CANADAconnects

CANADA'S NATIONAL SMART COMMUNITY MAGAZINE

DECEMBER 2003

Like Canada's Seaway, high-speed Internet promises to deliver health care, education, security, and commerce into the heart of your community. . . Inside twenty real life stories explain how its working out.

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Richmond B.C.'s eGovernment solution will make you smile too. ... *Page 22*

Twenty Two Canadian Internet Visionaries speak out!
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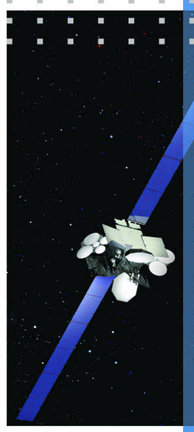

Special Section on Satellite Broadband
Not just for the far north, satellite links are delivering affordable broadband services to communities, businesses and consumers across Canada

Telesat Canada's Anik F2 will be delivering competitive consumer broadband by Satellite in 2004

Learn the basics of how the technology can be applied and read community and business success stories about how it has already been applied
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CANADAconnects

Canada's National Smart Community Magazine

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Editor's Note

The creation of a smart community, even a Smart Canada, first requires the formulation of a shared vision of what that community can and will become

"Despite their struggles, or maybe because of them, Canada's rural and remote municipalities might actually have an advantage over Canada's larger centres."

There is a international movement underway called the Smart Community movement.

Citizens and governments world wide are recognizing that the provision of high speed Internet service to a community does not just enhance their ability to communicate with the world, but rather provides an opportunity for these communities to metamorphose into a new kind of community, …. a Smart Community.

Despite their struggles, or maybe because of them, Canada's rural and remote municipalities might actually have an advantage over Canada's larger centres. In the smaller communities it is well understood that in order to justify the costs of bringing high-speed connectivity to their location, they must immediately find ways of transforming how they do business, and how they run their governments, in order to fund the services they need to survive.

Many of Canada's larger centres, governments and corporations have been able to delay, but not escape this reality.

The broadband revolution begins, but by no means ends, with the provision of the physical infrastructure components of high-speed connectivity.

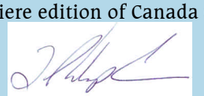
After talking to dozens of leaders in government, business, and the community, a realization emerges. That is: Canada's government agencies and larger corporations are providing a prescription to rural and remote communities that they may need, but are not be able to take themselves. The creation of a smart community, even a Smart Canada, first requires the formulation of a shared vision of what that community can and will become, once these services are in place and fully utilized.

Our current status on the national level, and in many cases the provincial levels, is that we solve each community's problems in a piecemeal and disconnected fashion. We have no national vision. Nor do we have a process of vision creation, which could guide our governments and corporations while making national and provincial level decisions about how Canada should proceed in transforming itself into the ultimate Smart Community.

In the hope that we may be triggering some larger process, we are pleased to offer in this, our first edition, the personal views of 22 Canadian visionaries, each of whom is passionate about helping to bring about the creation of a Smart Canada. With this and future issues our goal will be to foster thought and discussion, among the diverse stake holders in Canada's Smart Community transformation.

As readers, I would ask you to look beyond the bandwidth and imagine the possible.

Thank you, and welcome to our premiere edition of Canada Connects.



Philip Carr
Managing Editor
Canada Connects

Community Based Networks

Community Networks result from a community's need to have the best connectivity possible without waiting for normal market forces to play out.

Community Based Networks or CBNs represent a citizen's movement which has spread throughout rural Canada in response to the failure of market forces to meet their social and economic needs.

Photo courtesy of: South Dundas twp.

CO-OPetition and the Fine Art of Community Network Building

Question: Why doesn't every Canadian household and business that wants high speed Internet today, have it?

Possible Answers:

- We don't have enough money to pay for it as a country or as individual communities.
- We don't think high speed Internet is important enough for us to invest in.

or

- Major Telco's are run by mean people who leave us out just because we aren't their highest margin customers.

I don't believe any of these conclusions are accurate or useful. Like "The Tragedy of the Commons", our lack of ability to move aggressively forward on this issue is a puzzle over the issue of who owns and who benefits.

I refer to it as "The DSLAM Dilemma."

For the majority of people who don't use this term in their everyday dinner conversation, the DSLAM is the core piece of equipment required by Telcos to deliver high-speed DSL service to your home or business. DSL is arguably the delivery mechanism of choice for high speed Internet consumer service to offices and homes. Where DSL is not available, satellite and terrestrial wireless and even cable Internet all work fine, but DSL seems to be the preferred solution where available. That of course is the crux of the problem.

DSL is not universally available, despite the fact that the telephone service that it piggybacks on top of is. Why not?

In order to understand the answer to this question, let's discuss some back of the envelope calculations that describe what a Telco goes through when they consider delivering DSL to your door.

They have three main questions to answer.

1. Is there enough bandwidth in your neighbourhood? If they could get a DSL signal back and forth from their switching office to your home office, would they have enough capacity to carry it back to the main Internet backbone?

2. Is there a DSLAM unit with an available DSL modem slot, installed in the central office or sub office nearest your telephone set?

4. Are you within 4.7 km of that DSLAM and are the copper lines between you and that DSLAM of sufficient quality to carry DSL signals effectively?

If the answer to 1/ is no, then the Telco is looking at installing new fibre services between the nearest source of Internet backbone access and your central office, at a cost of $15,000 to $20,000 per km to install. In some cases equipment upgrades at the point of backbone access (Remote Concentrator) may also be required.

If we get to 2/ successfully, and find out that there is no DSLAM installed in your central office, the Telco then has to install a DSLAM rack for very roughly say ... $60,000 plus about $150 per DSL modem in that rack. One DSL modem is required in that rack for each DSL line serviced.

Finally if we make it to point 3/ and you are beyond the reach of DSL from your nearest switching office, or your Telco tells you that the copper lines between you and your central office have "impairments", then you had better call your local ISP or satellite service company to discuss a wireless solution.

What is interesting about the above, admittedly very rough analysis, is that in relation to the value of the DSL service to most communities, the investment required to achieve it is small. A $250,000 expenditure which gets a community of 5,000 onto high-speed service could be seen as a very small capital investment, relative to the overall benefit to the community. This seems especially clear when you consider that we readily invest a million dollars per kilometre to bring roads and highways into our communities. The problem is that after we invest in a road, we own the asset to balance off the liability we have just incurred. When we as a community invest in fibre to the central office, or a DSLAM in that office, we don't own the asset. We just invested in the Telco's infrastructure. The Telco now owns the asset, thank you very much, and we have to find a way to write off the $250,000 we just spent!

So the answer is simple. If the Telco owns the assets, the Telco should buy the assets. Right? ... Fair enough, we are only one little community and we need high-speed service and $250,000 can't be that much money for a major Telco. Ah but let's go back to the CEO's office and take a look at it from a balance sheet point of view. Our community is only one of a thousand communities, which when sitting on the balance sheet, all look just like ours. Take that $250,000, multiply by 1000 and we have $250M ... ouch!.... seems like a little too much money to sink into capital investments in the next six months ... how about we spread it out over the next ... say ... five years? Sounds like prudent business practice for the Telco, but for the community that is going to sit and wait five years to get connected ... Ouch!

So there we have it, the "DSLAM Dilemma."

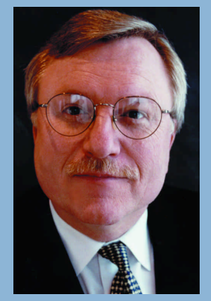
In a world where getting high-speed service to every community wasn't an economic life and death issue, we'd just say, "that's business", and walk away. ... but it is an economic life and death issue for the communities without high speed service and for the people trying to run businesses or remain employed while living in those communities.

The first and best option for community groups to consider is for them to market themselves to the high-speed vendors as a good investment.

This is where community based networks (CBN's) come in. These are, for the most part, citizen's committees, with varying amounts of municipal government support, who are not prepared to accept no for an answer, often coming from communities that can't afford to take no for an answer.

So what are the possible solutions for these citizen's groups? Well it depends ... one answer could be to lobby for a political change that would see us treat high speed Internet service the same way we treat telephone service today, and for the same reasons. But if you want to have high speed Internet while your teenagers are still young enough to play video games, then you'll need to take another route.

The first and best, option for community groups to consider is for them to market themselves to the high-speed vendors as a good investment. Keep in mind that like all investors they are looking for opportunities with low risk and short pay back periods. An easy way to manage this process is to invest your time in the front end marketing research for the potential vendor, through a process called



John Jung

V.P. International Marketing at the Greater Toronto Marketing Alliance. Chair of the Intelligent Community Forum in NYC.
Winner of the ICF 1999 Intelligent City Visionary of the Year Award

Why is Broadband important?

Simply put broadband is an opportunity to change everything!

I have been an active member of the International Smart Community movement since 1985 and have seen first hand the process that is required to convert normal communities into a Smart Communities.

It is a common misconception that once the pipes are in the ground, and the fibre is lit, the job is done. In truth this is only the beginning.

The Intelligent Community Forum has identified 10 separate infrastructure layers required in order for a Smart Community to take full advantage of its high-speed connectivity. Next to the physical connectivity layer, the most important of these layers may be the Leadership Layer.

In Canada, the greatest risk we face is that of complacency. We are world leaders in broadband deployment, Toronto being one of the most connected cities in the world. However we must now continue our efforts to provide all of our businesses and communities with the best connectivity possible. As well, we need to turn our energies to finding ways of using this infrastructure to transform our institutions, our businesses and our governments, so that Canada remains both prosperous and influential on the world stage.

By taking action now, we will ensure that today's opportunity to lead does not become tomorrow's struggle to keep up.

Matt Wenger
Founding President,
Columbia Mountain Open Network

I believe that the Internet is the "highway" of our future, and that the communities we live in will eventually either rise or fall based on their ability to use this "Highway" to meet economic targets and improve delivery of education, health, and e-government.

It is essential that Canadian communities begin to include telecommunications in their community plan. What type of people and businesses do we want to attract? What type of infrastructure do they require? What do their families want in terms of access to education, health and other services and how can we capitalize on telecommunications to provide these services?

In our current situation, communities are almost powerless in these matters. Our electronic roads and highways are owned and controlled by a few "Trucking Companies" or Telco's and they are usually built based on business plans that use three to five year payback models. In small markets, this approach promotes monopolies, which in turn promotes higher prices and fewer services. In very small markets, it often means that there may be no services at all.

I see community-owned networks, private/community schools and private health facilities as symptoms of the same problem. Unless the traditional "Trucking Companies" shift to more responsive, flexible, and decentralized delivery mechanisms, Canadians should expect to see an increase in the number of these decentralized, community-based solutions proliferating from the edges. After all, that is the paradigm of the Age of the Internet.

Continued from Page 7...

"demand aggregation".

A excellent example of this process is embodied in an organization called ORCNET, which operates in the rural districts around the city of Ottawa. Choosing one rural community at a time, they poll the residents to determine how many households and businesses would subscribe immediately to a high-speed service if it became available. Using community information nights, and presentations to the major vendors, they seek out a vendor who is motivated by the size and commitment level of the potential market. Once a fit is found between a vendor with the right resources and the size and location of the potential market, high-speed service is usually attained.

As you get farther away from urban centres the job gets harder because the market gets sparser and the distance to the Internet backbone gets longer. Often a more complex process may need to be entered into, where deals are made with local institutions to have them pool their demand with that of the CBN in order to achieve the critical market mass required. Sometimes the service can be achieved by combining resources from multiple vendors, possibly a hydro company which provides a fibre link into your area or a satellite company that could install a teleport, and a wireless provider that can deliver the last mile solution from the backbone point of presence. Another solution is, to sweeten the pot for the potential vendor by a providing a cash contribution from the municipality to offset their capital investment.

Satellite/Wireless combo's are becoming increasingly popular. In the village of Crysler Ontario, Telesat Canada and Storm Internet recently partnered to provide high-speed wireless service to a community of 6500 residents and businesses. The municipal investment included provision of access to the water tower for the wireless antenna. Telesat and Storm made the rest of the investment. Deployment took less than four months from the date of announcement to the delivery of service.

Other examples of community twists include:

South Dundas, with a population of 11,000 distributed in and around two urban centres, used a community hydro cash surplus to build a community owned and operated fibre to the door network for businesses and institutions in their community;

Hydro Manitoba is running fibre up the centre of the province and working with wireless providers to bring wireless solutions to communities off of the main pathway;

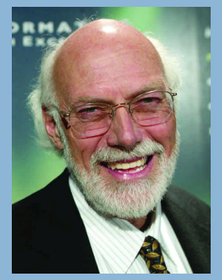
Albert SuperNet is a provincially driven initiative to run fibre to every Municipal Office, Library, School, University and Hospital. Bell will make the capital investment in the commercially viable portions and the province will own the less viable portions. All fibre end points are accessible to third part suppliers to deploy service to the rest of the community.

Simcoe County Ontario partnered with three regional hydro companies to deliver fibre to the door of all municipal offices in the county in exchange for signing long term contracts to purchase high speed service from the consortium. They were able to obtain $1.7M assistance from the Ontario government COBRA program and the difference was financed by the hydro companies on the strength of the long term service contracts with the municipalities;

Columbia Mountain Open Network in BC aggregated demand in the entire Columbia Basin by joining forces between the local governments, citizens, SME's , corporations and institutions in order to create the demand level required to bring fibre into their mountainous region.

If there is one thing everyone agrees on, from the largest Telco to the most irreverent community network advocate, it is that we must all talk, work, and most importantly, plan together in order to make the best combined use of everyone's available resources.

A marketing manager in one of Canada's major Telco's described it this way: "Delivering Internet service to any community requires a high level of Coop-etition between all suppliers."



Dr. Brian W. Unger
President and CEO of the Alberta Informatics Circle of Research Excellence (iCORE)

Excellence need not be an elite concept. In fact, excellence can be a democratic ideal, if we make a commitment to a culture that educates, inspires, engages and motivates a broad spectrum of people. Information technology can help to do that, now and in the future.

Albertans are blessed with a natural legacy of oil and mineral resources that have helped create one of Canada's strongest provincial economies. An important challenge now is to ensure that part of this wealth is invested in an economic engine that will sustain a high quality of life for our grandchildren and their grandchildren.

iCORE plays an important role in this process by providing funding for university chairs and postgraduate research positions in the information and communications sciences. These are the leaders who inspire and educate. They are also the innovators working in an area that is the fastest growing sector of western economies and, in Alberta in particular, they are the key to diversification of our economy.

