A New Model to Implement Next Generation Telecom for Rural and Remote Saskatchewan

Roland Renner

Introduction

The challenge and opportunity of rural and remote telecom

"Rural and remote areas are getting dated technology that will leave them well behind once again, even though the economic potential of engaging with the world through high-speed access is huge.

The challenge of getting modern telecommunications infrastructure to rural and remote regions is global. Many countries have programs to address this challenge. There is a World Rural Telecoms Congress and an association in the United States, NTCA—The Rural Broadband Association. In April, Canada's federal government announced a $305-million funding program to bring 5 Mbps download speeds to more Canadian households in rural and remote Canada. This clear opportunity requires political mobilization and direction to develop new business models that will take advantage of the technical opportunities now possible. This mobilization should be directed toward enabling municipal governments, band councils and co-operative enterprises to build their own last mile broadband telecom infrastructure.

Telcos have upgraded their networks with fibre-optic cable and modern switching and routing gear that enables very high speeds, the kind of speeds that collapsed long-distance charges to $20 per month Canada-wide, sometimes including the United States, with no cap. The last bottleneck is the access component or last mile from the subscriber's premises to the nearest central office or intermediate collection point.

In urban areas, the telcos have addressed this challenge with the use of Digital Subscriber Loop (DSL) technology and Fibre-to-the-Node (FTTN), an intermediate collection point that concentrates the traffic onto fibre lines for the next leg into the telco's central office. Most North American telcos have balked at the idea of installing fibre all the way to the subscribers' premises, Fibre-to-the-Home (FTTH), because of the cost and a perception that there are no applications for which residential subscribers require the additional capacity. However, many rural households are not residences that fit into the telcos' business/residence classification. They are a combination of residence and economic enterprise.

Rural and remote areas have even higher costs for this component, with the added complication that DSL technology works only to a limited distance from a central office. Hence, rural and remote areas are left with slow speeds and older technology, even in territories such as SaskTel's, which has a history of installation farther into rural and remote regions than other telcos. Even recently announced upgrades bring speeds up to only 5 Mbps, meeting the CRTC's target minimum speed. This is already well below the 20 Mbps to 50 Mbps speeds widely purchased from urban telco DSL networks, let alone Gbps speeds available through FTTH. Rural and remote areas are getting dated technology that will leave them well behind once again, even though

the economic potential of engaging with the world through high-speed access is huge.

Satellite Direct-to-Home (DTH) broadband access also provides an alternative to slow speeds and makes a significant contribution to connectivity in rural and remote Canada. It remains expensive, however, especially at higher speeds. As the customer base grows, competition for shared capacity will also threaten to reappear until additional capacity is launched.

Similarly, the federal $305-million program will serve only to bring speeds up to 5 Mbps. This may be adequate in the sense of being potentially achievable in the satellite-dependent communities, but for locations where it is possible to build last mile fibre or wireless solutions and get next generation speeds, the program will result in subsidized upgrades to outdated technology that effectively block superior competitive initiatives. It is time to structure financial support to leapfrog incremental telco solutions and build current best-practice solutions for rural and remote regions.

SaskTel performance

***SaskTel** was a leader in the installation of fibre-optic cable to remote areas.*

In Saskatchewan and its neighbouring provinces, this challenge was addressed in the early part of the last century by setting up provincially owned telephone company monopolies with a mission to serve the people by providing service farther into rural areas where privately held telephone companies had refused to go. In many respects, this was successful. More recently, SaskTel was a leader in the installation of fibre-optic cable to remote areas. SaskTel recently announced the further expansion of DSL to small communities, bringing 5 Mbps speeds and 10 Mbps speeds to those customers.

> This expansion is part of the company's long-term strategy to increase access to high speed Internet in rural Saskatchewan that was introduced at the Saskatchewan Association of Rural Municipalities 2013 annual conference. This strategy includes upgrading speeds to 10 Mbps download in over 220 existing DSL communities, in addition to expanding DSL of up to 5 Mbps to 50 additional communities. ("SaskTel Continues High Speed Internet Rollout," CARTT, August 28.)

