Alberta SuperNet connects

by Melanie Collison

Big Sky broadband

Alberta seems to do everything on a grand scale. Ambitious ideas are measured against broad prairie, tall mountains and a big sky. So, it's no surprise that SuperNet, a super-sized state-of-the-art broadband network, is well on its way to linking the whole province with fibre optic cable – spending $193 million on 13,000 kilometres of affordable connectivity for 395 rural communities.

Art Price, chair and CEO of system designer AXIA NetMedia Corp., calls SuperNet "real broadband – not incremental, but true next generation that can do interactive voice, video and data, high resolution graphics, in real time, and is fully bi-directional. The network can do everything you can digitize, and almost everything can be put in digital form now."

Five years ago, the Alberta Science and Research Authority (ASRA) laid out for an eager government its bold vision for shaping Alberta into a technology leader. The province had set up the authority in 1994 for just this purpose, to advise it on matters of science and research as a pathway into the global economy. ASRA's 1998 information and communications technology (ICT) strategy report wove the detailed thinking of 65 ICT educators and business people, together with previous studies, into the government's blueprint for prosperity.

When ASRA began its research, Alberta's share of the $2 trillion global ICT marketplace was estimated at 0.3 to 0.4 percent – a fibre optics and wireless communications infrastructure with a $210 million annual investment in R&D; 40,000 people in the ICT business sector producing $8 billion annual output.

The report projected Alberta's significant ICT use, and need for economic diversification onto a global forecast of nine percent annual growth through 10 to 15 years, and postulated that Alberta could capture 0.5 percent of the global ICT market by 2010. They saw 140,000 knowledge workers generating annual revenues of $30 billion.

But ASRA said to take advantage of the opportunities government had to boost education, nourish R&D with $1.5 billion a year, encourage ICT business growth, and create "an ubiquitous, affordable, high-speed communications infrastructure" – which evolved into the SuperNet concept. A specific goal of the ICT strategy was to make broadband available within three years to 100 percent of the schools, 95 percent of businesses and 80 percent of residences, to reach a total of 90 percent of Albertans. The recently urbanized province, whose rural electorate flexes significant muscle, didn't want to treat its rural population as second-class citizens. Thus it chose a policy of bringing service to businesses and citizens while building the system it needed for itself. "You've got a win without even paying more," Price says.

"SuperNet really came from the politicians' listening to the people in Alberta," says Grant Chaney, chief technology officer, Alberta Innovation and Science. In their public consultations, they kept hearing what educators and health care experts could do if they only had the bandwidth. "Now they can focus on those applications instead of scraping together the bandwidth to do them." Fort Vermillion, north of the 58th parallel, will suddenly have access to University of Alberta professors, for example.

The province wanted to boost existing projects that required high-speed access, such as the federal Smart Cities grant initiative; a northern school division's alliance with business and government to create a wireless network for their community; the public libraries' plan to share resources and improve public access; and, Telehealth, in which patients can be diagnosed in remote health centres by specialists in Edmonton and Calgary.

The Ministry of Innovation and Science set a daunting challenge for vendors in its February 2000 RFP. It called for proposals to be innovative on two counts. First, to sculpt the long-term industry-government alliance required to develop and implement a telecommunications network infrastructure. Second, it wanted innovative approaches to creating a secure ICT infrastructure across the province, and it had to offer cost and performance equivalent to competitive urban commercial service. What sharpened the challenge was how open-ended the RFP was. "The focus was on them providing us with models that allowed them a lot of flexibility," Chaney says. The system had to be scalable and able to accommodate technological advances.

Vendors had a month to respond.

"Innovative proposals and partnerships were evaluated at length," says Jeremy Fritsche, Alberta Innovation and Science public affairs officer. "There were nine substantial bids we could consider," Chaney adds. "Judging by the difficulty of the final decision, it was an excellent process. We accepted the initial proposal, then through a number of iterative steps, sought further clarification. I can't even remember how many cycles we went through. This allowed the bidders to put forward with absolute clarity their best bid. We tried to make sure it was easy for them to put their best foot

forward; for example, we took out all the mandatories and put them on a page at the front because we wanted to make sure no-one missed the opportunity because they missed a mandatory."

The successful bid came from the umbrella Bell Intrigna Consortium. While the business entities have since been fluid, the participants are Manitoba Telecom Services, Bell Canada, Cisco Systems, Microsoft, Nortel Networks and 360 Networks, plus four leading Alberta technology companies, AXIA Netmedia, TotalTelcom, WiLan, and Netricom.

IP solution specialist AXIA, based in Calgary, developed the workable, innovative business model to manage the portion of SuperNet outside of government use. "What happens with deregulation and private capital is that you can support your incremental investment in large centres, but it's hard to support in small centres – pure revenue versus the cost. The policy challenge is to maintain the advantages of deregulation and somehow get a network to locations it would not otherwise reach," says Chaney.

