



SSi Micro Ltd.

**Brief Submitted to the House of Commons
Standing Committee on Industry, Science and Technology**

- Study on Broadband Connectivity in Rural Canada

***“BROADBAND AS THE NEW BASIC SERVICE:
LOCAL TALENT NEEDS
A SHARED BACKBONE AND OPEN GATEWAYS”***

February 9, 2018

Introduction and Summary of Recommendations

1. SSi Micro Ltd. (“SSi”) welcomes the opportunity to provide this written brief to the Standing Committee on Industry, Science and Technology as part of its ongoing study of broadband connectivity in rural Canada.
2. SSi is a company, formed and headquartered in the Northwest Territories, that specializes in improving remote-area connectivity across Canada’s North and beyond. We hope that our experience can usefully inform the Standing Committee’s recommendations concerning the financial challenges and regulatory changes necessary to implement high-speed services in remote northern regions.
3. In our experience, a key success factor is to engage, enable and mobilize local talent to contribute to solving these challenges and thereby participate fully in the information economy.
4. A successful strategy for broadband connectivity in remote and rural areas must engage and develop entrepreneurial talent in the communities being served. Local talent can design high-speed services and applications to address local needs. It can develop applications and business offers informed by an intimate understanding of community priorities and opportunities. And, taking advantage of the most up-to-date technological innovations, it can offer Canadians in rural and remote locations choices, services and prices that meet their needs.
5. This is exactly what SSi is doing today. Our mission is to ensure that all Northern and remote-area communities have access to affordable, high quality broadband services.
6. To mobilize and enable local talent to contribute to broadband connectivity across Canada’s northern rural and remote regions, public investment and regulatory policy must observe three operating principles:
 - **Operating Principle #1 – Competitive and Technology Neutrality:** Only a neutral regulatory approach to competition and technology can maintain a focus on Canada’s underserved areas. Any public investment programs must support competitive delivery of telecommunications services to Canadians, not merely a competition for the administrative prize of a subsidy.
 - **Operating Principle #2 – Focus Funding on the Backbone:** New funding will contribute best to reaching Canada’s underserved areas by prioritizing investments into backbone transport facilities to reach remote areas. The performance of last-mile facilities depends on the quality and availability of the backbone connecting to those same facilities.¹

¹ In this regard, we note the response of Susan Hart, the Director General of ISSED’s Connecting Canadians Branch, when she appeared before the Industry Committee on November 23, 2017 (Transcript page 4):

- **Operating Principle #3 – Open Access to the Backbone is Essential:** All local service providers must be allowed open and affordable access to backbone connectivity on a wholesale basis. This in turn will allow for effective competition in the local services market, spurring on greater investment, innovation and choice for fixed and mobile broadband and voice services. The backbone must be open to all equally, with no undue preference or preferred rates for any service provider or customer.

SSi in Canada's North and Other Remote Areas

7. SSi is a family company, launched in 1990 by Jeff and Stef Philipp. We are deeply rooted in Canada's North: Our name reflects the company's origins in the Snowshoe Inn, founded more than fifty years ago by Jeff's parents in Fort Providence, Northwest Territories.
8. We specialize in remote-area connectivity, providing broadband, mobile and other communications services across Canada's North. We have also carried out projects in Africa, the South Pacific and South-East Asia. Our mission is to ensure that all Northern communities have access to affordable, high quality broadband services. To achieve this vision, we have invested heavily in facilities and infrastructure.
9. In 2005, SSi built and launched the "QINIQ" network to provide affordable broadband service to all 25 communities in Nunavut. Investments by the Federal Government covered part of the initial costs of satellite transport and infrastructure.
10. Since then, we have co-invested with Canada over \$150 million into Nunavut infrastructure, and we have paid over \$10 million to our community service providers, local agents who are key to our success in all of Nunavut's 25 communities.
11. In September 2015, SSi announced a \$75 million investment in Nunavut's broadband future, which included \$35 million from the Government of Canada's Connecting Canadians Program for the purchase of satellite capacity. SSi has directly committed \$40 million for additional satellite capacity and network-wide upgrades to both the backbone and last mile infrastructure throughout the Territory.

"[W]hen we talk about the backbone and the last mile and funding the backbone,[...] getting the backbone is almost like a prerequisite. You can't increase last-mile speeds without getting the backbone. For some projects, what you'll see happening is that we will put in place a backbone, but there could already be a last-mile infrastructure in place, and this will automatically increase the speeds for the last mile."

