



CASE STUDY

MARKET: STATE & LOCAL GOVERNMENT

REGION: NORTHERN QUEBEC, CANADA

COMPANY: ECN

ECN'S BROADBAND NETWORK PROVIDES SOCIAL EMPOWERMENT TO NORTHERN QUEBEC

A 1,400-KILOMETER FIBER OPTIC COMMUNICATIONS NETWORK IS FUELING COMMERCIAL AND SOCIAL BENEFITS THROUGHOUT NORTHERN QUEBEC.



Eeyou Communications Network (ECN) is a Mistissni-based, non-profit telecommunications utility that was formed to provide broadband internet access for the 35,000 people living in nine Eeyou Istchee Cree and five non-native James Bay communities in northern Quebec. Its 1,400 km fiber optic network utilizes a 10 gigabit communications infrastructure supporting voice, video and data, linking remote communities to global networks and commercial service providers, as well as to government, scientific, medical and educational resources. The area had previously been served by a single slow telephone service with dated microwave facilities. ECN's significant breakthrough in technology, combined with innovative approaches to financial and business partnerships, has made this project a showcase for developing regions around the world looking to address the digital divide.

CHALLENGES

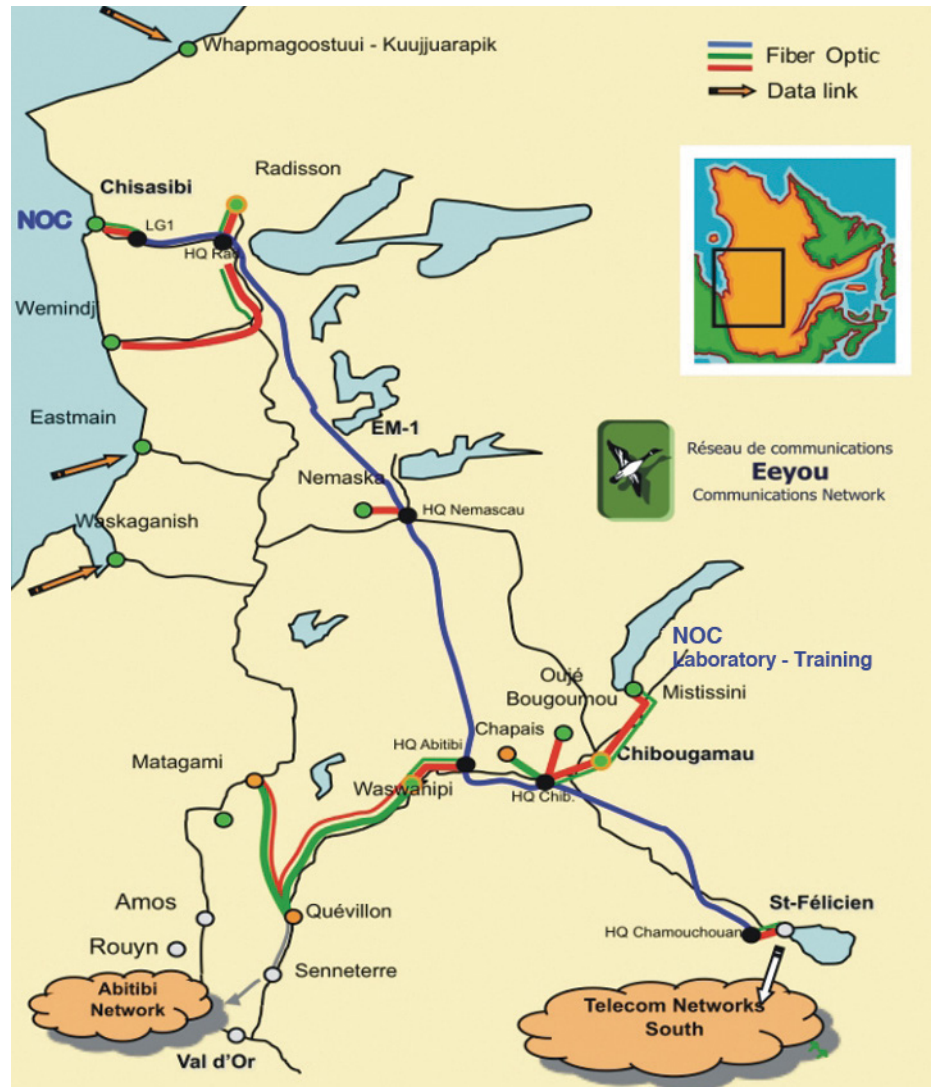
- Remote communities with limited connectivity and outdated services
- Massive coverage area (over 300,000 sq. km)
- Spans of 100 to 275 km without signal regeneration
- Severe weather and temperatures to -50 Celsius

