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# Satellite dependency in Nunavut: a barrier to the territory's political realization

Célestine Rabouam

*Officially created in 1999, Nunavut is Canada's youngest, largest and northernmost territory and no road network connects the 25 communities scattered across the territory. It is also the only Canadian territory to rely entirely on satellites for its communications and this situation contributes significantly to the isolation of the population, 85% of which is Inuit, and hinders the economic development and political governance of the territory. However, the development of telecommunications in Nunavut raises a major issue for the territorial government and the nunavummiut communities. Inuit organizations have been quick to take up the issue of Internet access, but despite these initial assertions, Nunavut remains the Canadian territory with the least access to the Internet. Two cable projects are currently being studied and/or developed, but the distances between the communities will not allow all 25 communities to be terrestrially connected in the short or medium term. To mitigate this problem, operators of low earth orbit satellite constellations such as Starlink have been deploying their services in Nunavut for several months and aim to compete with the players traditionally responsible for telecommunications in this territory. While Inuit associations are at the heart of the decision-making process for the development of cables (in the Qikiqtaaluk and Kivalliq regions), Starlink's takeover of a part of this market reinforces the geographic concentration of decision-making and organizational power in the South, whereas Inuit associations aspire to relocate these skills locally.*

## Introduction

Telecommunications in Canada are seen as essential tools for uniting the population, given the vastness of the territory and the distance between population centers (Charland, 1986). This representation is even stronger in northern territories, where the vastness of territorial entities combines with the weakness of road infrastructures, or even their absence in some communities.

Since December 21, 2016, the Canadian Radio-television and Telecommunications Commission (CRTC) has defined access to high-speed Internet without data volume limits and with a minimum speed of 50-10 Mb/s as a basic universal service to be provided to every Canadian, recognizing at the same time that the Internet is an essential tool for the economic development of a territory<sup>1</sup>.

Reinforced by the COVID-19 pandemic and the resulting widespread use of distance learning and working, the CRTC's statement acknowledges that Internet access must be seen as a vector of social and economic equality, as well as political equality, since it enables democratic participation in debates that are increasingly held online.

This CRTC statement follows the telecommunications services review process announced by the regulator in April 2015. The review specifically aimed to identify the technical and financial challenges and difficulties in serving remote communities in northern regions through consultations with users, service providers, and aboriginal organizations. In recent years, there have been significant developments in telecommunications regulation in Canada, with an increasing focus on equal and equitable access to broadband services and the promotion of competition. The CRTC has introduced new measures to ensure affordable prime rates for telecommunications services, monitor quality of service, and require investment in infrastructure to improve connectivity, particularly in rural and remote areas. Measures have also been taken to promote competition in the telecommunications market, especially by allowing the introduction of new players, such as mobile virtual network operators (MVNOs)<sup>2</sup>.

Officially created in 1999, Nunavut is Canada's youngest, largest and northernmost territory and no road network connects the 25 communities scattered across the territory. It is also the only Canadian territory to depend entirely on satellites for communications, and this situation significantly reinforces the digital inequalities that mainly affect the Inuit, who make up 85% of Nunavut's population. Dependence on satellites also represents a challenge for the territory's economic development and political governance as all services rely on satellite operation, which is both very costly and congested due to the number of users.

The issue of access to the Internet has been part of the Nunavut Implementation Commission's (NIC) work since 1994, with a first report entitled "Footprints in New Snow", which addresses the issue of information highways by including the Internet and asserting the importance of this resource to ensure the effective decentralized governance of the territory (Delaunay, 2021:239).

The role of the NIC was fundamental in the establishment of the Territory and played a central role in the negotiation and implementation of the Nunavut Land Claims Agreement. In its two reports - Footprints in New Snow and Footprints 2 - the Commission recommended strong decentralization of territorial government to provide programs and services at the regional and community levels to the extent possible. The decision to decentralize government services as much as possible also reflects a desire to provide employment and training opportunities to communities while enabling them to develop their capacity and strengthen and diversify their local economies (Millennium Partners, 2002).