12. QINIQ improved the lives of Nunavummiut by providing access to cost-effective broadband connectivity. This was previously impossible; before 2005 most users had no access at all to broadband infrastructure. With QINIQ, for the first time every Nunavut community had affordable Internet access for the same price, immediately allowing consumers to participate in the digital world. Today we are still the only broadband provider that serves all 25 communities in the Territory.
13. Now, with our latest investments, we are delivering another first: As of February 1, Clyde River and Chesterfield Inlet residents have access to mobile voice and data services for the first time ever. Until now, the vast majority of Nunavut has had no access to mobile services.
14. We have now deployed the SSi Mobile broadband network throughout the Territory, and with phased commercial launches all residents will soon benefit from the latest generation 4G LTE technologies, with the same service level and the same mobile voice and data pricing available to all.
15. The new 4G-LTE system enables services such as high-performance broadband, mobile voice and data, telemetry applications, video conferencing, and more. It is also offering, for the first time ever, a less expensive and more versatile alternative to the old wireline phone – one that eliminates long distance charges in Nunavut, bringing families closer together.
16. We have seen, know, and live daily the positive impact of our investments in information technology for consumers, organizations and small business in Nunavut.

Investing to Overcome the Bottleneck

17. Investing in and deploying better last-mile technology and networks, as SSi does, is an essential step to improving rural and remote-area connectivity. Unfortunately, the rising demand for bandwidth over the past few years has presented a significant challenge for Arctic telecommunications systems, including ours. The reason for this is simple: the capacity of the backbone, or transport, facilities that connect local networks to southern Canada and the wider world has not kept pace.
18. Why do relatively simple transport facilities create such a bottleneck for remote northern connectivity? In Nunavut, and many other parts of Canada's Arctic, a combination of sparse and widely dispersed population, the absence of year-round roads which could provide relatively easier pathways for fibre optic cable, and a challenging climate in which to establish and maintain terrestrial and undersea cables results in heavy ongoing reliance on satellite facilities, as the Committee has heard.
19. Whatever the specific combination of reasons, the result is in many ways the obverse of the challenge to improving broadband connectivity in southern Canada, especially in rural areas within reasonable proximity of urban centres. In the south, the challenge is to extend high-speed access facilities to sparsely populated areas. In the north, local players like SSi and

others can meet the challenge of extending facilities to the last mile. However, connecting to high-capacity, reliable backbone facilities irrespective of the transport technology used is the key to bridging the digital divide between north and south.

20. Because the challenge is different between northern and southern Canada, the policy that Government adopts to resolve it must also recognize and accommodate the differing needs of remote and rural areas across the country.
21. Two major developments in Canadian broadband policy, both announced in December 2016, promised just such an approach. The new telecommunications policy heralded by both ISSED and the CRTC that month recognizes that broadband access is essential and establishes major program changes and new initiatives for public investments in open backbone infrastructure.
22. These advances are important – and we believe need to be recognized, promoted and protected by the Industry Committee. Together, these policy initiatives build a path that will let local talent shine by refocusing away from exclusive support to the phone companies, which, despite a century or more of public support, have failed to deliver broadband to many Canadians in remote and rural areas.
23. The challenge now is not to repeat or perpetuate past mistakes. If there are to be public investments into rural and remote area communications infrastructure, and we believe there should be, the investment process must be transparent, and the funded infrastructure needs to be open to all in order to support competition, further investment, innovation and consumer choice.
24. ISSED's Connect to Innovate ("CTI") Program prioritized public investment to support the creation and deployment of backbone facilities, although some funding has also been made available to support access facility proposals. The Department is still allocating funds within the envelope of \$500 million allocated to CTI.
25. The second initiative was the CRTC's Telecommunications Regulatory Policy 2016-496, announced a week after the CTI Program. This new regulatory policy overturns the old regulatory framework which subsidized the monopoly provision of telecommunications facilities designed primarily for voice service. The new policy recognizes broadband as the new basic telecommunications service, and determines that all Canadians, no matter where they live, should have access to broadband on both fixed and mobile networks.
26. The CRTC is also supporting the availability of universal broadband by establishing a new broadband fund to assist ongoing deployment and operation of facilities in rural and remote areas.
27. SSi strongly supports both of these policy initiatives. So long as their implementation fully respects the operating principles we outlined above, we believe that they will go a long way to

supporting local talent and initiative as it contributes to bridging the digital gaps that separate Canadians in Northern, remote and rural areas from those in southern and urban environments.