SOLUTIONS

- 1,400 km fiber-optic cable, buried and aerial
- Scalable broadband infrastructure including the Alcatel-Lucent's 7750 Service Router and 7210 Service Access Switch, and the 5620 Service Aware Manager
- OmniSwitch 6855 Hardened LAN Switch, OmniSwitch 6250 Stackable Ethernet Switch
- GPS Clocking, UPS and DC plant
- Alcatel-Lucent IP PBX Service
- Detailed fiber network routing, engineering and deployment
- Shelter installation; batteries and generators
- Design, logistics, installation and maintenance service with engineers and project manager

BENEFITS

- E-government projects free from pre-existing conditions and at minimal cost
- Connection of school boards and educational services to bring post-secondary education and specialized secondary education with remote classrooms at no extra cost or relocation of existing teaching assets
- Adult education school for career reorientation
- Tele-health and social services for the entire area
- Governments able to hold tele-meetings in real time without travel.
- Equal access to network services and facilities for non-native James Bay municipalities
- New opportunities for jobs, e-commerce, commercial communication and research, driving a new economy for the area.
- Access to real High-Speed Internet System at affordable rates



ASSESSING THE CHALLENGES

The Eeyou Istchee and the James Bay region of northern Quebec is a vast rural area of over 300,000 sq. km. with a challenging climate of short summers and winter temperatures as low as -50 degrees Celsius. Populated by nine First Nation Cree communities and five non-native Jamesian settlements, it suffered from a lack of modern broadband connectivity, which has inhibited economic development. "The digital divide is a phenomenon felt in many Aboriginal and northern communities, communities without broadband connections to large centers," says Matthew

Coon-Come, Grand Chief, Grand Council of the Eeyou Istchee Cree. "This division does more than deprive Internet to the disadvantaged. It affects the way businesses and the economy develop, it affects the way we can attract human resources to the north to support our development; it affects the way health and education is delivered and it makes distant travel necessary, if only to obtain basic services. It deprives the regions of the capability to compete effectively."

Fortunately, the area had a fiber optic trunk line installed by a utility Company in 1990 to carry proprietary telemetry to monitor certain of its critical infrastructures. This core infrastructure

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Matthew Coon Come, Grand Chief, Grand Council of the Crees



Over 300 km of buried Fiber

proved to be the foundation for a project that now is transforming the region – giving every resident and business broadband access to the world.

BUILDING THE FUTURE: FIRST STEPS AND ALCATEL-LUCENT

In 2001, Alfred Loon, Director of Economic & Sustainable Development for the Cree Regional Authority, was looking for a tool that economic development officers of Eeyou communities could use to do their jobs more effectively. “The local telco was going to raise residential rates, so our representatives started talking with the Canadian governmental body that oversees them, and in doing so became aware of the fiber owned by a utility Company in the area,” he says. “At the same time I was looking for this type of resource, so we got together and started working with Canada Economic Development on ways in which we could build an advanced regional communications system from that backbone.”

The relatively small population and substantial logistical challenges required a unique business model based on investment for the future. Startup funding initially was provided by the Cree Regional Authority, which also conducted feasibility and engineering studies, environmental evaluation and business and technical assessment for the proposed network.

Local stakeholders included a number of diverse partners. The Cree Regional Authority and its communities – including the Cree School Board, the Cree Board of Health and Social Services of James Bay and the James Bay Cree Communications Society – worked with local non-native municipalities to move the planning forward. They were joined by the Conference régionale des élus de la Baie-James, the Commission scolaire de la Baie James and other key organizations in successfully negotiating with the local utility Company for access to its fiber.

“If we had followed a conventional business model we wouldn’t have gotten far,” Loon says. “We knew that we would need some government support for a project of this magnitude, and we had to be very creative. We approached each of the communities in the area – all of the players – and asked them how much they are spending on their telecommunications, especially the transport cost. Once we got that figure we had to consider what kind of network we could build from those revenues.”

In 2007 the group formed ECN with Loon as its president and issued requests

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Alfred Loon, President, ECN

for proposals for deploying a cutting-edge broadband network that could serve everyone in Northern Quebec. Government support from Quebec’s Villes et Villages Branchés program and the Economic Development Agency of Canada for Quebec Regions augmented regional financing to raise the C\$28.8 million required for the project.

“After the proposals came in, Alcatel-Lucent came out on top,” says Loon. “They just had a better solution. With another company that was competing, we would have bought equipment that was five years old. With Alcatel-Lucent, we bought equipment of the future – sometimes literally in the sense that our area’s unique geography and needs made it necessary to come up with solutions that didn’t yet exist. In fact, when we were planning this project, some people in our region thought we were a little crazy attempting this, but at the same time they were excited to see what we could create.”