Investments in programs like Alberta's iCORE and SuperNet are being made in the belief that the future world economy will be a knowledge economy. By helping Alberta become a leader in the use and development of information technology, we believe that we are building the engine that will sustain a high quality of life in the province for decades to come.

Alberta SuperNet

Whenever you start to believe that the broadband dilemma is just too complicated to solve, consider Alberta SuperNet.

Like the St. Lawrence Seaway the Alberta SuperNet project is an infrastructure build based on the knowledge that bringing commerce to the door of your communities creates wealth

Photo courtesy of: South Dundas twp.

An example of one of the POP buildings which are provided to house third party equipment for connection into SuperNet

Photo courtesey of: Total Telecom, a construction subcontractor on the SuperNet build.

Problem:
Privately owned networks are closed networks. If the owner doesn't have the motivation or the financial resources to expand their network to make it available where people need it, the world will just have to wait until they do.

Problem:
Publicly owned networks can't be opened up for commercial use because that would be unfair competition to the private sector.

The net result of both of these arrangements is that communities, businesses and members of the public living in the less densely populated areas of our country suffer a potentially unnecessary economic disadvantage. On the other hand, forcing a variation in either scenario would be violating the principals of separation of public and corporate affairs which we have all come to accept as being vital to the maintenance of sanity in our free market economy.

Solution:
The Alberta government in its wisdom has devised a variation on the "I cut you choose" method of establishing a fair distribution of the private/public sector assignments of opportunities and responsibilities associated with the broadband deployment process currently underway in their province.

Every once in awhile an idea comes along that makes you ask, "Why didn't I think of that?": Alberta SuperNet may be the ultimate application of a divide and conquer strategy.

This is how it works.

In issuing the tender which resulted in Alberta SuperNet project, the Alberta government was declaring that the province would have a network that would provide a fibre link to every hospital, library, school and provincial office in the province of Alberta.

Furthermore, every endpoint in that network would be open for a reasonable fee to any third party supplier who wished to install equipment in order to distribute commercial Internet services from those points into the rest of the community.

Having defined the ground rules for how their provincial network would operate, they then invited the private sector to partner to any extent that they wished in building and operating any portion of this network which they felt would be commercially viable, leaving the provincial government free to build, own and operate the remainder.

In the end there would be one network, parts owned privately, parts owned publicly, but the entire network would be open and accessible for expansion by third party vendors in order to ensure that no one with SuperNet fibre coming into their community would have to suffer in silence while being denied access to the province's online economy.

The result of this tendering process has resulted in a partnership between Bell and the province of Alberta to build a $295M provincial network with the public investing $193M and Bell investing the balance. As part of the package, Bell has also been promised $169M for the provision of provincial government telecommunication services over the next six years.

"Technically it's incorrect to say that the whole network is open to service providers.", clarified Bill Hart, media relations for Axia. "An ISP in Calgary, a base community, could not use SuperNet to reach customers in Edmonton, another base community. They do use the base network in the sense that their Internet head end is likely in a base city, but one end of the connection has to terminate in the extended area, i.e. an area that up to now has had no high speed service."

No real project runs smoothly, and no real system or business is totally fair, but Alberta has shown both courage and insight by attempting to take control of its critical high speed Internet infrastructure in a way that respects both the rights of the private sector and the needs of its citizens for fair access to the new economy.

Art Price
Chairman and CEO
Axia Netmedia Corporation

Leveling the playing field and bridging the Digital Divide

The Alberta SuperNet, allows government educators and health care-givers to share and deliver information and services farther, faster and more economically than ever before. Even more importantly, SuperNet gives rural subscribers – long denied high-capacity access because of the technical and financial challenges of long-distance connectivity – access to reasonably priced services, by allowing Internet providers and private businesses to use SuperNet to reach these more distant markets.

Axia's role as an independent, third-party operator of the SuperNet has been specifically structured to ensure fair and open access to all communities and to all service providers. Key to Axia's ability to play this pivotal role is that it is not a traditional telecom corporation. Axia and the Government of Alberta have created competition where the size of the market would not otherwise support competition. Axia has enabled the customer to be the decision-maker.

Access to a high-speed broadband IP network is an important competitive tool in today's economy, much in the same way as roads, railway lines and canals were a century ago. Axia deliberately created the SuperNet business model to provide this competitive tool, at equal rates, to everyone in the province ... and the true strength of this approach is that it can be applied to almost any jurisdiction, worldwide, that is looking for ways to bridge the Digital Divide between those who have high-speed connectivity options and those who do not.

A Leap Of Faith

Roy Brister and Max Tom install wireless equipment on the Cardinal water tower. Taking fate into their own hands, South Dundas has proven that bandwidth equals jobs ... at least in their Ontario East community.

Photo courtesy of: South Dundas twp.

Risk taking is usually not seen as a virtue in municipal politics, but sometimes we find ourselves in situations where using the accepted approach just doesn't produce the results we need.

This might characterize the South Dundas experience.

The South Dundas Experience

Whether or not you agree with their methods, the lessons they have learned will benefit decision makers and planners in communities across Canada and beyond for years to come.

The Seed for Success

This story begins with a local business man, Roy Brister, who owns an insurance brokerage firm with a chain of five offices scattered across the township of South Dundas which extends along the shores of the St. Lawrence river, about 50 miles south of Canada's capital city, Ottawa.

Faced with the effect that the Internet revolution was having on his industry, Roy felt compelled to keep up, through the use of IP technology. His vision was to consolidate his administrative services at one location, and connect them through high-speed Internet to the newly converted sales offices in the other four communities. In the end, Roy could reduce administrative and travel costs, while at the same time increasing the amount of time available for his staff to spend serving clients and generating new business.

In 1998, South Dundas was not a high priority market for established Internet service providers. High speed service was either not available, or only available at the cost of installing dedicated circuits which was far beyond what was reasonable for a rural business to afford. Taking matters into his own hands, he hired a wireless engineering firm out of Hamilton to help him design and install a high speed wireless IP network between his offices. The implementation was not without complications, but before the end of the year 2000 he had established his own 2.4 GHz dedicated wireless network for about what it would of have cost him, at the time, to purchase dedicated 56k service for each rural office, that is about $6,500 per month!

The project was a success! Savings in administration costs more than compensated for the operating and carrying costs of the wireless network. So what was next? Having a wired business was Roy's goal, but to complete the picture he needed wired customers as well. It was fine to have his staff using up to date IT services, however he knew that in urban centres, insurance clients were paying their bills online and buying policies at home in their pyjama's at 10 pm over the Internet. This would not happen in South Dundas until the broadband services in the surrounding community were more available, affordable and reliable. This is in fact where the real story of South Dundas starts.

The Real Story

By 2001, the township of South Dundas was in a situation which will sound familiar to many small Canadian municipalities. Its young people were heading for the big city where they could find educations and jobs, its industrial base was being whittled away by manufacturing plants which would close their doors for various reasons, and then not be replaced. In all, the township with a population of approximately 11,000 lost 600 jobs during the period between 1991 and 2001.

It was during the year 2000 when Roy Brister approached the South Dundas municipal council, asking for permission to lay fibre for his business network onto township property, that the idea was born. If a local businessman with no specialized technical training could implement a successful broadband network, then maybe the municipality could do the same.

Roy Brister volunteered to chair a municipal communications committee, which would ultimately come to work with Business Development Manager, Rob Kinnard of Expertech to manage the design of a network and the laying of fibre to the doors of all 160 local businesses. Expertech was formed from what was originally the fibre optic arm of Bell Canada. They are now an independent supplier for the design and deployment of municipal fibre networks, like the one in South Dundas.

The remarkable result has been measured and documented in an economic impact study carried out by the management-consulting firm Strategic Network Group. Company president Michael Curri reports that from the date that the first fibre was lit, in June 2001, until the end of the study period in September 2002, the community as a whole gained 537 new jobs, 42 of which were directly attributable to the availability of broadband service. This is a remarkable result. In the face of an average job loss rate of 60 jobs per year, the community "gained" 537 jobs in one fourteen month period following the lighting the first portion of its fibre optic network.

According to Curri his most recent results are even more impressive, "... the total jobs gained in the community now exceed 700, since the first fibre was lit. We have looked for other explanations that could account for the sudden increase in employment and have found none."

Peter Oliver, manager of the new Canadian Tire Store in Morrisburg says that ".. Canadian Tire head office made the decision to come to Morrisburg with their new store because they see the town as being the new economic hub for South Dundas, factors such as proximity to the 401 and being at the cross roads of highways 2 and 31 were key. At the same time Canadian Tire depends heavily on the use of e-learning for staff training. We have over 260 courses that our staff can take and access to broadband services makes this process much more effective."

Anne Marie Waddell, Economic Development Officer for South

Greg Geddes
Director Information Technology Services and CIO, City of Ottawa

There is a huge focus on making government transactions available on the Internet. While you need these basic building blocks to make self-service government work, recent feedback shows that information is, and will likely remain, the most common reason for visiting our websites and portals. Canadians embrace self-service experiences that they trust, and find convenient, simple, and secure. They want anonymous access to on-line government services and they want the information to be up-to-date and accurate. Sounds simple enough, doesn't it?

In time, we will get beyond the technical hurdles of creating secure, confidential on-line transactions. The real work is in two areas: maintaining up-to-date information, and going beyond our organizational boundaries to make services available to the public. Maintaining accurate information is a management problem. Having seamless government services portals is a political problem. Don't lose faith - we eventually did it with the blue pages in the telephone book.

Public consultation in a non-electronic world is difficult and expensive to undertake, and often reaches few of the intended recipients. Broadband Internet services open the door to virtual City Halls where people participate in local government issues from home, at a time that is convenient to them.

The public sector wants to promote on-line self-service as the way to provide better service to the public. For this to work, it really has to be a better, faster and more efficient service.

Tim Dickins
Vice President of Sales MCI Canada.

Calling on the Future:

Single Network, Integrated Voice and Data Applications to be the Foundation of Business Communications.

We see the future of business communications founded in a single, comprehensive IP based system, from which all communication services will develop. To us, the future will be rooted in convergence.

While convergence is not a new concept, only today have we begun to fully realize the opportunities and benefits convergence delivers. We believe that for businesses, now more than ever, productivity, security and methods of cost control demand a technology partner able to offer integrated voice, data and Internet applications and services on a single network.

As businesses' need for voice services becomes mission critical to its success, companies must find a technology solution that addresses traditional communication costs and challenges with innovative, non-traditional applications.

Voice over Internet protocol (VoIP), backed by a global Internet backbone and a reliable rigorously engineered IP backbone network, can enhance performance, customer service and profitability by seamlessly connecting the communication patterns of the workplace, eliminating the inefficiencies and impediments in the system and making business more accessible to colleagues and customers.

In our vision of the future, businesses moving traffic onto an existing data network by using VoIP will maximize the efficiencies of a data network while simplifying the overall management.

At MCI, we see IP telephony, or the convergence of integrated voice, data and Internet services as the new foundation for business communications.

Continued from Page 13...

Dundas speculates, "... there could be a snowball effect from the broadband. Some businesses expand or establish themselves specifically because of the broadband services and others invest in the community because of the new spirit of optimism and the community's demonstrated commitment to investing in its own growth." South Dundas is unique in that it stands as one of first communities that have been able to measure the economic benefit that it is receiving from its investment in broadband services.

It is unique in other ways as well. Conventional wisdom may now be coming down on the side of demand-aggregation as being the proper role for the municipality to play in the broadband deployment process. Infrastructure building is now most commonly considered to be the domain of the private sector.

The After Math

South Dundas, on the other hand, finds itself acting in the role of owner operator of a municipal fibre optic utility. Max Tom, president of a South Dundas ISP, explained how the service delivery is now structured. "My company, Prophet Technologies Inc., was originally brought in to help fix problems with the Brister Group wireless network. We have gone on to work with the municipality in helping them design and install their own fibre optic network. At this stage we wear two hats. Firstly, we manage the municipally owned fibre optic network and secondly, as a privately owned ISP we resell the municipal bandwidth to commercial end users. At the end of the process, we collect money from our commercial customers and then send a cheque to the municipality for the bandwidth supplied by their backbone."

The fact that South Dundas now owns its own fibre optic utility raises an interesting question: Is fibre optic deployment the proper business for a municipality to be in?

If we look at the examples being set in other Canadian communities, you might say that the answer should be 'no'.

Many other communities are following the example set by ORCNET in the city of Ottawa and

The fact that South Dundas now owns its own fibre optic utility raises an interesting question: Is fibre optic deployment the proper business for a municipality to be in?

investing in studies that define the market need sufficiently to motivate commercial suppliers to come in and set up infrastructure. Along these lines, the Industry Canada BRAND program requires that the services to which their funds are applied be privately held and not be owned by municipal governments.

Anne Marie Waddell responded to this question by wondering out loud, " .... Would South Dundas be enjoying the employment boom we are seeing today if we had waited to lower the risk sufficiently for an established vendor to be willing to come in and install services? Also, would they have installed the level of service we enjoy today, or would they have simply provided just enough service for them to obtain a reasonable return on their investment in the shortest possible time?"

Micheal Curri points out that, "... models exist for municipally owned services. Municipal Hydro utilities were one good example. If we view broadband as utility, then municipally owned fibre optic infrastructure could make sense. As we do more economic impact studies like the one in South Dundas, we may start to see municipal governments viewing their investment in broadband infrastructure in the same way that they now see their investment in water mains, roads and public transit."

"Life in the internet slow lane will become more and more challenging as internet applications and services become more and more advanced"

Michael Bindar
Assistant Deputy Minister, Spectrum, Information Technologies and Telecommunications

A Connected Canada ... Has a nice ring to it, doesn't it? Many would say that we're already connected, by roadways, by railways, and even airwaves! But a new century brings new challenges, and looking ahead, Canada must strive for digital connections for all Canadians.

Actually, looking back, we set a vision of a connected in country back in 1997, when the Speech from the Throne articulated a National Vision to make the information and knowledge infrastructure accessible to all Canadians, thereby making Canada the most connected nation in the world.

Six years later, most would say we've already reached our goal and achieved the vision, with internet access available to all communities in Canada through programs such as Schoolnet, Librarynet, and the Community Access Program. In fact, our latest numbers show that Canadians are world leaders in using the internet in increasingly sophisticated ways to shop, to research, to bank and more. Businesses are moving to streamline their internal processes, and to build an online presence.