To achieve these objectives, the NIC reports emphasize the need for the Government of Nunavut to benefit from a solid telecommunications infrastructure. In this context, telecommunications systems are seen as political tools for economic and social integration, whose primary objective is to compensate for the geographic dispersion of economic, political and population centers across the country. However, this objective is largely hampered by the fact that satellites provide all the bandwidth available for the territory.

Despite these early goals, Nunavut remains the Canadian territory with the least access to the Internet. Two fiber-optic cable projects are currently being studied and/or developed, but the

distances between the communities will not allow all 25 communities to be connected in the short or medium term. To mitigate this problem, operators of low earth orbit satellite constellations such as Starlink have been deploying their services in Nunavut for several months and aim to compete with the players traditionally responsible for telecommunications in this territory.

Focusing on the case study of Nunavut, the paper aims to question the impact of the arrival of LEO satellite constellations on the Arctic telecommunications market in a context of Inuit organizations' reappropriation of digital-related decisions. The objective of this paper is also to understand the role of telecommunications in Nunavut's political project and to analyze the evolution of power relations between the actors traditionally responsible for telecommunications in Nunavut, the operators of satellite constellations dedicated to broadband (Starlink - OneWeb) and the regional Inuit associations that aspire to a better understanding of the specific needs of the population in terms of access to digital resources.

### **Digital development in Nunavut: a complex but necessary undertaking for the territory**

The creation of Nunavut in 1999 was a turning point in relations between the Inuit of the Canadian Arctic and the federal government, but it also underlined the precociousness of the population's claims for digital inclusion. While access to the Internet and digital technologies has become essential to many aspects of modern life, Nunavut communities face major connectivity challenges. As early as 1994, the issue of Internet access became part of the work of the Nunavut Implementation Commission (NIC), with the first report "Our Footprints in Fresh Snow". In particular, the report emphasized the importance of information and communication technologies for effective decentralized governance of the territory (CEN, 1995:57). Two years later, in Volume 2, the importance of a modern communications network to ensure territorial governance is emphasized once again: "The rationale is quite simple: the proper functioning of a decentralized public administration in 11 localities located in one of the world's highest transportation cost regions will only be possible through an efficient telecommunication system" (CEN, 1996:71). The establishment of a decentralized system of governance is of prime importance to Nunavummiut communities, as it enables the creation of skilled jobs throughout the territory and the inclusion of communities in its governance.

To connect the remote and isolated communities of the Canadian Arctic, the federal government has always relied on geostationary satellites operated by the Telesat company, because they enable it to bypass the constraints associated with the distances between communities and the development of terrestrial digital infrastructures in rural and sparsely populated areas. However, this technological choice has left many communities dependent on an expensive system that offers only limited bandwidth. With the spread of Internet use and the progressive digitization of society, satellite telecommunications systems in geostationary orbit no longer meet the needs of the population, businesses and scientists, who have been calling for federal investment in fiber-optic cable for several years (Delaunay, 2021: 290). Today, the federal government is the only stakeholder with the resources to financially support the development of new telecommunications systems (subsea or terrestrial fiber-optic cable) in Nunavut, where each project requires a very high level of commitment, both logistically and financially.

The CRTC is responsible for regulating telecommunications in Canada, including the northern territories. The regulatory authority also supports funding programs such as the Broadband Fund, which was launched in 2019 in conjunction with a consultation on potential barriers to broadband deployment in underserved areas of Canada. In 2020 and again in June 2022, the CRTC also launched a series of consultations to find solutions to improve telecommunications services in the Far North<sup>3</sup>.

