Churchill   Justice System

Churchill Northern Studies Centre

The Regional Health Authority did not use CCNet's Internet service for reasons of patient confidentiality. The authors recognize that confidentiality issues need to be resolved before systems can be shared. It would seem worthwhile to try to overcome privacy and confidentiality challenges so all potential broad-band users could tap into one set of infrastructure.

The benefits of the PDN in Churchill have been demonstrated; the Rural Health Authority has upgraded their equipment so it can support telemedicine. Not only are patient costs reduced but administrative expenses are also saved. Churchhill's justice department could potentially also benefit from videoconferencing to relieve backlogged cases. There would also be distance-learning applications in the school system and at the research station.

Building on CCNet's assets, Churchill needs to develop an ICT strategy using a community economic development framework that results in one sustainable Internet infrastructure serving the entire community rather than having multiple broad band connections for different provincial and municipal departments and private citizens.

Sustainable Internet connectivity would help Churchill to overcome obstacles created by its remote location and share in the benefits created in the New Economy.

Post script

After the completion of this report, CCNet ceased operations in June 2005. In an interview, Churchill's mayor, Mike Spence expressed the frustration of losing broadband because it had helped to overcome the physical distance between Churchill and the rest of Manitoba. "In a sense, the community is going backwards. As the rest of the communities in southern Manitoba switch from dial-up to broadband, we are going from broadband to dial-up" Spence (personal communications, August 22, 2005).

Most businesses and organizations in Churchill felt the effects of losing broadband. The Hudson Bay Port Authority, the Churchill Northern Research Centre and the Town of Churchill have, at great expense, had MTS install private cable lines to deliver high speed service because broadband internet service was critical to their day to day operations.

The Churchill Town Council clearly recognized the importance of broadband for the community. As of August 2005, the Churchill Town Council is holding meetings with MTS, provincial government departments, and local businesses to discuss how to reinstate broadband services to Churchill.

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The role of the RDI Advisory Committee is to provide general advice and direction to the Institute on matters of rural concern. On a semi-annual basis the Committee meets to share information about issues of mutual interest in rural Manitoba and foster linkages with the constituencies they