Proposed model:

Co-op ownership for last mile fibre and wireless interconnection

These speeds are already slower than the speeds available in urban Canada, where 20 Mbps, 50 Mbps, 100 Mbps and more are available. The Frontier Centre for Public Policy proposes a new organizational model more in keeping with today's telecommunications technology, which has been described as an interconnected network of networks instead of geographically based monopoly utilities interconnecting only at their borders. To implement the model requires political mobilization to redirect aspects of SaskTel's current policy.

The model also leans on Saskatchewan's history of co-operative enterprise and SaskTel's historic mission to serve the people. SaskTel and the government of Saskatchewan should encourage small communities and rural subscribers to work together and build their own modern fibre or wireless access facilities (often called the last mile) up to an interconnection point with SaskTel where the company has its best current infrastructure.

SaskTel should be directed to form a rural competitive last mile interconnection capability and to encourage the emergence of local last mile construction and interconnection by third parties, including First Nations. This will keep the high capital cost off SaskTel (and the government's borrowing requirements) as only one of the benefits.

Local community groups can form co-ops or similar organizations or work through existing institutions to build out their network. The key hurdle is to get enough people signed up in advance to get faster payback on the investment. Saskatchewan's history of co-operative endeavours is a natural advantage for this task. The community group members will see the economic and social infrastructure of their communities enhanced, and the new infrastructure will increase the value of their individual properties. This is a much stronger economic incentive than is the government financial support to telcos that allows them to depreciate some outdated equipment for another several years.

Combining SaskTel's historic mission with these organizations to update the last mile in rural and remote Saskatchewan is an excellent opportunity to capitalize on two different streams of successful economic endeavours and make them both better and stronger.

The province could also support the last mile co-ops with funding, low-interest loans or training to assist them with getting started and implementing the projects.

Alternative infrastructure in other jurisdictions

Other jurisdictions took up this challenge in a number of different ways. In Scandinavia, rural co-ops have been formed to build FTTH and to connect with the telco network. In the United States, a municipal network movement has emerged, mostly in remote, rural small towns and cities that were last on the list of fibre upgrades by incumbent telcos. In South Korea, the government has stepped in to support competitive network providers, as well as the incumbent, with funding support and a national objective to bring 1 Gbps speed to every household.

In the United States, starting in Kansas City, Google installed a competing third network (after telco and cable) that can deliver 1 Gbps speed and is now being replicated in selected medium-sized U.S. cities. While this is not a rural telecom initiative, it is an example of a capable and well-funded company challenging the telco and cableco incumbents by rethinking and rebuilding the expensive last mile infrastructure.

In the United States and Canada, municipal governments and band councils are the organizations that have succeeded in implementing superior broadband telecom infrastructure. Saskatchewan's strong tradition of co-operative solutions may be a superior basis for building these alternatives. It also seems a natural partnership model for a new direction for SaskTel. As a provincial government entity, SaskTel should be able to help, whereas in the United States the telco and cable incumbents have generally obstructed municipal network initiatives.

Why alternatives to telco solutions are now common

What is driving these alternatives to the telco solution? First is the recognition that high-speed communication is essential to enable the community to fully participate in the modern economy.

Second, interconnection is now commonplace and compulsory instead of a technical and political challenge.

Third, current technology makes small installations viable or much closer to being viable than does historical telephone technology from the era of regulated monopolies and government telcos.

Fourth, people know that the telco used to own the telephone wire in every house and even the phone itself but gave that up years ago. If one now connects to the telco at a box on the outside of the house, why not connect down the street or a few miles down the road?

Fifth, the knowledge and ability to do this work is now widely available. Watch any busy downtown street and eventually a panel truck with "Joe's Fibre Systems" or some such title written on the side will drive by. The telco is no longer the only place where these skills exist.

Sixth, competing providers have demonstrated that the telco is not always right and that the telco way of doing things is not always the best way.

There are many examples of telcos failing to take advantage of the opportunities made possible by new technology while others have done so. It is surprising that many people including government agencies, whether federal, provincial/territorial/ or municipal, still assume that the incumbent telco is the expert in this field and its solutions should generally be adopted. Telcos did not provide cable TV service in the 1950s although they could have. Telcos did not initially develop the commercial Internet although they could have. Telcos offered an e-mail service but charged by usage, which was no longer driven by the underlying technology, so their offering failed. Telcos did not come up with search engines or commercial software to use their networks, allowing Google, Microsoft and others to become multi-billion dollar companies and muscle in on what had been a telco domain. Telcos did not take advantage of their own technology and drop long-distance prices in line with cost reductions. Resellers and competitors brought lower prices and new and better pricing structures, and the telcos followed suit after losing market share.