In terms of telecommunications, the three Arctic territories (Yukon, Northwest Territories and Nunavut<sup>4</sup>) share a common history of regulated monopolies granted to BCE (formerly Bell Canada) and then NorthwesTel in the Yukon, Northwest Territories (NWT) and Nunavut. Prior to the deregulation of telecommunications in 1992 and the introduction of competition in the marketplace, the government had assigned monopolies to Canada's major telecommunications companies to provide all services in the territories covered by the monopolies (Poitras, 2000). In 1992, Bell's monopoly over the Eastern Canadian Arctic ended, but its subsidiary NorthwesTel, created in 1979, obtained an extension of its monopoly in the Yukon, NWT and Nunavut until 2012 (Delaunay, 2020: 255). However, these three territories do not have access to the same technologies for their telecommunications, and this difference fuels inequalities between populations. In some communities, access to local radio is inconsistent, and many households do not have reliable Internet access because the cost of residential packages is too high. The poorest households therefore have the least access not only to digital resources but also to information in general<sup>5</sup>.

NorthwesTel is subject to regulation of its services by the CRTC due to its monopoly position in the provision of telecommunications services in the Northwest Territories, Yukon and Nunavut. As the main provider of telecommunications services, NorthwesTel is critical to ensuring connectivity in local communities. The regulations issued by the CRTC are designed to ensure that NorthwesTel provides affordable rates, adequate quality of service and investment in infrastructure required to meet the unique needs of these regions, while promoting competition to drive innovation and provide consumer choice. These regulations aim to balance the interests of consumers, communities and businesses while ensuring that northern residents have access to essential telecommunications services (CRTC, 2020:40).

While the Yukon's telecommunications infrastructure relies almost exclusively on terrestrial fiber optic cables operated by NorthwesTel, the NWT relies on a combination of several technologies (GEO satellites, cables and microwave tower networks) and Nunavut is totally dependent on satellite telecommunications systems (Delaunay, 2014).

In 2005, SSi Canada – formerly SSi Micro – was the first company to connect the 25 Nunavummiut communities to the Internet with its Qiniq network, but the provider quickly faced competition from NorthwesTel. The Bell subsidiary initially set up in the most populous communities before launching its Tamarmiik Nunaliit network in 2019, financed by a \$49.9 million grant from the federal Broadband Fund. Both ISPs relied on Telesat's geostationary satellites until 2021, when SSi chose to partner with SES Networks to offer new GEO satellite capacity on its residential and mobile networks.

Although the Yukon and NWT are better served than Nunavut, these two territories face similar issues regarding the improvement of Internet connectivity in their most isolated and remote communities. Firstly, NorthwesTel's monopolistic position in the telecommunications market of

the three territories hinders the emergence of competitive players in the telecommunications market. As a result, users have a limited choice of Internet providers, which reinforces the inequality of Internet access not only compared to southern populations, but also between social classes at local level.

In Nunavut, the cost of living is much higher than in the rest of Canada, and the most precarious households usually cannot afford an internet package. In addition, poverty mainly affects the territory's Indigenous peoples. The 2022 report by the National Collaborating Centre for Indigenous Health indicates that the poverty rate among Inuit in Nunavut is estimated at 62%, compared to 29% among the territory's non-aboriginal population. According to the 2017 Indigenous Peoples Survey, 68% of Inuit households in Inuit Nunangat have access to the internet at home, compared to 91% of Inuit households outside Inuit Nunangat. Of Inuit households in Inuit Nunangat that do not have internet access at home, 54.5% cite cost, 10.2% cite lack of equipment, and 2.9% cite unavailability of service as reasons for lack of access.

The federal government's preference for satellite-based systems to connect its Arctic populations subsequently had a major impact on the allocation of funding, as terrestrial infrastructure projects were considered too risky and costly compared with the satellite infrastructures already present in these territories and operated by traditional telecommunications companies. This trend can be seen above all in Nunavut, where the road network is limited and the development of terrestrial cables would require a complex layout in terms of logistics (Coelho, 2018: 141).