And while what we have achieved to date is commendable, it's really just a first step in a long journey towards a completely networked economy and society. What is the next step, the next challenge?

Broadband. Once again, the government articulated a vision in the 2002 Speech from the Throne, when we announced a plan to ensure that all Canadian communities would have access to broadband by 2005.

Why the vision? Why all of Canada?

Because life in the internet slow lane will become more and more challenging as internet applications and services become more and more advanced. And we believe that all Canadians, wherever they live, should have access to these new applications and services. Think about it.

While content-sharing and spam have been grabbing most of the media attention of late, there are a number of interesting and innovative pilots going on right now that really leverage the power of the internet to deliver valuable services to our citizens and businesses in areas such as healthcare, online learning, electronic commerce, and governments online. Things that once would have been considered science fiction are happening here, and happening now. Who would have thought even as recently as 10 years ago, that we would now be conducting trials and tests in areas such as long distance, robot assisted surgery. If this is happening today, what will the future hold?

While we can't be sure, we must be ready. We must lay the groundwork for the Networked Nation, the foundation of which is broadband.

Playing the System

John Walden EDO in Deep River pursued a strategic plan that built a strong relationship with Bell Canada and delivered high speed Internet to his Ottawa Valley community.

Nicholas Aboumossa (left) of Bell Symaptico demonstrates high speed service to now former Mayor of Deep River, John Murphy

Photo courtesy of: The Town of Deep River

Patience and Planning Deliver DSL to Deep River

John Walden is the Economic Development Officer for Deep River Ontario. Deep River is a town of 2000 homes located 35 minutes west of Pembroke on the TransCanada Highway. It's reason-for-being is almost entirely centred on providing community services for the employees who work at the AECL facility at Chalk River.

This is why it seemed so critical to John in 2001, when he discovered that of 11 new employees joining AECL that year, 9 had decided to reside elsewhere. For the most part, that was either in nearby Petawawa or in Pembroke. This was a serious set back from Deep River's historical 50% success rate in attracting new AECL employees and their families to live in his community.

What was the reason for this downturn? Both Petawawa and Pembroke had recently succeeded in obtaining DSL services for their communities. It would appear that this drawing card was so compelling that it had become a serious threat to Deep River's ability to sustain its population level.

"Based on our initial inquiries", said John, "we found that Bell normally prioritizes a community's application for DSL service based on population and number of phone lines. Using these criterion alone, it would be years before Deep River would receive DSL service."

This wasn't fair. Despite its small population of 4000 residents, Deep River has the highest average education level of any community in Canada. The uptake rate for a community like this one had to be much higher than it would be in any "average community". To prove this point Deep River surveyed a sample of their citizens and found that an large percentage of them wanted and would be willing to pay for DSL service.

This was the tool that John Walden needed. Equipped with survey results that showed that Deep River had far above average demand for DSL relative to its population, he was able to establish the interest of two potential suppliers. One was a wireless company called Clear Sailing Networks and the other was Bell.

"The key to getting Bell's attention", says John, "was finding the right contact." The right contact for John, was Cheryl Burwash in Ottawa who was the Bell Regional Director Community Development for his area. The other key to getting Bell's attention may have been to suggest that Deep River would be willing to share half the cost of deploying DSL in their community with Bell.

Cheryl explains, "My role at Bell is to get to know communities, what their priorities are, and determine how Bell can become an enabler to help them achieve those goals." In today's world, this often means that she is looking for ways for communities like Deep River to obtain DSL service despite the fact that they do not meet the typical statistical profile of high demand communities. There are six Bell Regional Directors in Ontario. Each director services the needs of a specific geographic territory.

After numerous meetings between Deep River and Cheryl Burwash's group, John had established two viable options for achieving high-speed service. One was based on Clear Sailing Networks providing a wireless service in the community and the other was based on Bell providing DSL service conditional on town council approving a motion to pay for half the cost of installation.

As events unfolded, Bell deployed DSL in Deep River despite not receiving the subsidy from town council. The first bay of 432 DSL lines filled almost immediately, and Bell is now working on filling a second bay. John credits Deep River's success to the fact that Cheryl's team had been sold on the viability of the Deep River market. "Cheryl and our account representative, Aaron McIntosh, were both great." Said John, "They fought for our cause within Bell and won."

As for Clear Sailing Networks, they had been willing to move forward in Deep River but reconsidered once they learned that they would be competing with Bell DSL service within the community. Clear Sailing CTO, Anthony Van Alphen commented, "Wireless and DSL both provide comparable performance, for a comparable price. But that becomes the challenge. When the two services are available in the same market; given a choice, a consumer will usually choose DSL." Anthony explained that there are still areas around Deep River without access to DSL that could have been serviced by wireless, but after the main part of the community had access to DSL, there were not enough potential customers left over to make his company's project viable.

For information on how to locate your own Bell Regional Director Community Development, contact Cheryl Burwash at 613-781-5915 or information on Clear Sailing Networks visit: www.concept42.com.

Eugene Roman
Group President
Systems & Technology
Bell Canada

'NET-PUTING'-THE GENESIS OF NEXT GENERATION COMMUNICATIONS

Communications is entering a new era, a digital revolution driven by IP.

Two environments are central to this transition: computing and networking. Computing layers intelligence onto a vast network of connectivity-available anytime, anywhere. The genesis of the next generation of communications is the marrying of these two environments. We call this "net-puting."

Net-puting is synonymous with eBusiness on Demand. Net-puting architecture is the key many companies have been searching for in overcoming the 'siloed' nature of computers and organizations…and improving the performance of the entire enterprise.

At Bell Canada, we are already reaping the benefits of net-puting. We have completed the merger of IP-based wireline and wireless network at our core. Now, by taking a net-puting view of the world, we are getting the horsepower of the computer into network.

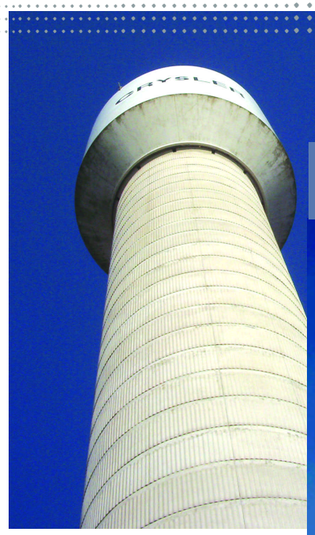
The enormous potential for net-puting is not restricted to organizations like ours. Companies with foresight can vastly reduce internal costs by opening up the power of the network. Net-puting lowers the costs of computing by optimizing unused capacity, and providing higher performance, less wait time and greater reliability.

This is pioneering work. Net-puting is a vision that is reshaping our own internal infrastructures and that will enable a new array of communication services and capabilities for other farseeing enterprises.

In a net-puting environment, where computing is ever more pervasive and resilient, the universal glue is network.

The Why Wait Solution

The digital divide in rural parts of Eastern Ontario became a little smaller in April 2003, following an announcement that Telesat Canada and Storm Internet Services were teaming up to provide high-speed Internet accessibility to the township of North Stormont and its 6500 residents and business owners.

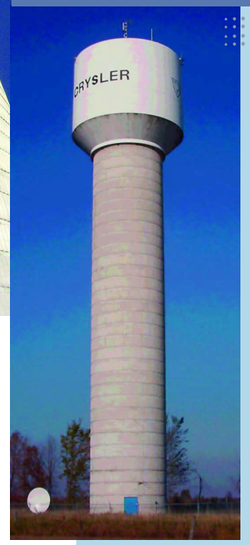


Looking up the Crysler water tower

Crysler water tower with the TELESAT communication dish in the lower left and the Storm Internet wireless antenna on top.

Photo copyright 2003 Canada Connects

Wireless/Satellite Teamwork Delivers Service with Lightning Speed



The township of North Stormont, located 40 minutes outside of Ottawa, becomes the first municipality to benefit from a joint agreement between Telesat and Storm that commits to delivering high speed Internet services to rural and remote areas of Canada.

Ray Charboneau, municipal clerk for the Township of North Stormont, says that their agreement with the wireless provider, Storm Internet, is that the municipal office receives free high-speed service in exchange for allowing Storm to use the Crysler Village water tower as a platform for their antennas.

"This is a wonderful thing for North Stormont.", says Charboneau, "We now feel like we're part and parcel of the rest of the world. We can now upload and download reports instantly and the service is much more solid and reliable than our previous dial-up connection."

With the new high-speed service, the community will now be able to participate in the region's new Internet voting program.

Peter Burpee of CEONET, the area's regional community network organization, said, "The North Stormont project never came to us, probably because they had no need for external funding."

"This was a perfect demonstration project showing how a wireless service provider like Storm Internet can work with Telesat to deliver service to a community that might have been months or even years away from getting high-speed service over telephone lines." says Dan Wilton, VP Marketing for Storm Internet.

"In this project, Storm is testing a new business model." explained Wilton, "In regions where there is no ready access to fibre or wireless backhaul, Telesat's satellite service provides the perfect interim solution. It allows us to establish a market base in a new community which in time will justify the deployment of a high speed backbone into the area. " Benefits of a model like this include the fact Storm can grow its terrestrial network as client demand permits. Effectively, Storm can redeploy its ground station equipment, enabling communities on the outskirts of its network to get broadband connectivity where it simply doesn't exist today.

In nearby Chesterville, Storm has partnered with the Nestles factory to bring high speed service into the community. In this case, Nestles helped subsidize the set up costs of connecting the community as an extension to Storm's wireless network which is making its way from Ottawa. Nestles also provides a platform for the broadcast antenna and building space to house the associated electronics.

Churchill MB are US

Karen Keppler
Executive Director,
Smart Partners of Manitoba

The Internet and the wealth of information it contains is transforming society. Information is increasing efficiencies for all sectors and enhancing the lives of all individuals. Connectivity allows for the rapid exchange of information, and in turn, the rapid creation of knowledge. Connectivity is not equitably available in many jurisdictions in rural Canada. Some countries have solved their connectivity problem by adopting an equitable connectivity strategy. This allows all communities to become "smart communities," to communicate, participate and compete on a global level.

In rural and Northern Manitoba, the ability to retain a community's human resources is a priority. Ensuring there is broadband connectivity provides a means to retain professionals, youth and businesses. Connectivity relieves the negative impact of isolation allowing community members to relate to their peers and keep in touch with current trends, markets and educational advancements without leaving the fulfilling rural lifestyle behind.

Currently our policymakers, regulatory agencies and telecommunication companies are in the midst of the decision making processes regarding the parameters that will ultimately determine the state of broadband in Canada. The effect of broadband related technology on the Canadians of tomorrow is obviously far reaching and thought provoking. At first glance broadband allows for increased interactive communications, higher security, improved education, superior healthcare and enhanced economic opportunities. Upon further reflection the future of our non-urban communities depends on equity in connectivity.

Almost every Canadian has heard of Churchill, Manitoba. With a population of 1000 it is located on the shores of Hudson Bay and is famous for both polar bears and military bases.

Aerial View of Churchill Town Site. Churchill has a population of only 1000 but with the help of its dynamic town web site it attracts visitors from around the world

Photo courtesy of:
The town of Churchill MB

Iceberg chunks float by the shore of Churchill. Churchill is Canada's only inland sea port and is a major re-supply centre for Inuit communities along the coast of Hudson's Bay

Photo courtesy of:
The town of Churchill MB

A town website where citizens talk to the world

The U.S. and Canadian military bases moved out in the 1970's but the polar bears are still very much a part of Churchill life. What many people don't know is that Churchill is Canada's only inland sea port, shipping significant amounts of Saskatchewan grain every year. It is also an important service hub for the Inuit communities along the coast of Hudson Bay, and it is a well-known tourist destination, especially for anyone who wants to see polar bears or beluga whales.

Losing the military bases in 1970's was a blow to the community, however Churchill has recovered and is stable at a population of 1000, down from a one time high of 6,500.

When Town CEO, Darren Ottaway, set about to obtain a municipal web site, he had big ideas but a small budget.

What Darren wanted was a web site that would tell the whole story of Churchill, about the town, its services, its businesses, tourist attractions, tour providers, hotels … in short he wanted the site to be a dynamic web portal for eGovernment, eBusinesses, municipal services and tourist attraction.

Darren's development budget …. under $10,000! Darren's maintenance budget … pretty much $0.

In a community of 1000, you can't afford to pay for ongoing web maintenance consulting services and even dedicating a full time employee to the task was pretty unrealistic.

The web site would be of very little use if it wasn't dynamic and current and didn't allow the people of Churchill to communicate with the municipality, each other and the world.

Anyone with any experience in web development would have told Darren that he was wasting his time and that he had to be realistic about his expectations given his meager budget. In fact, many people did, until he encountered Bruce Hardy and a not-for-profit organization in Winnipeg called Cimnet (see: www.cimnet.ca).

The web site that Bruce Hardy and Cimnet were able to provide for Churchill Manitoba met all of Darren's expectations and more. The current Churchill town site (see: www.townofchurchill.ca) allows hotel and tour operators to maintain their own information section; Citizens can access the minutes of the last town council meeting; Citizens can send anonymous messages to the mayor; tourists from Japan can see photo's of polar bears in Churchill during the winter, which change to photo's of beluga whales in the spring and rare species of birds in the summer. Darren says, "We've had tourists from as far away as Los Angeles tell us that they came to Churchill because they learned about us off of our web site."

The power of the Churchill web site comes in part from the self-maintenance aspect, where everyone from the dogcatcher, to the hotel operator, to the mayor, maintains their own content. This eliminates the costly process of using a human web master to change every element of the web site every time you need it. This also ensures that web content is alive, accurate and relevant. In effect, the site is one part "town web site" and other part "community bulletin board".

Bruce Hardy explained that the technology behind the Churchill site has been the product of a long process of research into the community planning process and the development of a software tool designed specifically to empower communities to work together by communicating with each other and the world. Cimnet maintains about 140 different community web sites similar to the one used by Darren Ottaway at Churchill, addressing the needs of a diverse collection of community groups. Examples of the types of focus these communities can have, include: disability support (disability.cimnet.ca); golf superintendents (mgsa.cimnet.ca) , toy swapping networks (cfan.cimnet.ca); community skill development (westbroadway.cimnet.ca); seniors (seniors.cimnet.ca) and the list goes on.

If you are represent a community of any sort, and believe that you can't afford to build the kind of web site that draws tourists from Los Angeles California all the way to Churchill …. then visit www.cimnet.ca and learn how you can follow Churchill Manitoba's lead to "join the world"!