The government knew private industry would not go into remote locations on its own. "We asked them," Chaney says. "We knew it was needed, but no one was going to build it. There wasn't a chance. So the government needed to do that, but the really key thing is that other commercial users can utilize it. There's really two models going on – a business model that allows schools, libraries and hospitals to get adequate bandwidth and allows collaboration within the sectors, and creating a network where bandwidth doesn't exist."

AXIA's idea as system access manager was that it provide service directly to all government operations, plus create competition among private sector resellers by wholesaling bandwidth at a consistent price across the province. "The way we make money is effectively to make sure costs are low and we save the government money, because AXIA gets a share of what it saves the government," Price says. "We make money when the government gets its policy outcomes. We make money by creating competition in rural Alberta as opposed to making money by having limited competition."

While it has now customized its concept for various other countries, "at that time, it hadn't been done before," says Price. "We bid as an alliance of AXIA, Cisco and Microsoft. The business model we proposed was to buy services from major telecoms in metropolitan space, wherever there is competition, and where there wasn't competition we would create the network and create the competition. The government wanted us to arrange the service from the major telecom company in the metro as

Courtesy Province of Alberta

part of the bid, after [the first] round of the bids. We had discussions with Telus [the Alberta/BC utility] and Bell; Bell agreed to supply us the services in metropolitan Alberta. It was attractive to Bell because it was already planning to invest in Alberta."

The design hinges on distributed network access points to which "any credible local access provider can make the connection and rely on attractive pricing and on AXIA not being their competitor," Price says. "The specialty small player is on a level playing field with the big historical players. It's economically viable to compete, and we – their supplier – are not a threat to them, we're a partner, where all the other traditional telecom companies are competing with them." (Technical information and a description of the physical network are available at **www.albertasupernet.ca**.)

After months of negotiations, the contract was signed July 24, 2001 with a three-year deadline. While Bell maintains it is still aiming for that target, it is rewriting the construction schedule after taking over building the rural network from AXIA, in addition to establishing its urban presence. It has hired numerous subcontractors to increase the pace of construction. Bell officials declined to be interviewed, saying through a spokesman, "Bell is uncomfortable not knowing the questions ahead of time because of the sensitivities surrounding the subject." A flurry of lawsuits last January and February contributed to the shift in the partners' responsibilities.

The base network, supplied and owned by Bell, is located in 27 communities, including the cities. The extended network reaches 395 rural communities, and should there be delays or cost overruns, Bell carries the responsibility. The cable network begins with existing fibre, some of its lines already in use and some of it dark (laid but not in use) fibre. New cable is being buried – 90 percent of it along road ditches – where the route is economical and environmentally acceptable. Towers will cover the gaps. AXIA has a 10-year contract to maintain the system, in addition to managing access to it.

"This is not a government network," Chaney emphasizes. "It's not built by government or owned by government. Our private sector partners are making it work. There's a tendency for governments to say networks are private and they can't share, but [doing it this way] doesn't cost any more. It's a win-win-win – the private sector, government, and residents, students and patients benefit." It also provides applications developers with a tremendous opportunity to demonstrate innovative products. Still, despite the importance of the private sector, Price says, "it's crucial that the leadership of the government value the outcomes that ubiquitous real broadband can deliver. They've got to believe in it and in the value of competition and creating competition for the benefit of others."

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The first leg is coming into operation west of Red Deer. In Eckville, pop. 1,000, users pay $40 per month. "A local company is able to piggyback off the network the government has invested in, that was built and is operated by private sector partners, to create opportunities in a place where those opportunities just weren't available before," says a happy Fritsche. "Everything is working in concert beautifully to achieve what is planned."

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But the delight of the first users can only make the wait harder for the people at the end of the queue. "The total experience will have to wait until the department of education has a province-wide network and the department of health has a province-wide network from a functional point of view, as opposed to a geographical point of view," Price says. "There are a lot of things they're not doing for anyone because they can't do for everyone – think of the public policy issue of having to answer to the part of the electorate that doesn't get the service. When everybody has broadband it will be a whole different knowledge experience."

The procurement challenge for such a visionary project is that it cannot be bought department by department. The network may bring something different to each user, but it's all the same network. "It used to be more logical to decentralize the purchase of telecom because it was a limited offering with more limited choices," Price says. "Now deregulation means choice, a new technological structure, which means change, plus interoperability issues and everything else, so now it makes sense to buy the network centrally and let the departments choose how to use it locally. Add the policy objective of [service to] businesses and citizens, and you can only accomplish that if you think centralization." It is yet another example of how technology changes the structure of government.

Since the cable ought to be good for 30 years and it's the electronics at the end of the line that determine its efficiency, the whole network can be updated by replacing the cards in the electronics at either end, Fritsche says.

Meanwhile potential users are eager to get the final hook-up done. At Eckville Public Library, Brenda Brzak says, "I'm excited about this. We're a small town and my library is in the basement, but I want people to be awestruck when they come down those basement stairs. We have three public terminals; our stations are nicely set up; we have a comfortable atmosphere. It will be impressive that we have what the bigger centres have."

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