The low population density of the communities and the technical challenges posed by the installation of terrestrial and submarine cables in Nunavut partly explain why satellite was chosen to connect the rural populations of the Canadian Arctic. Firstly, terrestrial cables are subject to extreme climatic conditions and unstable permafrost, which complicates infrastructure layout and maintenance. The NWT government did support the installation of a terrestrial fiber-optic cable in the Mackenzie Valley to connect several communities that still relied on satellites. However, the project has taken a few twists and turns since it was announced in 2014. Costs have risen dramatically (from \$81 million to \$194 million), forcing the NWT government to pay an additional \$28 million (Carroll, 2017). Leducor, the company laying the cable, also faced significant geological challenges caused by permafrost along the cable route (Thurton, 2016).

And secondly, laying submarine cables in the Northwest Passage requires a major effort in terms of feasibility studies and environmental impact, as this sea passage is covered with ice for part of the year. In addition, ice masses gradually breaking away from the continent can cause damage near the coastal section of a cable if it is not adequately protected. The Quintillion cable project is a good example of the logistical and technical difficulties of laying submarine cables in the Northwest Passage. In 2016, the Alaskan company Quintillion bought the assets of the Canadian Arctic Fibre project, which would connect Asia and Europe via the Northwest Passage, because the Canadian company was unable to secure federal funding for its project. Since 2017, Quintillion has laid the first part of its cable in Alaska and plans to continue its efforts, first to Asia, then to the Canadian Arctic and finally to Europe. While the project has succeeded in its first phase, the company has also faced significant financial challenges – Quintillion's former CEO has since been put on trial for fraud within the company – as well as technical challenges in installing and protecting the cable (Delaunay, 2021: 291). During the construction of the first segments of the Quintillion cable in

2017, concrete was even laid to reinforce the installation and further protect the branch (Green et al., 2018).

The constraints associated with the vastness of the territory, the distances between communities, the absence of a road network and the demographic distribution of the area make Nunavut a particularly challenging place to build infrastructure, where federal investment is essential.

### **OneWeb and Starlink satellite constellations: two contrasting models for polar connectivity**

Throughout Nunavut and Canada's remote Arctic communities, the choice of operators and Internet service providers is very limited, and competition is almost non-existent. This situation has led to considerable frustration among the local population, who are calling for more choice (Environics Research, 2020). Since the aim of these satellite constellations is to bring broadband to the most remote and isolated areas, their launch in the Canadian Arctic has been eagerly awaited by users. Both constellations are now available. Starlink's offer has been operational in Nunavut since November 2022 and OneWeb's services have been available to commercial entities and organizations in Nunavut since March 2023. Canadian operator Telesat has also launched its own satellite constellation project, Lightspeed, but has experienced significant delays compared with OneWeb and Starlink. The constellation was due to be operational in 2024, but Telesat announced in March 2022 that commissioning could be delayed until 2026 (De Selding, 2022). Since then, the Canadian operator has changed its plans, announcing in August 2023 that its Lightspeed constellation was now fully funded. The company announced that it had replaced Thales Alenia Space with Canadian company MDA Ltd for the construction of the 198 satellites needed for its constellation. The satellites are now scheduled to launch in mid-2026, with polar and global services launching in late 2027<sup>6</sup>.

Major constellation projects bet on inter-satellite optical links because they enable data to travel at the speed of light from one satellite to another, reaching the ground station that connects to the Internet backbone and then to the user's terminal as quickly as possible. This system reduces latency and the need for ground stations, forming an interconnected mesh network that gives users access to the network wherever they are. Users' data packets travel from satellite to satellite to the nearest ground station, back up to the satellite and transit again between satellites in the constellation to reach the one closest to the user (Rodriguez-Perez et al, 2011). Currently, the second generation of Starlink satellites – including those launched into polar orbit – are the only ones equipped with this technology, enabling SpaceX to bypass the costs of building and operating ground stations in the Arctic (Foust, 2021). The use of inter-satellite optical links therefore gives the Starlink constellation an advantage in polar coverage, both in terms of operating costs and services.