Randy Johns
General Manager,
Keewatin Career Development Corporation

I think of Canada as being like the Maple tree: large urban centres making up the crown that everyone enjoys and notices and the sprawling hinterland that represents 90% of the rest of the country are its roots. The roots are less noticed, but play an essential role in nourishing and sustaining the whole.

Historically, the inhabitants of Northern Saskatchewan, like most remote communities, have had to choose between the options of remaining at home as part of their native communities, or leaving the region in order to access the kind of educational and employment opportunities that most Canadians would consider only standard.

With the advent of the Internet, we now have a third possibility. Investments that are miniscule in relation to the cost of building improved physical infrastructure can now deliver into our communities: education; improved health care; and better employment opportunities, via the Internet. This will serve to level the playing field between our communities and urban centres. Instead of killing the roots by drawing residents away, urban centres would be helping the tree to become stronger.

The investments needed are small, relative to the value delivered, but they are still needed.

To the majority of Canadians who do not live in Canada's northern areas, I would say that investment in Smart Community infrastructure within northern Canada represents the best investment you will ever make in your own economic future, and in the health and future well being of your community and our country.

eGovernment for the People

Richmond BC's passion to stamp out line ups has spawned an eGovernment facility that any municipality can afford.

Richmond B.C. Finance and Corporate Services General Manager Jim Bruce stands beside one of the electronic kiosks that helped them eliminate line-ups for city services.

Fort St. John B.C. is taking the technology one step further by partnering with TELUS to develop a generic system that can be leased to municipalities for a monthly usage fee.

Photos courtesy of: Richmond, B.C. and Fort St. John, B.C.

In the early 1990's, Richmond, B.C.'s corporate service manager, Jim Bruce, had a meeting with one of his city residents. This resident conveyed to Jim his observation that the line-ups, and telephone hold times required to access the city's services were too long and that he should explore ways to do something about it!

As it turns out, these comments were not coming from just another irate citizen. They were in fact coming from David Leung, now retired from TELUS, who was then President of the TELUS subsidiary, SRI Strategic Resources Inc., charged with delivering IT consulting and solutions to Municipal sector organizations. This Municipal Practice team, now part of the TELUS' Web Solutions team, had a vision of what automated services could do to improve the lives of citizens and at the same time, lighten the load on city hall. Over time, Jim Bruce and the rest of the city of Richmond came to share that vision as they worked together to help make

eGovernment Solutions That Pay for Themselves

Richmond, B.C. one of the most online municipal governments in Canada.

"It all started in 1992", says Jim, "we were just going into tax time and we agreed to work with the TELUS Municipal Practice team to set up a trial which would allow our citizens to obtain their tax information over the phone, by using their telephone touch tone keypads to access their personal tax information. The system is referred to as an Interactive Voice Response system or IVR." The results were phenomenal! City staff were happy because they didn't need to field hundreds of phone calls from people who had misplaced their tax bill; tax payers where happy because the information they needed could be accessed 24/7 without long hold times; other citizens and businesses were happy because city staff were now more available to help them with their other problems; and finally, the city's finance department was happy because the overtime charges usually associated with tax time had been kept to a minimum.

From that success, Jim Bruce was on a mission to automate just about every process that involved citizen line-ups or telephone hold times. From the tax department success, the city moved to provide community kiosks where citizens could access public computer terminals in order to pay for everything from garbage bag tags to their property taxes using their credit card, and without having to line up to see a city clerk.

When the Internet arrived around 1995, it opened up whole new areas of opportunity. Instead of needing to go to community kiosks, citizens could now access city services online from the comfort of their own homes.

"One of the areas that was causing confusion for us at that time" explained Jim, "was the fact that we had six community associations in Richmond. In order to access the city recreational facilities you needed to belong to the association that managed the facility you wanted to use. In order to go swimming at one location, take judo lessons at another, or cooking lessons at a third, you might have to pay membership fees to two or more community associations." To address this issue Richmond again partnered with TELUS' Municipal Practice team to create an online registration and fee collection service, that allowed Richmond citizens to register for the activity they wanted, without requiring any general membership fee. The fee for a specific activity was collected online then dispersed to the community associations providing the activity that the person had subscribed to.

Another example of a Richmond/TELUS partnership produced a system that can be used in libraries, which will allow a library user to book access to an Internet terminal in advance of their arrival at the library. This guarantees that a terminal will be available when they expect, without the need for a long wait or line-up. Once they are on the terminal their session is automatically time limited so their access will end at the time that the next person had reserved for their session to begin. "This has been very successful" says Jim, "so much so that TELUS is now rolling this system out for other major libraries all across Canada and the U.S., including cities of Toronto, Ottawa, San Francisco, Los Angeles, Seattle, and West Palm Beach "

Part of the vision for Richmond included the concept of software reusability. It wasn't TELUS' goal just to make Richmond BC, Canada's most online municipal government, their goal was to partner with Richmond to create the tools and systems that could help municipalities everywhere deliver better services with fewer line-ups.

TELUS Web Solution's team continues to apply the learning's gathered from working with Richmond; this time in a smaller city, Fort St. John in the northern part of BC. City Manager John Locher informed us, "Our city wants to be known for having the most comprehensive eGovernment service in Canada." In addition to being able to: buy almost everything the city sells online; and fill out almost every application form the city owns electronically; our citizens will be able to access our GIS service. This GIS, or mapping system, will allow Internet users to find any property in the city on an expandable city map, and then zoom in to access all the information available that is related to that property, things such as the zoning, the owner's name, and the tax assessment.

TELUS Web Solutions intends to eventually rent the use of this fully fledged eGovernment system to other cities for far less than it would cost them to build and operate it on their own. In principle, the eGovernment system being used in Fort St. John could be used to sell dog licenses in Toronto. The user interface would need to be modified to show that the purchaser was doing business with the City of Toronto but it could be the same software, running on the same server, selling dog licenses in Fort St. John and in Toronto and perhaps in many more cities across Canada.

Far from costing Fort St. John an arm and leg to implement, John Locher told us: "The system will actually be saving us money from day one, or at least allowing us to deliver highly improved services to our citizens at no increase in costs." TELUS has signed an agreement to co-develop this system with Fort St. John for their mutual benefit. In the end, the services that are implemented by the partnership, will be maintained by TELUS and then leased to the Fort St. John, in order to avoid the need for a large capital investment on the part of the city.

Girish Pathak
Chief Customer Strategist
TELUS Communications Inc.

An All-Inclusive Call for Canadians to Join the Internet Evolution.

It was management guru Peter Drucker who said, "If you want to succeed in business, be bold, be different, and be daring." These qualities are particularly applicable to the Internet's vast potential - which we are only just beginning to tap. The current applications represent a fraction of the tremendous advances that will be made in all sectors of Canadian society through the growth of the Internet. It is fair to compare this century's exploration of the Internet to the search by 15th century explorers for the New World.

The Internet is playing a key role in Canada's evolution from a 20th century, manufacturing-dominated economy to a knowledge-based economy. In the manufacturing economy, key ingredients were raw material, energy, and transportation: a large capital investment was required to be able to play a part in this economy. The key ingredients of the new economy, however, are human knowledge, automation, and telecommunication: with only limited capital, it is possible to participate fully in this economy.

In today's global, service-driven economy, collaboration between all participants - those who represent consumers and influence telecommunications policy … those who thrive at the edges of innovation and deliver the promise of service … and those who receive the benefits - is essential to unleash the remarkable power of the Internet and ensure a prosperous future for all Canadians.

David H. Leung
President,DHL Consulting Group
Former President,
SRI Strategic Resources Inc.,
A TELUS Company

During the last 25 years working with Deloitte Touche and then with TELUS, I have assisted over 100 different municipalities throughout North America and Asia to develop information technology strategies and implement eGovernment solutions.

Based on my experience, suffice to say that, " When it comes to the deployment of Smart City and eGovernment solutions, municipalities are in the driver's seat".

Most municipalities are not aware of the above fact, or the power behind it. Consider how Microsoft, Yahoo and thousands of online service providers have invested millions of dollars in the hopes of achieving what you, the municipality have already achieved:

Sufficient public confidence that residents and non-residents alike will trust your online service with their personal and financial information;

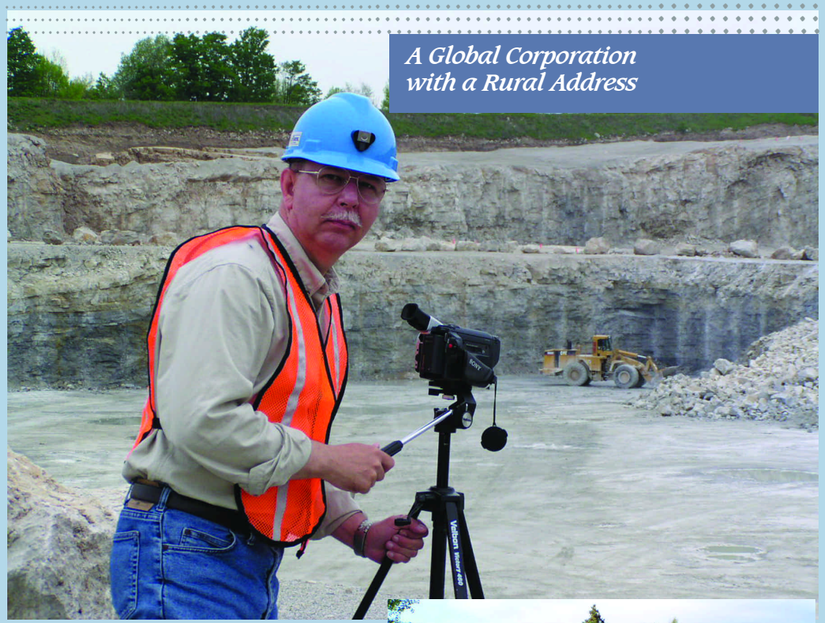
The facilities required to fulfill the physical dimension of online relationships, including libraries, recreation and senior's centres;

The IT infrastructure and bandwidth required to deliver e-services to your citizens online.

What I witness is that municipal governments need to be much more proactive in the adoption of e-service delivery systems. Many are waiting for their province, their federal government or their major Telcos to decide what services they should launch and when to roll them out.

If this mindset persists, this will guarantee that your municipality and ultimately, our country, will be missing an enormous opportunity to create wealth and provide world-class services to your citizens.

Rural Roots, Global Reach



A Global Corporation with a Rural Address

From a rural location East of North Bay Ontario, Topex Inc. serves major mining and explosive companies around the world. Thanks to the community networking initiative called NIPNET (Nipissing Network), success hasn't driven Tom Palangio into town.

Above Left:
Tom Palangio has won a global traders award for the amount of overseas business that he conducts, that's over 80% of his total business volume.

Above Right:
Thanks to NIPNET and the DSL service he is now getting Tom Palangio can still put together international business deals from his rural headquarters in Bonfield Ontario.

When Tom retired from a career at Dupont-North Bay, in 1995, he set up his own consulting company, operating out of his home in Bonfield Ontario. Tom's unique area of expertise was explosives consulting and the use of a software product that his team had developed called WipFrag. This enables him to measure the size distribution of broken rock from images, in order to predict the optimum amount and location of explosive charges required when excavating various types of material.

The better his predictions, the lower the production costs for companies like Inco, Falconbridge, Lafarge and Noranda. In mining and quarrying, when the amount and location of the explosive charges are calculated properly, rock breaks up neatly, so as to minimize the expense of pulverizing it into the required particle size. Too much explosive charge and you have unusable rock powder. Too little, and you have added significant expense to the mechanical crushing process.

Needless to say his skills are in demand all over the world and as a spin off to his activities, he employs a staff of five at his home location, two additional staff located near Kitchener, and supports another five consulting associates located across North America. In the process of providing blast-consulting services, he also promotes technology developed by other Canadian firms such as Instantel and Stroma. Instantel employs 75 staff in Ottawa, where one of their product areas is a line of seismographs, which Tom uses in his work. Stroma, located in North Bay, develops underground drill pattern design software known as iRing that makes it easier for mine planners to design blast rounds. This is a remarkable amount of economic activity generated around one person living and working on a rural road in Northern Ontario.

When asked why he chose Bonfield as the location for his business, he explained, "When I first started in 1995, it was the logical place to locate. Working out of my home was the economical thing to do. In the beginning, the imagery, which I analyzed for my clients, could be delivered to me on CD via courier or I could download it over my dial up Internet line, mostly running the downloads over night."

As time went by, the amount of data he had to exchange with his clients went up, as did their expectations. Tom says, "I had clients working out of thatch roofed huts in South Africa who had high-speed Internet, at a time when I only had dial up. They couldn't understand how they could have high-speed access where they were, and I was in Canada and I couldn't get service."

Tom's ultimate salvation was a community network project funded in part by the Northern Ontario Heritage Foundation, Bell Canada and others. The community initiative provided the funds required to upgrade the copper based services throughout the Nipissing District in order to provide DSL service to hundreds of rural resident's like Tom Palangio.

"If it hadn't been for the Nipnet project getting DSL service to my home office", says Tom, " I would have been forced to move to a larger centre. My essential requirements for servicing my international clients are now: reasonable access to an airport; and high speed Internet service. Once I have that, doing business out of Bonfield is every bit as effective for me as working from downtown Toronto."

Tom Palangio's story illustrates the reality that thousands of Canada's rural businesses face. High-speed Internet is now as much a requirement for the operation of a modern business, as owning a fax machine, perhaps more. Thanks to Nipnet and the investors behind it, Tom Palangio's rural business has experienced a happy transition. Many other rural Canadian businesses have not been so fortunate and are now struggling to remain viable in a world where bandwidth is becoming the lifeblood of commerce.

See the Topex web site at: http://www.topex.on.ca

Bernard Turcotte
President,
Canadian Internet Registration Authority (CIRA)

Canadians and Canadian companies are registering dot-ca Internet domain names in growing numbers to establish Made in .CAnada identities on the World Wide Web. Canadian Internet users prefer to use dot-ca domains and many companies now want their international presence on the Internet to proudly reflect their Canadian identity. As a result, businesses and governments have collectively invested millions to develop and nurture online brands.

As ironic as it seems, the real value derived from the millions spent on web projects rests upon domain names costing only $15 to $50 a year. IT, marketing, and legal professionals are quickly learning that an organization's domain name, costing as little as 4 cents a day, must be carefully managed.