Three Essential Operating Principles

28. Again, the broadband policy initiatives by ISED and the CRTC are important and amount to a very good start on what is needed to improve rural and remote-area connectivity.
29. However, as always, the devil is in the details, and we must ensure these policies are enacted as intended. Otherwise, inertia, neglect and incumbency could bring us back to a world of an end-to-end monopoly, where incumbent phone companies receive all the public funding, restrict competitor access to their publicly funded networks, and thereby squeeze out further investment, innovation and consumer choice.
30. In our representations to both ISED and the CRTC as they work through those details, SSi has consistently emphasized that to avoid this negative outcome, implementation must respect three operating principles.
31. We have already explained why, so as to ensure that the North does not continue to be left behind, the Department and the Commission alike must **focus funding on the backbone (Operating Principle #2)**. The Connect to Innovate program does this, to a degree. We do not yet know how the CRTC will structure its broadband fund, but we have urged the Commission, as well, to recognize the central importance of directing public investment towards these often-costly facilities, and relying on competitive markets wherever possible to serve the relatively easier purpose of extending access networks beyond urban areas.
32. To make sure Canadians receive the benefit of those backbone facilities, however, it is essential that both ISED and the Commission follow two more principles – one specific, one more general – to guide the decisions they make as they resolve the details.
33. The specific principle is that **open access to the backbone is essential (Operating Principle #3)**. All local service providers must be allowed open and affordable access to backbone connectivity, which in turn will allow for effective competition in the local services market – spurring on greater investment, innovation and choice for fixed and mobile broadband and voice services. The backbone must be open to all equally, with no undue preference or preferred rates for any service provider or customer.
34. We cannot emphasize enough the importance of open access to gateway and backbone facilities on a wholesale basis. Without this, there can be no competition at the local level in remote parts of the country.

35. Without open access, local talent – whether individual consumers, applications developers, private companies, or public institutions seeking to improve delivery of online services – will see innovation denied and face a restricted choice of service and price at the local, or access, level.
36. This is because their choice of local providers, and their own ability to emerge as an alternative new local service provider leveraging publicly funded backbone and gateway facilities, will be constrained to the single option of a service provider who also holds bottleneck control over the backbone network.
37. There can be no doubt that there is ample Northern local talent in the digital world. For example, on January 24 of this year, the Pinnguaq Association, which SSI is proud to sponsor, was awarded \$1.7 million under the Federal Government’s CanCode Program to develop lessons tailored to Nunavut on computer engineering, coding, digital art design, 3D modelling and games development.
38. Ryan Oliver, the director of Pinnguaq, aims to have a much larger number of lessons that are all available online, and to accomplish this, the association is looking at alternative ways for Nunavummut to have easy access to materials. With a concept called LibraryBox, they would develop a “...wireless network connected to a hard drive that contains Pinnguaq’s full curriculum.”²
39. However, the ability to deliver on this concept is either constrained or denied if open access to the backbone and gateway facilities are restricted. Innovation at the internet’s “edges” is stifled.
40. ISED clearly recognized the importance of open access to backbone and gateways – of requiring the provider of backbone facilities to offer wholesale access to its competitors as well as using those facilities to serve its own retail customers – when it designed the conditions for the Connect to Innovate Program.
41. We have urged ISED to ensure that all recipients of CTI Program funding respect this open access condition. That includes Bell Canada and its subsidiary Northwestel as they deploy backbone facilities in Nunavut that ISED has decided to support with CTI funding. ISED must impose and enforce strict conditions of funding in the Contribution Agreement between ISED and Bell/Northwestel. These conditions should include:
 - i. Wholesale prices and service parameters for access to the backbone and facilities to be built with CTI Program assistance are to be published in advance to allow wholesale

² “Feds help extend the reach of te(a)ch: Nunavut’s coding camp gets \$1.7 million to scale up”, John Thompson, Nunatsiaq News, January 24, 2018, http://www.nunatsiaqonline.ca/stories/article/65674feds_help_extend_the_reach_of_teach/

customers to prepare in advance of the backbone being available, public comment and appeals to oversight agencies if necessary;

- ii. No undue preference in delivering retail services should accrue to the backbone operator through the provision of access to that backbone; and
 - iii. No head starts for the backbone operator or any affiliate or customer of the operator to deliver retail services with the benefit of access to the subsidized backbone.
42. The process of working out the details of the December 2016 policy framework established by ISED and the CRTC has made it painfully apparent that such conditions of funding are necessary: already we have seen at least one CTI fund recipient, namely Bell Canada with its affiliates, including Northwestel, pushing to be permitted to deny wholesale access to competitors and to new local talent, and instead limit the access to publicly funded backbone facilities to Bell and its affiliates' own retail customers.³
43. Bell has extended an argument it developed in support of its proposal to the CRTC for the *mechanism* it prefers to allocate the Commission's new broadband fund – a reverse auction – into a more general appeal that it be permitted to abandon the historical obligation of providing wholesale access to its facilities. Put another way, having developed a proposal for one method the CRTC might select to make choices between competing applications that relies primarily on only one consideration (lowest subsidy requirement), Bell is now suggesting that eliminating historical requirements in the interests of permitting applicants to propose low subsidy requirements should be extended to become general policy.
44. Not only does Bell's proposal run counter to fundamental principles of regulation in this country: its adoption would result in illogical and short-sighted decision-making. The fundamental principles that support the development of competitive markets by requiring wholesale access to scarce resources – especially scarce resources supported by public funds or mandatory industry contributions – have for thirty years contributed significantly to the development of service-level competition in Canada. We can tell you that wholesale access to backbone facilities, in particular, is absolutely essential to telecommunications competition today.
45. In addition to defying the very conditions on which it is receiving public funds to develop backbone facilities, Bell's proposal defies the logic of broadband access. The Commission's annual *Communications Monitoring Report* shows an enormous, and ever-growing, demand for internet access across the country. That demand grows, almost exponentially, as Canadians rely more and more on high-speed data access for their information, entertainment, and transactional needs.