To offer satellite telecommunications services in Canada, operators can adopt either a direct-to-home model – which means that the operator sells and delivers its services directly to users – or a community aggregator model, which enables the operator to aggregate traffic at a central point and redistribute it to the local network. In the latter case, operators must generally partner with local service providers to manage distribution on the local network<sup>7</sup>.

Starlink's business model enables it to bypass traditional ISPs by selling Internet access directly to users, unlike OneWeb, which in August 2021 signed a Memorandum of Understanding with

Northwestel to extend connectivity solutions for the population, businesses, governments and mining. Initially, Northwestel planned to rely exclusively on the Telesat constellation, but the company has not ruled out OneWeb to meet its objectives as part of the "every community" project<sup>8</sup>. In May, OneWeb signed a new ground station agreement with Swedish Space Corporation (SSC) and Northwestel to build and manage a new OneWeb satellite network portal in Yellowknife, the capital of the Northwest Territories (Swinhoe, 2023).

Starlink's rapid deployment and uptake by northern consumers seems to have caught Internet service providers – limited in the Canadian Arctic – off guard, and they now fear losing market share. This is particularly true for Northwestel, which called on the CRTC even before the service became available in the Arctic, to help it counter the competitive threat posed by this new player. In 2021, the company asked the regulator to modify the rate filing process for retail Internet services so that it could prepare for Starlink's arrival on the Arctic telecommunications market<sup>9</sup>. Although Starlink has not yet completed its polar coverage, the constellation has been a great success in Nunavut, and has even led to an outcry against the Northview Housing Corporation, which does not allow its tenants to install Starlink antennas in their homes. A petition was launched on December 04, 2022 to force Northview to allow its tenants access to Starlink service (Cohen, 2022).

For the moment, SpaceX's direct competitors who aspire to connect the Arctic territories are acting only as wholesale satellite operators, selling their bandwidth to ISPs already present in the territory. OneWeb and the Canadian Lightspeed project developed by Telesat have signed agreements for the Yukon and NWT with Northwestel, the incumbent Internet provider in the Canadian Arctic, and Pacific Dataport, a Microcom subsidiary serving part of rural Alaska<sup>10</sup>. In Alaska, Pacific Dataport strongly opposed Starlink at the FCC, and followed up its efforts with a white paper entitled "Clearing the LEO fog in Alaska", in which the OneWeb constellation is presented as the safest and fastest option for rural populations in the Arctic, while the Starlink project is accused of trying to influence regulatory agencies and of relying on populist campaigns (Pacific Dataport, 2021).

SpaceX's authorization to launch its satellites into polar orbit has thus given rise to incumbent service providers protests from the constellation's competitors in the Arctic while the service was eagerly awaited by northern residents. In particular, Amazon objected to the FCC's request to modify the orbital plans of the second-generation Starlink satellites, arguing that this modification doubled the technical effort that operators like Amazon face in examining interference and orbital debris issues vis-à-vis Starlink (Brodkin, 2021). Criticism of Starlink has also focused on the service's supposed benefits for local populations. Indeed, although Starlink's availability in remote and isolated Arctic communities allows users to choose a new, more efficient service, the company is not physically present in the territory, which raises a number of issues. For example, SpaceX doesn't participate in the economy of these territories, and unlike traditional access providers, it doesn't employ a local workforce. Furthermore, users located in remote communities have no access to a dedicated customer service to report problems.

However, it is important to note that during phase 2 of the CRTC's call for comments on telecommunications in the Far North, ISP Northwestel's practices in terms of customer service, local employment and monthly data overage billing were highlighted as major issues for



respondents. Indigenous parties participating in the call for comments also raised concerns about the way NorthwesTel engages in dialogue with local Indigenous communities (CRTC, 2022-147).