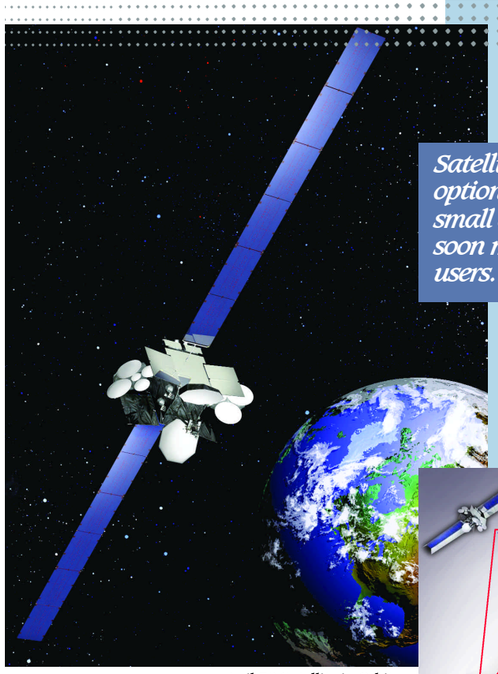
The Administrative Contact of a domain name is generally the "King/Queen". He/she has ultimate power-the power to direct a domain name to any website. In practical terms, the Administrative Contact is the only person who can act on behalf of the organization for domain name related tasks and decisions. However, he/she can only do so if the email address provided at the time of registration is still functional. Many Administrative Contacts change email addresses but forget to notify their registrar!

Internet domains generally have similar requirements for registrations, renewals, and Administrative Contact updates. Dot-ca processes are more extensive but offer a greater degree of security to consumers.

How much effort have you put into developing an online presence and brand? Would your business be affected if it lost its domain name? Do you know who the Administrative Contact is for your organization's domain names? Will you know what to do with your domain name if he/she moves on to another job?

As use of the Internet reaches a state of maturity in Canada, we will see a growing number of people ask and answer these important questions.

Broadband via Satellite



AnikF2 Satellite in Orbit
Photo courtesy of: CRC Ottawa

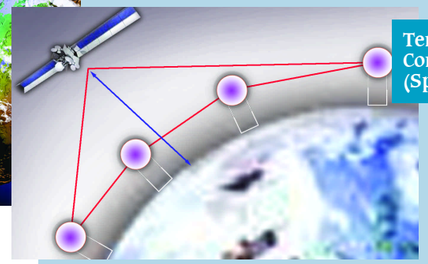
What is satellite communication?

Satellite communication is a form of wireless communication. With wireless technology, information is transferred between two antennas, encoded into radio signals at one end and decoded into data at the other.

Satellite broadband connection has become an important technology option for national businesses, rural communities, and even for small and home rural offices. New technology on the horizon will soon make satellite a competitive option specifically for urban end-users. ….. Here's what you should know today …

Terrestrial or ground based wireless requires many hops between a series of communication towers in order for the signal to travel even 100 km.

Satellite wireless communications requires only one hop, from the base station to the satellite and back down to the signal destination.



Terrestrial (Ground Based) Wireless Communication VS Satellite (Space Based) Wireless Communication

Advantages:

Coverage: an enormous area can be seen from the satellite, often the majority of continental U.S. and Canada combined.

Shadowing: terrestrial wireless can be blocked by buildings, foliage and hills, satellite service is available wherever the sky is visible.

Cost per user: Satellite serice is comparable to terrestrial wireless business packages.

Disadvantages:

Delay time: Due to the distance between the satellite and the earth's surface, there is a inherent 0.25 second delay between the origination of the signal and

A closer look at the TELESAT Internet antenna in Crysler Ontario.

TELESAT Ground Station Antenna at Crysler Ontario. Even in less remote parts of Canada Satellite service is providing a fast solution to deliver high-speed service until the terrestrial infrastructure arrives.

Continued from Page 26 ...

Some Satellite History

As little as 35 years ago, the accepted method of using wireless technology to communicate between distant locations was through the use of ionospheric bounce. Communication signals were aimed at the earth's upper atmosphere and when conditions were right, they would bounce down to earth again at the location you wished to reach. When conditions were not right, there was little choice but to wait until they were.

In 1972, Telesat Canada launched the world's first commercial communications satellite, the Anik A1. Now instead of bouncing communications signals off of an unreliable upper atmosphere, we could bounce communication signals off of a commercial satellite. The satellite was always in the same location, always responded to the same frequencies and could direct your signal to almost any location in North America. The Anik A series satellites and later their many successors facilitated the delivery of television and telephone signals across Canada, the U.S. and to the far north. Because earth stations were initially large and expensive, satellites were first used for long haul communications, which means getting the signals from one side of the continent to the other. Local distribution of television or telephone signals was carried out using conventional terrestrial wireless or copper wire communication technology.

A decade later, Telesat Canada launched the Anik C3--the first of Canada's dedicated satellites to offer point-to-point commercial services. Because of its ability to use higher communications frequencies, it could also use smaller, lower cost receive antennas. This enabled a revolutionary two-way interactive data service using VSAT (Very Small Aperture Terminal) earth stations installed directly on customer premises-facilitating services such as electronic fund transfers, gathering point-of-sale information, national reservation systems, etc. As the technology evolved, this point-to-point capability opened the door to new commercial services including direct-to-home TV, satellite based telemedicine and eventually direct-to-home broadband satellite Internet services.

After six generations of satellites and a sustainable growth, Telesat Canada will launch Anik F2 in 2004, Canada's first satellite to provide full two-way point-to-point Internet and multimedia services. By again increasing the operating frequency of some of the satellite channels, Telesat will further lower the required size and cost of ground station equipment facilitating two-way communication between the end-user's personal computer and the satellite. The new satellite will support up to 300,000 simultaneous Internet connections; each connection meeting an approximate DSL equivalent quality standard.

Satellite Operating Frequencies

The fundamental difference between the satellite communication technologies described above is the choice of operational frequencies.

C Band, or lower frequency satellite services, provide reliable station to station transmission of signals of all kinds including television, telephone and Internet services. However, ground stations are typically affordable only for communities and large organizations which can distribute the signals and the costs on the ground to many end users.

Ku band, or higher frequency satellite services, like those first delivered by the Anik C, has facilitated direct to end-user services like the Express Vu and Star Choice TV, DirecPC Internet services as well as live video feeds and software applications. The receiving stations are smaller and are affordable by individual end users. Typically, communication back to the Internet has been done over conventional dial up lines and only the high volume downloads initially came from the satellite. In April 2002, Telesat Canada launched a new High Speed Internet business bi-directional (two-way) satellite network, branded HSi, to facilitate the growing needs of businesses, government agencies and educations institutions.

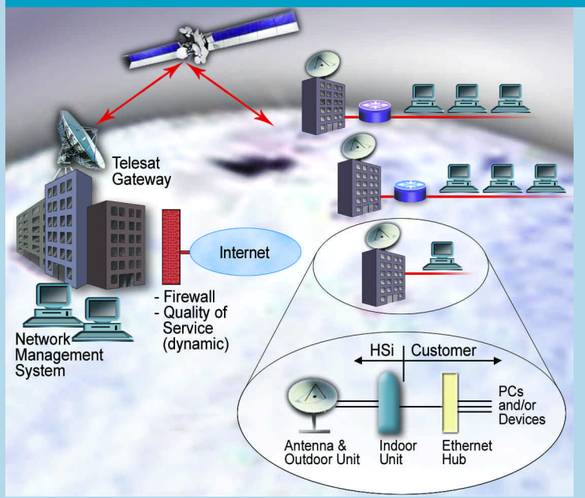
This type of service has also been a superb introduction of satellite telecommunications into the general business market. The network provides affordable ADSL-like "always-on connectivity" transmitting and receiving internet information over the satellite with no telephone lines required. Using smaller 1-meter antennas, HSi provides the capability to any rural or remote business to take advantage of a high-speed internet connection throughout Canada and the U.S. The value of the Internet grows daily and no one has to be without a robust and reliable connection. HSi will continue to service many businesses even after the eventual launch of Ka band.

Ka band, or higher frequency satellite technology, which will be delivered by the Anik F2, can also facilitate two-way point-to-point communications where the Internet or other signals can travel back from the end user through the satellite to the Internet. A major advantage of the Ka-band frequency includes the ability to focus smaller communication beams allowing more users to share the available spectrum bandwidth.

This being said, newer satellites carry a mix of transponders, which provide C Band, Ku Band and Ka Band services. Each band has its own applications targeting different types of services and different types of customers.

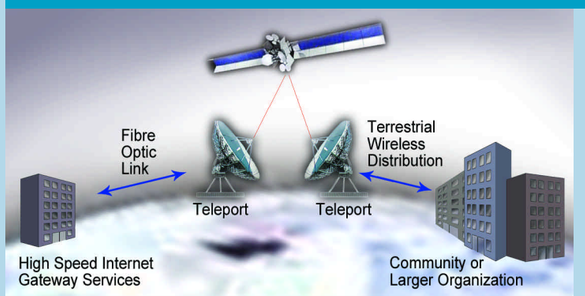
Solutions Available Today

HSi Business Network



All data transmitted to and from the remote sites is processed at the Telesat hub in Toronto. From there, access is provided to the World Wide Web. Specialized services including secure Virtual Private Networks (VPNs), Voice over IP (VOIP), credit/debit card transactions and fax processing are all supported by this network to meet the needs of today's business environment. Entrepreneurs are using HSi to provide the needed connection to support Internet Cafes in areas that would otherwise struggle with a poor dial-up service. The Telesat network is available to North American consumers through its value-added resellers, RAMTelecom of Ottawa, ON and Infosat in Vancouver, BC.

Community Broadband Delivery



There is no need for any remote community to go without high speed services for the local residents or businesses. A satellite service provider can deliver high speed Internet connectivity into a community ground station or "teleport". From there the broadband service can be distributed by wireless or other "last mile solution" into the community.

There are many Canadians who still today do without access to the Internet. Only a small number of northern communities have taken the leap to reap the social, educational, medical and business benefits of high speed services. Conventional Ku Band such as RAMTelecom's Independence Community Solution, Telesat's I Direct C Band network or other low frequency technology are suitable for this application. RAMTelecom has the infrastructure in place today to support a population base of more than 10,000 northern Inuit, Aboriginal and Non-Aboriginal residents and businesses in Nunavut, Manitoba and Quebec.

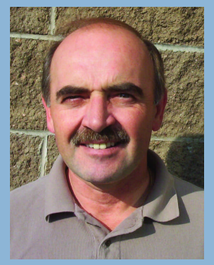
Bill Barrett
Co-Chief Executive Officer
Barrett Corporation

The Internet will become critical to our daily lives. The Internet will "follow us" in our daily lives (home-car/mobile-office-car-home) and services with "synched" wireless mobile connectivity will become a way of life.

Canadians are going to require high-speed services no matter where they are in Canada, and access to wireless connectivity in places never imagined. In fact, in many ways that are obvious today and in many ways that will only become apparent in the future, this access for rural Canada and remote communities will, more than any recent technology evolution, create an economic, cultural and social level of parity, if you will, a level playing field.

The ever-increasing utilization of the Internet and the expanded rich content is going to stress the current backbone to Service Providers. The Internet infrastructure is also going to have to be expanded to include remote locations and mobile destinations. Ultimately, spectrum is going to become very scarce and valuable.

We believe that we most often err by optimistically overestimating the pace of adoption of technology changes initially but, we have a tendency to underestimate its overall impact on society. To put simply, information is knowledge, knowledge is the key that unlocks the future…for everyone. We can't even begin to dream of the applications that we will be using Internet services for in the next decade.



Ralph Misener
President, RAMTelecom Corp.

Nowhere is it more apparent than in Northern Canada that there is a direct connection between Internet access and economic prosperity.

Our customers in communities like Baker Lake, Nunavut and Schefferville have all experienced a dramatic shift forward since they have had access to the types of Internet services that we take for granted in the south.

Teachers now have access to a world of information to share with their students; institutions including airports and school boards are able to use the same IP based administration systems available to their southern counterparts; retail stores are tying into the same POS systems that their southern partners have used for years.

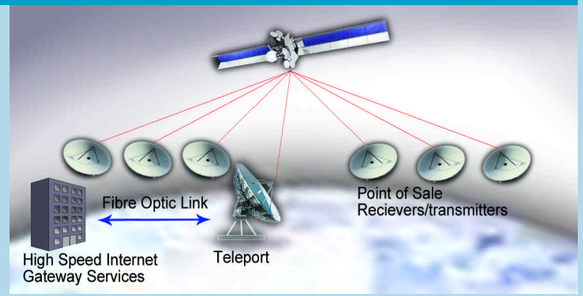
In the north, it is apparent that there is a learning process that goes with the technology. New applications and uses arise over time as people and businesses familiarize themselves with the Internet's capabilities and they learn how these fit with their particular needs and skills.

I encourage more southerly Canadians to contrast their economy with that of Northern Canada, and to consider how their lives might eventually appear to even more connected economies, like those now evolving in Korea and Japan.

I believe that we should follow the example of our northern communities and continue to move aggressively forward by both deploying new connectivity and in finding new ways to use the Internet to improve our lives.

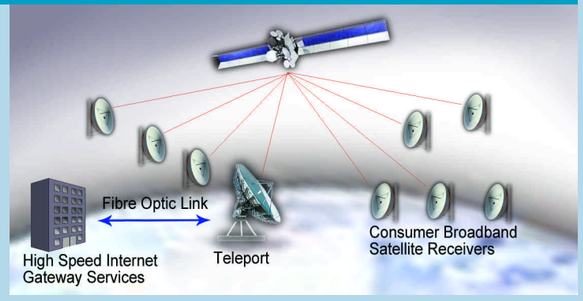
Broadband Via Satellite
Continued from Page 29 ...

National Point of Sale Systems



For organizations which have a large number of end user locations such as business with a national point of sale system, two-way satellite service can be an attractive solution. Each end location is equipped with identical receivers systems which allows the remote location to plug networked equipment directly into the receiving unit. End-user systems are of moderate cost and are affordable for a business application.

National Consumer Broadband Service



Before the end of 2004, Ka Band multimedia services will be available at competitive prices for the consumer market. The high-speed Internet service will be positioned competitively with present DSL services in both price and performance

Videoconferencing Visions

Petawawa's Plan to make Distance Disappear

Karen Fischer's dream of making distance disappear using videoconferencing technology is informative, and so are the road blocks she encountered.

Petawawa Ontario has facilities and access to nature that other communities would envy. Videoconferencing would make the ideal business development tool for overcoming their location disadvantage but DSL isn't enough.