To be fair, North American telcos have had many successes and for years provided far better service at lower prices than was available anywhere else in the world. The list above demonstrates that telcos do not always have the best solutions, and they do not always take complete advantage of new technologies. It would be surprising if they did. Monopoly environments are not the most creative. DSL came about because of the competitive challenge from cable systems to the telcos' core business. There are solid reasons and excellent examples to look for alternative ways to address the rural telecom challenge instead of accepting the telco answer.

Why telcos resist

SaskTel, in spite of its successes, in many ways reflects the history and behaviour of North American telcos. Why have these alternative solutions to upgrading the last mile in rural and remote communities been so slow to emerge in Saskatchewan and the rest of Canada?

Telcos do not want to lose control of the last mile. This is the only remaining source of market power that they share with cable systems, and they have consistently tried to maintain control. In the United States, for example, telcos and cablecos have united to lobby for state legislation to hamstring or eliminate municipal networks even though they exist because these companies refused to provide their communities with growth technology service.

Another response has been to do just enough to head off any competing initiative. For example, the Southwest Enterprise Region (SWER) was studying alternative approaches in co-operation with SaskTel when the project suddenly lost its money, and SaskTel went ahead to implement some of the ideas on its own.

In Ontario, Rogers bought the successful telecom ventures that had been established by municipal hydro utilities, pre-empting another source of competition.

Canadian examples

There are many examples of successful models from Scandinavia to small-town U.S.A. In Canada, Olds, Alberta, is but one example. The Olds Institute for Community and Regional Development built a fibre network in Olds, successfully connecting residences and businesses and bringing the benefits of up-to-date telecom to its 8,500 residents.

Another successful example is the Katlodeeche First Nation in the Northwest Territories and Northern Alberta. The KFN made the following statement to the CRTC during the Commission's proceeding on NorthwesTel's Regulatory Framework.

> I would like to thank the CRTC for this opportunity and thank Northwestel for rejecting our request to install new communication on our KFN reserve, because it gave our community the drive to learn and build and own the fiber optic communication infrastructure we have today. We have shown our determination to think in new innovative ways to help others see what can be achieved.
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> (Telecom Notice of Consultation CRTC 2012-669-1: Review of Northwestel Inc.'s Regulatory Framework, Modernization Plan, and related matters. Reply comments submitted on behalf of the Katlodeeche First Nation.)

Similar models can be used all the way down to individual households in rural areas whether the final connection is fibre or wireless. In remote areas, there is little or no spectrum congestion, which provides a rare advantage and opportunity.

Conclusion

By using co-operative models, rural residents can band together and choose to make their own investments in broadband Internet infrastructure, a key economic enabler to enhance the value of their farms and other properties as well as being a provider of additional economic opportunity and entertainment options in their communities. This model requires the redirection of SaskTel's mission, a tough political challenge. By combining SaskTel's capabilities and public mission with Saskatchewan's culture of co-operative initiative, it is possible to deliver high-speed broadband to rural and remote Saskatchewan and to connect it with the world at large.

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About the author

Roland Renner, is a consultant who has worked in telecommunications, broadcasting and Intelligent Transportation Systems (ITS). He has participated in the transition of telecommunications and broadcasting from monopoly to competitive policy and regulatory environments, and has been involved in numerous regulatory proceedings.

He held management positions at Bell Canada and Telesat Canada. As a consultant he worked with PwC Consulting and Nordicity Group, he advised clients on new market opportunities in a changing regulatory climate.

He has worked for both public and private sector clients in Canada, Germany, Bahamas, Trinidad & Tobago, Israel, Saudi Arabia and Pakistan.

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Further Reading

March 2010

Rebuilding the Last Mile

By Roland Renner

http://www.fcpp.org/files/1/PS132_LastMile_AP09F3.pdf

April 2014

The Role of the CBC

By Roland Renner

https://www.fcpp.org/sites/default/files/cbc_role.pdf