³ See the January 30, 2018 intervention of Bell Canada to the Industry Committee as part of the study into rural broadband connectivity.

46. Why, then, would it be good public policy to permit a recipient of public funding to deliberately size or restrict backbone facilities for only that recipient and its affiliates?
47. More far-sighted decisions – embodied, among other places, in ISED’s requirements for backbone funding under the Connect to Innovate Program - will recognize the logic of internet demand and will encourage funding recipients to build higher capacity, especially in backbone facilities, by requiring them to make that capacity available to their competitors at just and reasonable rates and access conditions.
48. This brings us to the most fundamental of the three operating principles that SSi has urged on both ISED and the Commission as they work out the details of their new policy. Their decisions must be scrupulously neutral as to both **competition** and the **technology** choices, and potential developments, made by market participants from customers through to competing providers (**Operating Principle #1**).
49. As we have worked with regulatory authorities to elaborate the details, it has become evident to us that we must stress that public investment programs, including the CRTC’s new broadband fund, must support competitive *delivery* of telecommunications services to Canadians. They cannot stop merely at establishing competition for the administrative prize of a subsidy. This would be the effect of using an auction, or reverse auction, process to allocate funds for broadband deployment, as Bell has advocated.
50. Competitive neutrality – and the very real needs of local communities and competitors in remote areas – also demands that regulatory decisions support open gateways to backbone facilities.
51. The importance of harnessing competition to deliver broadband, and avoiding policy prescriptions that favour monopoly or oligopoly, has been recognized around the world. A 2012 OECD study, “Universal Service Policies in the Context of National Broadband Plans”, makes the following strong recommendations:

*In the end, the ever-present question will be how best to economically expand broadband coverage and use, to the greatest practical extent, with the minimum distortion on competition, as opposed to imposing a particular policy instrument.*⁴

52. It is also vital that policy-makers at all levels not prejudice the development of broadband networks by making decisions that favour one set of technologies – usually terrestrial fibre facilities – on the basis of current perceptions that their capacity is higher or their offerings are more desirable. We will need both wired and wireless technologies, fixed and mobile, to satisfy Canadians’ needs for broadband access service. Our regulatory decisions now must

⁴ Page 5, <http://www.oecd-ilibrary.org/docserver/download/5k94gz19flq4-en.pdf?expires=1518038284&id=id&accname=guest&checksum=B5FAE711C49091CBD780D014ED927A08>,

foresee and require these technologies to work together (ensuring interoperability) and must not artificially skew or limit availability.

Conclusion

53. Although we have made progress, much still needs to be done to improve rural and remote-area connectivity in Canada. In this regard, we are hopeful that the substantive broadband policy reforms begun by ISED and the CRTC will be recognized, promoted and protected by this Committee.
54. Last-mile infrastructure in many remote communities, such as that deployed by SSi throughout Nunavut, can now often match what is available in southern Canada. But the continuing barrier to better broadband is the backbone transport connecting those same remote communities to the rest of the world. This reality effectively disenfranchises Northerners and many rural Canadians from participation in the digital democracy.
55. Canada's policy and regulatory framework needs to encourage ongoing private investment, it needs to best leverage public funding, and it needs to ensure Canadians across this country – in particular remote and outlying areas – have access to high quality, affordable and innovative communications infrastructure.
56. If we successfully invest in and enforce open backbone and gateway infrastructure, local training, and local innovation and competition, Canada can be a global showcase, where broadband overcomes the barriers of distance, and where all regions of the country – no matter how remote – benefit from and participate fully in the digital economy.
57. SSi appreciates the opportunity to submit this brief, and we are hopeful it will serve to assist the Committee as it works to complete this critical study into rural and remote-area broadband connectivity.

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