Karen Fischer Economic Development Officer for Petawawa discovered the hard way that just because government and corporate tenants within their community have access to plentiful bandwidth, it doesn't mean that the community does.

Photo courtesy of: The Town of Petwawa

Karen Fischer, Economic Development Officer for the Ontario town of Petawawa, is responsible for attracting new businesses and new investment to her community.

The task shouldn't be difficult. Despite the small population of 15,000, Petawawa has a stable economy. Canadian Forces Base Petawawa disperses its regular payroll into the community, as well as making financial contributions for municipal infrastructure. The base also provides world-class athletic and recreational facilities for its staff and general public. Finally, the town is next door to Algonquin Park, in the midst of a wilderness paradise which is the envy of the world.

Karen does face challenges. Meeting with potential investors requires either a full day trip to Ottawa, or a two-day expedition to Toronto with associated travel expenses. As negotiations advance, she often needs to bring five to ten people together in one room, some from Petawawa and others from away. Not only is the time commitment for these meetings prohibitive, but the out of pocket costs for travel and living alone would guarantee that this type of activity will not become an everyday event.

Two years ago Karen was struck with an idea for a solution: Videoconferencing! At that time, advances in technology were making it practical to hold face-to-face meetings with participants in three or more cities. Setting up meetings between town councilors or local business people and investors could now be done with a two-hour time investment from each participant and without a lot of travel costs.

Karen moved ahead with this idea, obtained buy-in from the mayor, and arranged for a six-month loan of equipment to the municipality at no cost. All she needed now was access to a few ISDN lines and the trial would take flight.

However the project never did take flight: high-speed Internet links that come into town for use by CFB Petawawa are secure and cannot be shared; high-speed VPN links that run past the community from near by Atomic Energy of Canada were private as well; neighbouring Pembroke has fibre optics, but a fibre jump from Pembroke would cost $200k; local telephone switch upgrades to support ISDN ... approximately $250k; and finally a multiple tower wireless jump from Pembroke .... $120k. ... Emerged in a sea of connectivity it could not access, Petawawa was not able to establish a videoconferencing trial within any reasonable budget.

Karen's collision with the bandwidth barrier caught her by complete surprise. Many businesses and municipalities are similarly surprised when they look for services that they thought were available in their community and they find out that their part of their community has been left out.

Since that time Karen has become much more aware of the subtleties of the high speed Internet dilemma. Working with neighbouring communities she has helped to sell her community's case to Bell Canada and obtained DSL service for most of Petawawa. Notably the DSL service ends 500 feet short of the local airport, but then even in the Greater Toronto Area not everyone has DSL.

As for videoconferencing, DSL service does not support the quality of video connections that initially inspired Karen. Her dream of a fully connected Petawawa has taken its first baby steps but there remains much more to achieve.

The View From CRC

The main CRC building in Ottawa as seen through the lens of a special camera used to determine a site's accessibility to wireless communication.

Photo courtesy of: Communications Research Centre Canada

Hydro towers carry not only electricity but also fibre optic strands used to communicate with the utility's control systems. Excess fibre capacity is often sold to third parties making hydro companies an alternative bandwidth supplier.

Photo courtesy of: Communications Research Centre Canada

Communication Research Centre scientist, Gérald Chouinard will provide insight into the technology behind broadband services in this regularly featured article. This month's topic addresses the question of "What is?" and "What is not?" Broadband Internet service.

What is Broadband?

The term broadband is generally used to describe high-speed Internet access. But just what exactly is it and how is it going to change your life?

To understand broadband, we have to first look at the characteristics of Internet access through the traditional telephone modem. Some of you may remember the old 300-baud (roughly 300 bits per second) phone connections, which later increased to 1,200, and eventually to 9,600 bauds. At that point, the data transfer on the phone line was so fast that no one could keep track of the text scrolling up on the alphanumeric display of the local terminal. After a time came more demanding software applications and modems that functioned at 14.4 kilobits-per-second (kbit/s), and then at 28.8 kbit/s, 33.6 kbit/s, and finally 56 kbit/s. The latter represents the practical limit in bit rate that a telephone voice channel can carry because it is encoded digitally at 64 kbit/s to be carried over the Public Switched Telephone Network. Some headroom is needed at the phone network's central office to filter and recover the data from the analog waveform generated by the non-synchronized 56 kbit/s stream at the subscriber modem.

Broadband: Proposed Definitions

Broadband has different meanings depending on the context. According to the International Telecommunications Union, broadband means 1.544 kbit/s (T1 speed) and beyond, in both forward and return directions. The National Broadband Task Force described broadband in its June 2001 report as: "... a high-capacity, two-way link between end user and access network suppliers capable of supporting full-motion interactive video applications delivered to all Canadians on terms comparable to those available in urban markets. A minimum symmetrical speed of 1.5 megabits per second per individual user is currently required to support these applications." The U.S. Federal Communication Commission defined broadband as 200 kbit/s and above in both directions.

Broadband: Proposed Definitions

The current commercial reality seems to be that an adequate high-speed Internet connection for small and medium-sized enterprises, and individual subscribers, ranges from 400 kbit/s to 3 Mbit/s in the forward direction, and between 128 and 640 kbit/s for the return. Depending on the location, these levels of access capacity can be obtained through cable modem, asymmetrical digital subscriber line (ADSL), satellite or terrestrial wireless.

Besides its actual higher data capacity, another key feature of broadband access is its "always-on" capability, as opposed to needing a phone modem to dial a connection. The fact that high-speed access doesn't tie up your phone line is also a plus.

Broadband Services

Based on today's technology and applications, high-speed broadband typically includes services such as Web browsing, streaming video, audio, file transfers, and other lower-capacity services such as e-mails and newsgroups. These services generally require higher capacity for moving data from suppliers to subscribers than they do in the return direction.

The National Broadband Task Force concluded that with the rise in use of bi-directional communications such as peer-to-peer file exchange and videoconferencing, an equal amount of capacity or bandwidth will be needed between suppliers and subscribers to move data back and forth.

Peer-to-peer file-sharing developed very rapidly in the last few years, especially for audio files. However, things have become somewhat more leveled as a result of the Napster effect, which led to tighter enforcement of intellectual property laws. Video conferencing, on the other hand, is likely to continue to increase in use as people begin to discover the benefits of tele-learning, telehealth, etc. Video conferencing will likely define the highest capacity requirement for broadband access as it evolves toward better quality and full motion, resulting in the need for higher bandwidth.

Meanwhile, some network access suppliers have started asking for additional fees from subscribers who use unusually large amounts of bandwidth to cover for the over-dimensioning of the data network as compared to what is needed for a more casual level of Internet access. However, as more cost-effective technologies make their way to market, we could see a drop in access costs even if the typical Internet access use is likely to increase in time.

Broadband: An Evolving Definition

The National Broadband Task Force concluded in its June 2001 report that the definitions of "broadband services," "broadband networks" and related concepts should be dynamic and should encompass and reflect changes in technology, applications and the needs of individuals. They should also stress the potential of broadband to yield great economic and social benefits for Canadians.

For these reasons, the definition of broadband is still evolving. As the public becomes more aware of the capabilities and benefits of accessing data networks, the definition of broadband will continue to change. Data transmission capacity will also evolve as applications become more varied and sophisticated. The access networks will need to adapt to more demanding requirements. These networks will also need to move beyond the status quo and offer better quality and security for users.

Gérald Chouinard is the Program Manager of Communications Research Centre Canada's Rural and Remote Broadband Access (RRBA) Program (www.crc.ca/broadband).

Arturo Duran
Vice President of Interactive Services for AOL Canada Inc.

Canada has a number of advantages in the online space. Canada has the world's second highest market penetration of high-speed Internet access and the lowest cost broadband services - around $25 (US) while the world average is $40 (US). The benefits of high market penetration and low cost to consumers are obvious.

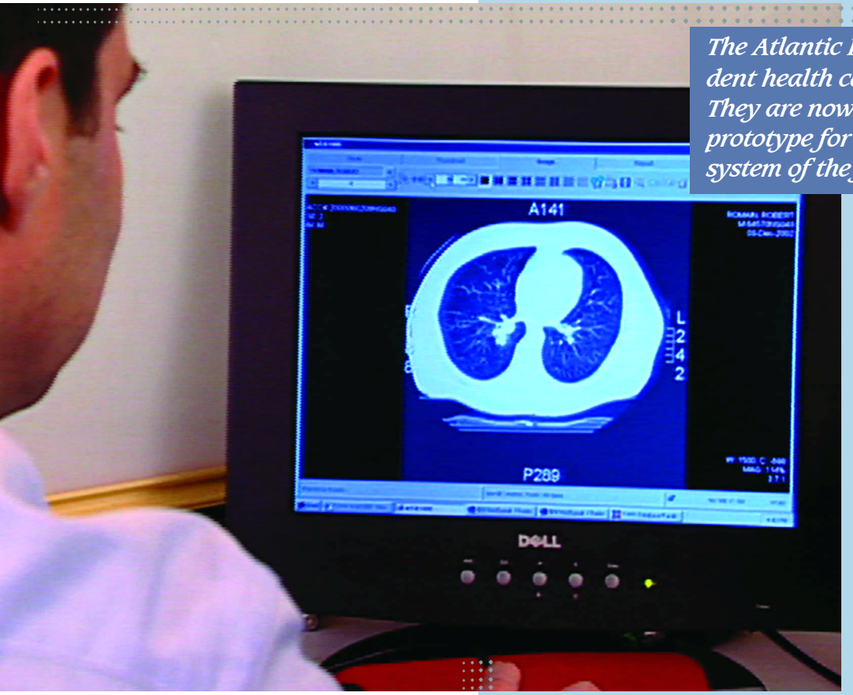
However, Canadians are also starting to indicate dissatisfaction with high speed providers, with satisfaction scores declining 15% in the last six months. As people become comfortable online, they expect and demand more.

The majority of online Canadians are merely scratching the surface of an engaging online experience, using the Internet for email and searching.

To create a more connected Canada, the marketplace needs to leverage opportunities for true innovation. One opportunity is already emerging: it's increasingly common for new products like cars, PDAs, appliances and phones to be IP accessible, so everything can communicate with everything else. The challenge, and opportunity, for service providers is to make effective use of this infrastructure; to keep you connected and engaged anytime and anyhow.

Canadian service providers need to offer compelling reasons for users to do more online. The online experience should be rich, engaging, safe, easy and relevant to Canadians. Getting people online is no longer the challenge - now it's about the best possible online experience. We're continuing to evolve our complete package of access, content and product features; setting the bar for the next generation of enhanced online services.

In Pursuit of the Longitudinal Health Record



Health Infostructure Atlantic and Health Canada's $24M project will see all medical imagery in Atlantic Canada stored in digital form including digital X-Rays. A cross jurisdictional network allows health workers anywhere in the

Photo courtesty of:
Health Infostructure Atlantic

The Atlantic Provinces have had interdependent health care delivery systems for decades. They are now using this fact to help create the prototype for our health care information system of the future.

Any Canadian who has made a recent visit to their local hospital will be familiar with the small plastic card which you are issued on arrival. This card connects you and the hospital to your complete online medical history within their institution.

Using your personal identification number, your physician or any administrator can pull up your records and see when you last visited their cardiologist or the date of your last chest X-Ray.

What you probably haven't considered is that each one of these online systems is an island. The information that your local hospital holds about your treatment history is usually disconnected from the treatment history which was recorded when you travelled to a hospital 200 miles away for those special tests or the treatment you received at the walk in clinic last Thursday.

The Atlantic Provinces are working cooperatively on a program known as HIA or Health Infostructure Atlantic.

The goals of this program are two fold:

1. Develop the widespread medical digital imaging capability necessary to allow health care providers in Atlantic Canada to collect and access all medical imagery in digital form. Types of medical images included are X-Rays, CATSCANS, Ultrasound and MRI;

2. Ensure the interoperability of the data storage and retrieval systems so that physicians in any Atlantic Province can access patient imagery from any other Atlantic Province through their provincial health care networks.

These are two remarkable achievements.

The investment in developing a totally digital approach to the collection of medical imagery, especially X-Rays, which have been film based for a 100 years, opens up enormous opportunities for savings and efficiencies. "Savings in printing, data storage and archiving alone makes this process worthwhile," says Geoff Rabbie, systems analyst with the New Brunswick Dept. of Health and Wellness. Geoff explained, "Legal requirements to maintain X-Rays for seven years or more mean that storage space becomes a significant cost; not to mention the cost of having staff file, retrieve and archive the X-Ray films."

However the real power in moving to the adoption of completely digital medical imagery is what happens next.

Once all of the medical imagery connected with every patient is stored centrally and digitally, it can then be accessed by: any physician; or any radiologist; anywhere in the province, provided they have access to the provincial health network.

Furthermore, the provincial databases are being designed to communicate with one another, across the boundaries of each provincial health network. This means that medical imagery from any patient in Atlantic Canada; can now be accessed by any physician or any radiologist with access to any one of the four provincial health networks.

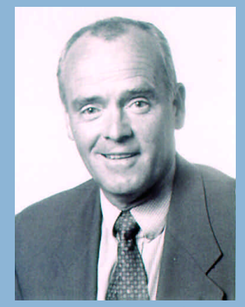
The implications of this are staggering.

Herman McQuaid, Director, Health Informatics, East Prince Health Facility PEI says, "Patients that used to carry their X-Rays with them from PEI to Moncton to be analyzed by a specialist can now go directly to Moncton and have their X-rays made available when they get there. Sometimes they don't have to go at all; the X-Ray analysis is done in Moncton without them, and then sent back to their GP."

"Eventually, we could see the day where, as long as there was a radiologist working somewhere in Atlantic Canada, a physician would have results back for a particular X-Ray within minutes rather than hours." explained Geoff Rabbie, "The impact on the physician's ability to make faster, more informed treatment decisions will be significant."

Our ultimate goal in this, explains Rabbie, is to create a "Longitudinal Health Record". By this, he means that every patient in Atlantic Canada will eventually have available to their physician a complete online treatment record including X-Rays, prescriptions, and trips to the walk in clinic, regardless of where that treatment was delivered in Atlantic Canada.

Once that happens, that small plastic card that you are issued on arrival at any Atlantic Canada hospital will be connecting you not only with the resources of your hospital, but with a medical capability that encompasses the pooled resources of four entire provincial health care systems.