One of SpaceX's main arguments for launching its satellites into polar orbit is the public interest of this service for the world's least connected populations, particularly in the Arctic<sup>11</sup>. Unlike Starlink, its main competitor OneWeb completed its polar coverage several months ago, but its satellites do not integrate inter-satellite optical links, which appears to have an impact on the quality of its Arctic services. In December 2022, lobby group Alaska Telecom Association filed a document with the FCC, citing unsatisfactory connectivity levels and excessively high operating costs for a residential network aimed at rural Alaskans (Swinhoe, 2023).

### **Increasing involvement of Inuit organizations in telecommunications development across Nunavut**

Inuit claims concerning access to digital resources and infrastructures were particularly precocious and testify to the population's genuine concern that their specific needs regarding ownership and control over the organization of the networks be taken into account. An initial Broadband Task Force was set up by the Nunavut government in January 2001, and was replaced in 2002 by the Nunavut Broadband Development Corporation (NBDC), a group of members from the Government of Nunavut, Inuit organizations and SSi Canada, created to meet the requirements of Industry Canada's BRAND program to build the Qiniq network and improve telecommunications services in the territory (Mignone et al., 2008:20). The early creation of these two organizations illustrates the importance of telecommunications in the process of Nunavut's creation, but also reaffirms the central role of the federal government in their funding.

The context of reconciliation with Indigenous populations also plays an important role in the discourse around digital equity in Canada. Access to digital resources is seen not only as a universal need, but also as a political tool to meet the specific needs of Indigenous communities. Reconciliation with Canada's Indigenous populations does indeed rely on economic and political levers. In terms of telecommunications, initiatives that are part of this reconciliation logic must enable Indigenous communities to achieve digital sovereignty by giving them the possibility of owning and deciding on the organization and management of their data and digital infrastructures. Digital infrastructures are thus seen as tools of emancipation that communities want to seize in order to control the uses and effects of digital technologies and ensure that they meet their specific needs (McMahon, 2013).

Since 2007, the Kuhkenah Network (KO-KNET) developed in Northern Ontario has been a good example of the reconciliation approach in the field of telecommunications. KO-KNET is a non-profit association that has adopted a self-controlled, autonomous community model for digital infrastructure and services. This initiative has connected 26 ISPs in First Nations communities, and each First Nation served by KO-KNET owns and controls its own local network infrastructure, and is its own Internet service provider. The value of this initiative is that the First Nations control and maintain the telecommunications infrastructure “according to their own politics and policies, but in dependency of non-Indigenous funding bodies and partners and in the wider context of governmental policies” (Budka, 2015:37).

In Nunavut, Inuit organizations are also actively involved in projects designed to improve access to digital resources. For example, the Inuit company CanArctic Inuit Networks has for several

years been working on a project that would bring high-speed Internet via a submarine cable to the capital Iqaluit. In March 2023, the company signed a Memorandum of Understanding with Alaskan company Quintillion to help build a fiber-optic network from Happy Valley-Goose Bay, Labrador to Iqaluit (Wright, 2023). The Kivalliq Hydro Fibre link project also aims to bring both a new energy source and a fiber-optic connection to several communities and a mining site in the southern Kivalliq region from Manitoba. The development of the project and the active search for funding were largely managed by the Kivalliq Inuit Association, which will also own the entire infrastructure once it is built (Canadian Northern Economic Development Agency, 2021). This will be the first fiber-optic cable in Nunavut and will provide a new source of revenue for the Association, which will be able to sell wholesale bandwidth to NorthwesTel and SSI.

Inuit organizations involved in fiber-optic cable projects focus on regional projects that will connect only one or a few communities. The Sednalink project is currently focused on the capital Iqaluit, and the Kivalliq Hydro Fiber Link will connect only 5 communities in southern Nunavut. These projects will therefore not solve the problem of satellite dependency throughout the territory. They will, however, connect two major population centers, Iqaluit and Arviat, thereby freeing up bandwidth for other communities that will remain satellite-dependent. One of the main challenges in improving connectivity in Nunavut is to free up satellite bandwidth by connecting the largest population centers to fiber-optic cable<sup>12</sup>.