SOLUTIONS FOR TECHNOLOGY, BUSINESS AND COOPERATION

Deployment of the network began in 2010. Alcatel-Lucent managed detailed engineering, construction and maintenance, while providing fiber, Ethernet and PBX software, hardened switches, routers, batteries, generators, shelters and other equipment. As the project reached out to connect communities to the backbone, it often buried the fiber in northern areas where no poles existed, while stringing it alongside existing aerial lines further south.

One major challenge was deploying the network over fiber spans of 100 to 275 km without signal regeneration, while keeping service fast and economical – an issue ultimately addressed by using submarine cable technology.

“It’s incredible what the engineers were able to come up with,” Loon says. “We really pushed the technical envelope on this, creating a significant

Perspectives from Alfred Loon, President of ECN

Reasons for choosing Alcatel-Lucent:

- Cutting-edge equipment
- Ability to innovate to address unprecedented challenges
- Flexibility
- Attractive cost
- Corporate history and stability

breakthrough in technology to support this kind of bandwidth under these circumstances. It's something ECN has achieved by developing new approaches in all aspects – technology, financial, business, special legal structures and partnerships – making this project a showcase for other developing regions.”

ECN's bold project is also creating a positive platform for cooperation and reconciliation between the area's Cree communities and non-native municipalities, which often have been at odds politically. Its current governance board is made up of eight Cree and three non-native members, with a 75 percent majority vote needed for any major action. That means that at least one non-native member would have to agree with Cree representatives in order to approve any important decision. “Regardless of political issues, we still need to work together. We're aiming to foster a better relationship between the communities,” Loon states.

CREATING A WORLD OF BENEFITS

ECN broadband began operation in March 2011, changing lives throughout northern Quebec while moving it into the future. Currently all of the school boards are connected with tele-education and tele-health provided by the region's own Cree health and social services agency.

“We're not just a transport carrier,” Loon points out. “We're also wholesale Internet. The old system was able to provide dial-up quality service. When we opened up the pipe our customers were experiencing for the first time real broadband internet access, and on bandwidth basis, communities are now

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paying significantly less than what they paid before to the old telco company.”

The new infrastructure and services will also create jobs for the region. We're going to start a three-year training program,” Loon says. “Ultimately we'll be training at least 35 to 50 people. Combined with job fairs hopefully that will make a real difference in people's lives. Once we have the networking in place, it will be here for the foreseeable future. So the jobs are always going to be there.”

There have been additional benefits as well, such as bringing in customers that had not been anticipated at the outset – for example, a police force that now has been regionalized thanks to ECN's communications services, as well as an agreement with the Quebec Provincial police. “Even the local telco company, Telebec, has let us know that that they want to partner with us,” says Loon. “They know that we're here to stay. They can use our network for QoS and other services.”

A business incubator based in Montreal is at the forefront of what is sure to be a significant number of commercial organizations looking to do business in the region. The mining sector is particularly interested in using the network for such applications as sharing and analyzing 3-D data, according to Loon. “They used to have to make trips between Montreal, Toronto and up north,” he explains. “Now they can do all of that analysis online and then contact people in the field to take whatever actions are necessary. We also are able to eliminate some of their telecom costs, especially for workers who want to stay in touch with their families who are hundreds of miles away.”

And this is only the beginning. “What we're talking about now is just the tip of the iceberg for what is to come in the future,” Loon says.”

NEXT STEPS

ECN's regional broadband project will continue to be an enabler of growth in the years ahead. Quebec's Plan Nord aims to invest C\$80 billion in developing the northern region over the next decade, with ECN's network central to its effort. ECN has been invited to be part of a research committee organized by Quebec's Laval University, while queries arrive daily from others looking to spur development in the remote and challenging regions.

“As we speak we are getting calls from other companies and nations who are interested in how we did it and how they can connect their constituencies in the same way,” says Loon. “There is value to what we've learned, so we're trying to share it with other First Nations across Canada, as well as with people around the world.”

There's no doubt that this network has opened up an entire region to fast, modern telecommunications serving every segment of society. It has also proved to be a source of pride to the communities that have both aided and are benefiting from its deployment.

“Before we accepted the network from Alcatel-Lucent last June, we had to go through testing in one of our network operating centers,” says Loon. “Online there were people from Italy, India and China. Here we are a small community in northern Quebec, basically in the middle of nowhere, and people from all over the world were on the line, looking to us for guidance. When I tell this story to local people, they are astounded that we have that standing, and that Alcatel-Lucent can look at our network as a global model. It's been a great effort by members of my team, our partners, the region and their leaders. Without everyone it would have been impossible to accomplish.”