Herman McQuaid
Director of Health Informatics
PEI Dept. of Health Informatics

I believe that one of the important keys to the advancement of health care in Canada is the adoption of a single electronic health care record for every Canadian; a record that will be made available across all health care sites and across all jurisdictions.

With universal access to a patient's health care history, we will be able to ensure that health care providers are providing the appropriate service, at the appropriate location, making best use of all available information.

The most significant enabling strategy for the development of the single electronic health record for every Canadian is the recognition that the information technology systems must be standards based and interoperable.

Regional, provincial and federal health care organizations are making progress towards the day when they will have the ability to access any patient's health care history from any health care site in any province or territory.

Implicit in our vision of this future is the assumption that: when we finally overcome issues of inter-jurisdictional regulations and standards, Canada's networking infrastructure will be ready to support the required high-speed connectivity, both public and private, between all health care institutions in Canada.

Web Based Building Monitoring Keep Seniors Safe

Automated building monitoring is an established technology, but having a human responder always available can be unaffordable. Web based monitoring services provide a solution.

Regency Care Corporation is responding to the growing need for affordable long term health care facilities by using building automation technology to reduce costs and improve safety.

Photo:
Dan Scully checks the status of one of his homes using the cell phone data access feature.

Dan and Donna Scully of Regency Care Corporation have been providing care for some of their community's oldest and most fragile members for more than 30 years. Their focus is on providing care for those seniors suffering from dementia or other disabling conditions who require daily nursing care in licensed long-term care facilities.

Donna is a registered nurse and Dan runs the business development side. Starting out with a single nursing home in the early 1970's, they were operating five homes with up to 160 seniors per home, by 1998. It was then that the Ontario government announced that it would award licenses for another 20,000 long-term care beds in the province of Ontario.

With thirty years of experience behind them and a deep commitment to providing the kind and quality of care required, it was no surprise that some 2,500 of the 20,000 long term care bed licenses issued by the province were awarded to Dan and Donna's company, Regency Care.

What was once a small family business was now getting out of hand. Rather than five homes which they could oversee personally, they are now operating 17 homes of about 160 beds each. Ten of these homes they owned themselves and another 7 homes they operate on behalf of others. How were they going to take thirty years of caring experience and spread it out so that it could benefit as many as 2,500 long-term care residents?

One area that they identified as being a significant issue for the managers in each home was the control and monitoring of the building environment. Ventilation, air temperature, lighting, refrigeration and water temperatures all have to be controlled and monitored in order to provide a consistent, comfortable and safe environment for the residents. Consistent environmental control within specified limits is both a government standards requirement, and a management concern for Regency Care in order that they can control utility costs.

Regency's solution has been to install automated building control systems in each home. The systems can be set to control all of the factors that affect the residents' comfort and safety. Hot water must not be too hot, or too cold, lights must be dimmed at the appropriate hour, food refrigeration temperatures need to be kept within limits and the list goes on.

Automatic control systems were certainly part of the answer. However, if the on-site care staff still had to monitor the operation of the building control systems and take action if they failed. Regency would not have achieved their original goal of freeing the staff to focus solely on the delivery of patient care.

The other piece of the solution of course is monitoring. Alarm systems have existed for some time, where head office would receive a phone call when operating parameters go out of range. But there is a better solution.

The Idimax service, which they now subscribe to for $150 per month per building maintains an online log of all building control parameters.

The building's environmental data is collected from the control systems by the Idimax unit and it is then forwarded via high speed Internet to the Idimax web server were it is logged and made available to Regency Care for inspection at any time of the day or night. "I personally log onto the Idimax site everyday to monitor the status of each home" says Dan, "If any parameter goes out of range, I can take immediate action." Dan went on to explain that the managers in each home were very happy to be relieved of the responsibility of monitoring the environmental control system. Having the data available from all the homes accessible from head office gives Regency Care reassurance that they are delivering the kind of service, and care, that they have taken pride in for the past thirty years.

For more information about Regency Care visit www.regencycare.ca , and for Idimax data monitoring services visit: www.idimax.com .

Ronald Zimmer
President & CEO
Continental Automated Buildings Association (CABA)

The mission of the Continental Automated Buildings Association is to encourage the development, promotion, pursuit and understanding of integrated systems in buildings. The Internet via broadband has and will continue to play an important role in the achievement of this mission.

Broadband is the key catalyst that propels a wealth of new products and services to homes and commercial buildings. Consumers can expect more voice, video and data migration to electronic networks. This will make content available not only through traditional devices such as televisions, but vis-à-vis a whole constellation of personal digital devices.

Building owners/operators, homeowners and consumers will be the chief beneficiaries of this technology. Broadband will increasingly be utilized as a tool to enable energy management, tele-work, enhanced security, distance education, small home offices and tele-medicine.

More specifically, large building or whole house automation currently allows users to integrate and control all their communications; lighting; audio/video; integrated security and access control; heating and cooling and energy management from the Internet. A real example this current technology are energy management systems that can reduce building energy costs by a quarter and energy consumption by a third.

It is therefore important for governments at all levels to put laws into place that enhance the deployment of broadband and the use of the Internet. Such policy will encourage costs cutting in health care and energy consumption, along with improving our environment, productivity and quality of life.

No More Limits to Learning

*CA*net 4 is an R&D network that links researchers and educators across Canada to each other with a bandwidth of 10GB or better. It is operated by an organization called CANARIE (see: www.canarie.ca) and funded by Industry Canada. The purpose of the network is to provide a proving ground for the technologies and the human processes that will eventually launch the use of a next-generation "Super Internet."*

Teachers from urban and rural Canada (Ottawa, Buckingham, Quebec, Kangiqsualujjuaq, northern Quebec, St. Johns, NF., Gander, Lewisport, NF., Iqaluit) receiving technical training at the CRC BADLAB for their participation in the Musicgrid project.

Photo courtesy of: Communications Research Centre Canada

CA*net 4 Canada's Next Generation Network provides key to breaking down barriers to human communication.

John Spence is a researcher at Communications Research Centre Canada (CRC) who uses CA*net 4 to devise solutions for real world communication problems and to find ways to share educational experiences over distance. John's collaborators include: Dr. Martin Brooks at NRC, educators all across Canada, and advanced networking specialists at CRC.

In a very simple example scenario, we joined John in his meeting lounge at CRC. Here, he had an easy chair and a couch arranged in a comfortable fashion across from a large video screen. After we had settled in, he picked up a control unit and caused the large video display device to come to life. Soon there appeared a live full-sized image of Dr. Martin Brooks sitting in his National Research Council (NRC) office, located about 30 miles away on the opposite side of the city. For about 15 minutes, we all sat and chatted comfortably about the collaboration between NRC and CRC on the VirtualClassroom project. The sensation of having a face-to-face meeting was almost complete. John pointed out that we could have had the same type of meeting if Dr. Brooks had been 4,000 miles away in Norway instead of just across the city in Ottawa.

The challenges that John has created for himself and his team go far beyond using CA*net 4 to help duplicate the feeling of a face-to-face business meeting.

In his VirtualClassroom activities, John coordinates the activities of teachers and students from all across Canada to share teaching and learning experiences around IP-based video conferencing. John says, "Our goal is not to just provide access to teachers at a distance, but to break down all barriers to learning, including distance, culture, diversity and age group."

John also works on MusicGrid, a project which includes the provision of music instruction carried out over CA*net 4. Through this project, students can access some of the very best instructors in the world, regardless of their location. In one project, a class of music students in Kangiqsualujjuaq, a remote village in northern Quebec, were given violin lessons by an instructor in Ottawa. The IP connection was made possible through satellite links provided by Telesat Canada. "Music instruction provides one of the best proving grounds for our methodology," says John. "The participants demand the highest authenticity of video and sound reproduction possible."

When asked what the future of the program might be, John explained, "The violin music program has already been expanded to include instruction in piano and choral singing. Dr Gilles Comeau, of the music faculty at the University of Ottawa, and Yamaha have partnered with MusicGrid to provide the digital piano instruction for the students in Kangiqsualujjuaq."

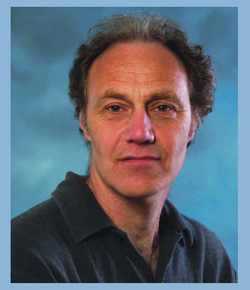
The results of John's work will impact future generations of students and teachers as they learn to maximize their ability to connect over distance using tomorrow's version of high-speed Internet. The potential impact for business communications is already clear and obvious. A face-to-face business meeting that could take up days of travel and thousands of dollars of expense to hold in person could be held over high-speed Internet, with only an hour or two invested on the part of each participant and no travel costs incurred.

The CRC research involving CA*net 4 is only one example taken from hundreds of other projects where Canadian researchers are developing applications for tomorrow's Internet.

For more information on the Virtual Classroom project, visit:

www.crc.ca/virtualclassroom.

John Spence
CRC



Dr. Martin Brooks
NRC

Program Managers for the CRC/NRC Virtual Classroom

Working with authentic user communities in urban, rural and remote communities, Communications Research Centre (CRC) and the National Research Council (NRC) have pursued the goal of helping to create a future where Canada can provide its citizens with universal access to global learning communities.

During this process, we have identified the principles and technologies required to foster human engagement over broadband videoconferencing.

We have learned that excellent technology is necessary, however, it is the human behaviour around this technology that facilitates the person-to-person engagement, thereby creating value.

We have also learned that progress can be measured along two distinct axes; migration and evolution:

- migration being the spread of the technology throughout our society;

and

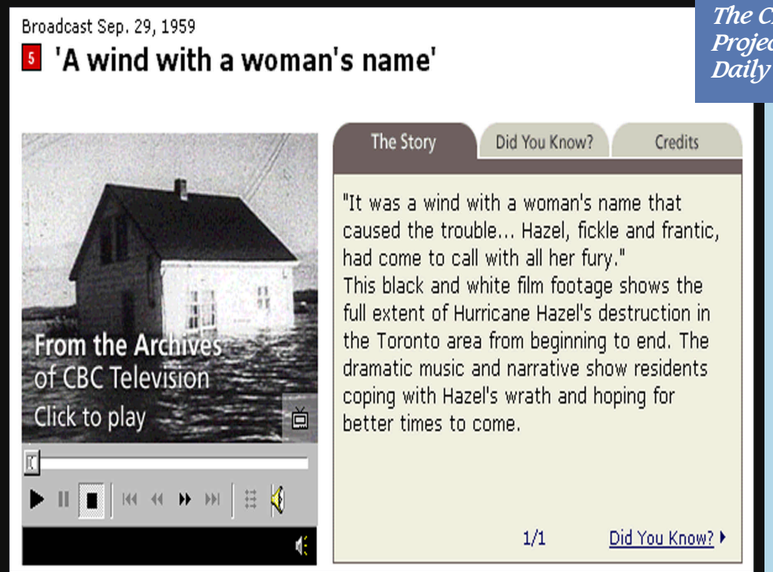
- evolution being the discovery or invention of new applications for the technology.

Our research is being carried out through three projects: LearnCanada, VirtualClassroom and MusicGrid. LearnCanada supported teacher professional development. VirtualClassroom brings students together in collaborative learning around global issues. MusicGrid enhances music education programs.

Approximately 200 broadband learning sessions with teachers and students at schools in Nunavut, northern and southern Quebec, Newfoundland, Alberta and Ontario have been held over the past few years, connecting groups at 2 - 10 sites, often with mentors from the National Arts Centre, the National Library, the Canadian Space Agency, and government.

We have learned much through our efforts and have provided what we believe is a valuable knowledge base for anyone charged with designing and deploying today's eLearning and eBusiness communications systems.

Our Collective Memory



The CBC/Radio-Canada Archives Project provides Context for our Daily News

Have you ever watched a movie about the Roman Empire filmed in the 1960's? If so, you will understand what Albert Einstein meant when he said, "Memory is deceptive because it is coloured by today's events." Even though the characters are supposed to represent a culture 2000 years in our past, the hair-styles, manner of speech and values portrayed will tell you immediately the period in which the movie was created.

The CBC Archive project adapts archival material for viewing by the web. This is one of the examples of how Canadian Heritage's, Canadian Culture Online Program helps Canadians improve their understand of themselves.

Screen shot courtesy of Canadian Broadcasting Corporation.

This is why the CBC/Radio-Canada Archives Project represents such a special opportunity for Canadians to have direct access to more than 5000 archival television and radio news clips dating back to the 1930's. The online archives are accessible from the CBC and Radio-Canada web sites at www.cbc.ca and www.radio-canada.ca respectively. Each web site delivers current news and archival content in one of Canada's two official languages. Note that the news and archival content on each of these sites are developed independently, so as to best serve the unique interests of their specific target audience.

François Boulet, the project director, explained that the content for the online archive project is decided upon by an editorial board, in the same way they might decide on which stories are the most relevant for presentation on the evening's news. Once a topic is selected for the project, a collection of news clips relevant to that topic are chosen from the main archives for inclusion and then digitized for web presentation. These clips are presented on the web site within the context of the story they represent, accompanied by a summary explanation of their significance.

The project was initiated based on a proposal CBC/Radio-Canada submitted to the Canadian Culture Online Program. The Canadian Heritage program awarded the CBC/Radio-Canada proposal $6.6 M of funding over three years. CBC/Radio-Canada supplements this funding with an internal contribution bringing the funding to a total of $8M over the first three-year period.

When asked, "Who should be interested in this project and why?", Boulet responded, "Every Canadian should be interested, young and old. Why? Because it gives back to all of us our collective memory."

The CBC/Radio-Canada Archives Project is only one of hundreds of online cultural projects funded by Canadian Heritage's Canadian Culture Online Program. (see: www.pch.gc.ca/ccop-pcce) The program's goal is to ensure that despite the overwhelming amount of non-Canadian material being published around the globe, Canadians will continue to be able to find uniquely Canadian web content that helps us all better understand who we really are.

Broadband Brings 911 Service to Canmore

Emergency Dispatch services are an expected part of urban life these days, but isolated communities can't afford to carry the cost by themselves. ... Broadband Internet delivers a solution

The Foothills Regional 911 dispatch centre provides local service in and around Black Diamond, Alberta. Thanks to the the RoIP or Radio over IP technology, they can also service Canmore BC.

David Cameron (left) holds the Radio-Over-IP circuitry which he developed with Randy Zalechuck to support Canmore's 911-over-IP dispatch service.

Photos courtesy of: Town of Canmore Alberta

Communications Specialists Katherine Mackenzie (middle and far right) working with Karmen Allonby (blue fleece jacket) are dispatchers at the EMS Dispatch Centre.