Cable projects are therefore at the heart of Inuit demands for access to broadband services in Nunavut, but Inuit organizations have also been interested and invested in the opportunities presented by the arrival of LEO satellite constellations in the Canadian telecommunications market. The telecommunications arm of Qikiqtaaluk Corporation – the for-profit development arm of the Qikiqtani Inuit Association (QIA) – PanArctic Communication, has seized this opportunity to create Inuknet, a company 51% owned by PanArctic and the result of a partnership with OneWeb and Galaxy Broadband (Lipscombe, 2023). Inuknet, formed in 2023, currently serves only one customer in Iqaluit, but plans to offer residential services in all Nunavut communities in the coming months. It will then be the only operational service provider in Nunavut that is Inuit-owned.

## Conclusion

Inuit organizations have a long-standing understanding of the technical challenges posed by the territory, by the lack of competition in the telecommunications market and by the dependence on federal investment induced by the cost of infrastructure in the North. While the first cable will not connect all 25 Nunavummiut communities to fiber optics, these initiatives will gradually free up bandwidth for satellite-dependent communities, improving the overall situation across the territory.

Similarly, the introduction of LEO satellite constellations and the availability of new networks based on new bandwidth sources will diversify digital opportunities for users while strengthening the resilience of information systems in the territory. Therefore, although new infrastructure development in Nunavut is extremely slow and costly, the complementarity of terrestrial and space-based telecommunications infrastructures is therefore essential to achieving broadband in the territory.

Although Inuit involvement in projects dedicated to improving connectivity in Nunavut has long been a mere façade, the context of reconciliation with Indigenous populations on a national scale has made it possible in recent years to confirm the central role of Inuit players in the territory's digital development. While Indigenous organizations criticized NorthwesTel during recent CRTC public consultations primarily for its weak services and approach to Indigenous communities, recent federal government and regulatory public policies aimed at bridging the digital divide have primarily targeted rural Indigenous communities (McMahon, 2020). In addition, the CRTC has made clear that it seeks reconciliation in the context of telecommunications regulation in the Far North and recognizes that Indigenous voices are essential and indispensable in conversations about telecommunications services in the Far North. In the second phase of consultation, in response to complaints received in Phase 1, the CRTC took steps to allow for broader participation by Indigenous organizations (CRTC, 2022-147). Despite these efforts, no Nunavut organizations attended the CRTC hearings in Whitehorse. They argued that the discussion with the CRTC would be more meaningful if it took place in Nunavut (Tranter, 2023).

The aim of low-earth orbit constellations is to bridge the global digital divide and universalize Internet access. However, they serve governmental and private interests far removed from the concerns of communities still dependent on limited and costly Internet services. With Starlink, the amount of data consumed per month is five times greater than the volume of data allocated to the largest NorthwesTel package. Moreover, Starlink does not charge users for data overage unlike NorthwesTel.

Starlink's improvements in service quality and the availability of consumable data will therefore enhance users' digital capabilities. The arrival of competitive players such as Starlink nevertheless raises certain risks, as pointed out by Inuit organizations and competitors of the American constellation in the Canadian Arctic. Firstly, SpaceX does not participate in any way in the economy of the Arctic territories, nor does it contribute to initiatives aimed at strengthening reconciliation with Indigenous populations. And secondly, by taking over part of the users in Nunavut, the Yukon and the NWT, Starlink increases the dependence of remote communities, and of Canada in general, on American telecommunications infrastructures. Starlink's capture of part of the market also has the effect of strengthening the geographical concentration of digital organizational decision-making power in the South, while Indigenous populations aspire to relocate these skills locally.

The intensification of debate on the opportunities and challenges raised by the arrival of broadband constellations in remote Arctic communities underlines the ongoing tension between the societal, economic and political vocation of digital resources and infrastructures.

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