"Photos courtesy of: Foothills Emergency Medical Services

One service, that may be as badly lacking and needed in Canadian Rural and Remote communities, as much as high speed Internet, is 911 emergency service.

Canmore, Alberta has recently killed two birds with one stone and shown how high speed Internet can be used to deliver 911 emergency response/dispatch services into their town of just over 11,000 people .... Here is their story ....

The power of 911 is two fold.

Having one universally known phone number to call in any emergency is of enormous value.

Once an emergency response has been initiated, the 911 team remains in action throughout the entire emergency response process. Their role is to be the coordinating point for all information coming from, and going to, the emergency responders and the scene of the emergency itself.

Without the 911 central dispatch support, the fire fighters, police and paramedical workers would not be able to focus on their tasks, and would be lacking key information and key resources needed to help them save lives and prevent injury.

This second operational function requires that the 911-dispatch centre be located close enough to the area serviced, that it can be connected with the responders through a wireless radio link.

In the case of Canmore, Alberta, their situation within the Rocky Mountains made establishing a radio link with any existing dispatch centre impractical. Establishing an emergency response centre of their own, was estimated to cost $240,000 per year to operate with a comparable investment required up front, just to equip the basic operation.

At about the same time that Canmore was investigating its 911 options, Randy Zaleschuk, the Town of Canmore's Information Systems Manager, was setting up a Ham radio system, which included an IRLP Link (node). These letters refer to the first letters in the words "Internet Radio Linking Project".

An IRLP Node is a PC equipped with a combination of specialized software and electronics that allows it to provide a seamless bridge between the world of Internet Voice over IP and the Ham radio world of wireless communications. IRLP played a

Evelyn Roth
Evelyn Roth, Assoc. Director
Strategic Alliances, Bell Canada

Some of us remember a time when shopping was a much more personal experience. We had close relationships with our baker, banker and the man who delivered milk to our front doors. These merchants knew our names, our families and how we liked our goods delivered.

Just as the local store owner made it his business to know his customer, we must now invest in our online relationships through data collection and analysis. Websites such as Yahoo! have done this by creating personalization of content through products like "My Yahoo!". Through this vehicle, users are able to customize their home page to their unique content needs (news, entertainment). In exchange, the company is afforded demographic, psychographic and geographic information, which will prove invaluable to them later on in the sales cycle.

Many online merchants have collected user data already, yet are unclear as to how to best facilitate it. Developing the criteria for collection is key to building relationships with your clients/users in the long term. As we design the e-commerce web sites of the future, we must get to know and relate to customers in a more effective and relevant way. This will allow us to deliver higher value products and services, better fill our customer's needs, and in return be rewarded with higher sales volumes and revenues. Going back to grassroots where the customer was key is the secret to better business, and the online world is no exception!

Continued from Page 41 ...

recent public service role when it was used by the National Hurricane Center to establish front line communications around Hurricane Lili.

The goal of the Internet Radio Linking Project is to allow ham operators the ability to bridge their communication signals onto the Internet and come out at chosen remote locations around the globe in order to talk with other Ham radio operators anywhere in the world.

What this technology offered Canmore was an opportunity to bridge the emergency dispatch radio system in Canmore to a 911 emergency dispatch centre located as far away as they needed to be.

This was not a simple plug-and-play solution. Ham radio equipment differs substantially from the commercial radio systems used by the 911 dispatchers. However with the help of David Cameron, founder and designer of the IRLP system, the equipment was modified to work with the commercial emergency dispatch radio system and the final solution worked flawlessly. Cameron refers to the new system as RoIP for Radio over IP.

"Once our RoIP system was established and working in Canmore, we chose to connect with the Foothills Emergency Medical Service (EMS) in Black Diamond, Alberta. "said Randy Zaleschuk, "We could almost as easily have chosen a service out of Melbourne, Australia. Once we're connected out onto the Internet, distance doesn't matter."

Brenda Fenwick, Business Manager for the Foothills EMS explained, "The Foothills dispatch system is now well established and Canmore's $40,000 annual contribution is a welcome addition to our operating budget. We are looking forward to serving Canmore as well as other Alberta communities once these other communities have obtained their own high-speed Internet connections."

When asked which other communities Black Diamond could service, she explained, "Our first goal is to be able to provide 911-over-IP service to our neighbouring communities once TELUS builds high-speed services into those areas. After that we could, in theory, deliver service to any community in Canada. All we require are the maps for that area. We would simply train our staff around the geography and services available in that community and we could pretty much operate as if we were there. One factor that does come into play is that we train our staff on the ground in the communities we serve. So working with nearby communities will allow us to save on some of the initial travel costs."

For more information on the Foothills remote Emergency Response service visit http://www.frems.ab.ca. Information on David Cameron and the IRLP Internet-to-Radio technology is available at http://www.irlp.net .

Securing The Future

Proud Parent to the Internet, Defence Science Continues to Anticipate its Evolution

If you think that you have a tough environment in which to maintain your Internet services, consider the challenge now being faced by Canadian military units deployed in Afghanistan in potentially hostile environments.

DRDC Network Security specialists design security into defence communication systems from the ground up; something civilian network designers may have to consider doing in the future.

Photo courtesy of: Defence R&D Canada

These units have communication requirements very similar to those faced by your organization everyday, except that their systems must have:

- the capability to be deployed and torn down quickly;
- built-in redundancy, to protect them against the risk of network failure; and
- security technology designed into them as if people's lives depended on it, which of course they do.

It is the job of the Network Information Operations Section of Defence R&D Canada (DRDC) to identify the nature of these challenges, and to find the solutions required to keep our forces communicating effectively and securely.

"The challenges faced by our troops in the field are an extreme version of what could be facing civilian security organizations, during events like the recent Rolling Stones concert in Toronto." says Mazda Salmanian, leader of DRDC's Secure Mobile Networking group. The work done at DRDC is specifically targeted towards keeping Canadian troops safe. At the same time, DRDC promotes a dual use policy for their R&D programs and actively seeks out opportunities to use what they have learned to benefit civilian agencies whenever possible.

Lynne Genik, a Defence Scientist working in Mr. Salmanian's group, points out that, "Security is often built into civilian networks as an afterthought. It has to be the reverse in military systems. Security must be of utmost concern from the ground up". When it comes to commercial systems, colleague Dr. Peter Mason notes that, "Civilian organizations should not underestimate the importance of security or overestimate the strength of the built-in security features which come with their commercial systems. For example, wireless systems used for applications like inventory management could leave an opening for the theft of valuable inventory data or malicious damage to inventory software, if not properly monitored and administered."

Efforts to improve the military's ability to deploy secure networks rapidly could have benefits down the road for resource companies who need to deploy systems quickly in remote and rugged environments such as in the case of the battle against the Kelowna fires.

For civilian organizations, the importance of security is not as well defined and therefore less emphasized by their vendors and support staff. However, as we advance the process of restructuring communities, health services, and corporate operations around the use of the Internet, we will all need to start thinking more like the scientists at DRDC, and begin to design networks as if people lives depended on them.

The Connected Constable

PEI Citizens get more of what they pay for, because of CIIDS/ROADS the RCMP's new mobile digital high speed communications network.

Occasionally, you can go into a smaller computer store and see a sign behind the counter that says: "Our Service is Fast, Cheap and Good ... Pick Two!"

The ROADS portion of the system allows constables on patrol to stay in close touch with the dispatch centre, and each other.

The CIIPDS portion of the system allows dispatchers to see visually where every police vehicle in the province is in order to judge who is closest to the scene of an emergency or if any one police officer may be in difficulty.

Photos courtesy of Government of Prince Edward Island /B. Simpson

The RCMP in PEI has managed to foil this economic principle by implementing a new mobile digital high-speed dispatch network referred to as CIIDS/ROADS.

Using this new service the RCMP can now: get to where they are needed faster than ever before; spend less time doing paper work and more time in the community; and be better prepared for what they will find when they stop a car or approach a premises.

Deployment of this digital communication system is a national RCMP initiative. As of October 2002, PEI was the first province to achieve 100% coverage within the RCMP's jurisdiction. The system consists of two main components.

Dispatch Centre Component (CIIDS)

From their operations centre in Charlottetown, the RCMP dispatchers can use CIIDS to keep in touch with police officers in the community in ways never before possible. Digital tools at their disposal include:

- A digital mapping system allows the dispatcher to see live maps showing the actual location of RCMP vehicles in the province that are equipped with the ROADS mobile component (approximately 25 cars);
- The CPIC database containing information on individuals with criminal records, probation and parole information, and wanted or arrest warrant information, as well as property and motor vehicle records;
- The PIRS databank, which contains complainant, victim, suspect, and witness information;
- An instant messaging system allows the dispatcher to send text based instructions to officers in the field, along with attached reports containing search results from the PIRS and CPIC databases. This system allows for greater voice privacy as the messages are dispatched over a secure network.

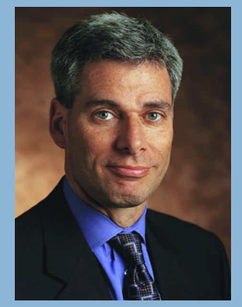
The Mobile Component (ROADS)

Approximately 25 police cars carry a ruggedized laptop mounted inside the vehicle which is connected over the RCMP's province wide wireless network. From this laptop, the officer in the community can do the following:

- Receive/send text messages from/to the dispatch centre and other police vehicles;
- View digital maps allowing the constables to identify where they are, where they need to go, and the fastest route between the two locations;
- Perform direct database queries on the CPIC and PIRS databases;
- Create and complete police reports while on the road.

Constable Leo Shea, Informatics Operational Support with the RCMP in Prince Edward Island, took some time to explain to us how this functionality allows the RCMP to deliver faster service, better and at lower cost.

"The greatest benefit to the public is that police are able to respond more efficiently to any emergency call. With the aid of the CIIDS map, the dispatcher knows where the nearest patrol vehicle is located and can dispatch that vehicle to that call. The ROADS mobile is also equipped with the same mapping system which our members can use to determine the best route to a complaint. This new dispatch system allows police to provide improved service to the public. With information readily at hand, the officer is better able to carry out his or her duties, enhancing officer and public safety. By being able to initiate and complete files on the road, we are able to spend more time in the community, a key to crime prevention and proactive community policing thereby ensuring our communities are safe and secure."



Brian O'Higgins
VP, CTO & co-founder of Entrust Inc.

The Internet is transforming the way that governments and enterprises conduct business, which in turn is expanding the scope and quality of Internet connectivity for citizens. Broadband Internet has helped to enable this shift, and will prove to be the foundation upon which the evolution in connectivity is built.

We are still in the early stages of online interaction. The first phase is access to information. We are now into the second step: the ability to conduct transactions, such as filing an e-form online instead of downloading one to be filled out manually. The most significant step is just around the corner: a transformation of services to fit the new medium, rather than merely automating existing processes. In this stage, businesses, for example, would deal with customized pages and forms for their own business rather than e-filing a generic form. This would be an enormous stride towards a friction-free online environment.

A "government outward" strategy is necessary because Canadians are faced with an interesting challenge - one of geography. While many "wired nations" have a more evenly dispersed high population density, Canada has a very low population density, with pockets of urbanization. It will take government initiatives - such as GOL - to act as catalysts to further drive momentum in enterprise, and thus citizen, connectivity. If left alone to commercial market forces, connectivity will suffer in regions of lower population density and adversely affect national connectivity as a whole.

Ronald F. MacNeil
Director, Information Technology Innovation Centre
University College of Cape Breton

Winner of the 1999 National IWAY Award for Community Service sponsored by CANARIE and CATA.

Broadband is an essential, fundamental capability for economic survival in rural communities in the 21st century. The availability of this service will enhance the social, cultural and economic development throughout the county.

I have been assisting rural communities with connectivity issues for over 10 years including establishing Community Access Sites (CAP), developing and implementing of a Smart Communities strategy in our region and most recently in developing a business plan for submission to the Broadband for Rural Development program (BRAND).

Broadband deployment in rural communities provides an infrastructure necessary to enable communities to participate in the knowledge economy. This infrastructure will act as a catalyst to strengthen e-business sub-sectors in tourism, fishing, crafts and culture, on-line learning, and access to government.

Rural communities in Cape Breton are responding effectively to the broadband challenge. There is the extensive degree of community engagement and commitment that is a part of the BRAND business plan development. Consensus building on the strategic elements of BRAND includes residents, businesses and institutions declaring their commitment to subscribe to the service.

The challenge before us is to insure that broadband deployment becomes a tool for expanding all sectors of the Canadian economy rather than yet another differentiator between urban and rural development. The rural communities in Canada are ready, and their engagement will benefit all Canadians.

22 Internet Visionaries who contributed their insight to this issue of Canada Connects.

John Jung
Winner of the ICF 1999 Intelligent City Visionary of the Year Award

Ralph Misener
President of RAMTelecom Corp.

Bernard Turcotte
President, Canadian Internet Registration Authority (CIRA)

Matt Wenger
Founding President, Columbia Mountain Open Network

Karen Keppler
Executive Director, Smart Partners of Manitoba

Randy Johns
General Manager, Keewatin Career Development Corp.

Brian O'Higgins
VP, CTO and co-founder, Entrust Inc.

Tim Dickins
VP Sales, MCI Canada Inc.

John Spence / Martin Brooks
Program Managers for the CRC/NRC Virtual Classroom

Ron F. MacNeil
Director of Information Technology Innovation Centre
University College of Cape Breton

Herman McQuaid
Director of Health Informatics, PEI Dept. of Health Informatics

Eugene Roman
Group President, Systems & Technology, Bell Canada

Ronald Zimmer
President & CEO, Continental Automated Buildings Association (CABA)

Arturo Duran
Vice President of Interactive Services for AOL Canada Inc.

Greg Geddes
Director Information Technology Services and CIO, City of Ottawa

Bill Barrett
CEO, Xplornet

David H. Leung
President, DHL Consulting Group former President, SRI Strategic Resources Inc., A TELUS Company

Evelyn Roth
Assoc. Director, Alliances, Bell Canada

Art Price
Chairman and CEO, Axia Netmedia Corporation

Michael Binder
Assistant Deputy Minister, Spectrum, Information Technologies and Telecommunications Industry Canada

Dr. Brian W. Unger
President and CEO of the Alberta Informatics Circle of Research Excellence (iCORE)

Girish Pathak
Chief Customer Strategist, TELUS Communications Inc.

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