

6 Government Future Needs

All governments are looking to take advantage of advancements in communications technology and services to improve and enhance program delivery, and to connect to people working on the land between communities.

This Chapter lists some of the trends identified by federal and territorial participants regarding their future needs.

Each section also provides a listing of some of the initiatives and needs participants highlighted while participating in the workshops or in the online survey. It was not possible to gather every single initiative and future need of every government department operating in the Arctic in the time frame of this report. *The list of initiatives and needs are not comprehensive.*

These listings are provided with the intention of highlighting the wide range of communications needs and initiatives being considered by some departments serving the Arctic, so the reader can get a sense of the road ahead, and the challenges departments face, and some of the efforts being made to improve communications for the future.

6.1 Federal Departments Serving Territories

All federal departments struggle with implementing services in the Arctic that comply with national service standards. Whether they are attempting to serve the general public, communicate with head office, coordinate with other government departments, or connect on the land, there are a number of trends in communications that were brought forward in the visioning workshops and in the online survey.

Online service to public

A major focus at the federal level is for increasing use of online applications for public use, in an effort to bring more and better services to the public. This of course, will necessitate improved connectivity in order for the public to have access.

Real-time access to databases

In terms of program delivery at the federal level, the march of progress continues, regardless of whether or not the territories can keep up. Increasingly, federal government employees require real-time access to databases that are tuned to run on a fiber backbone in order to work. This trend will only continue.

Many federal departments tasked with serving the Arctic try to conduct the same operations and offer the same services to the citizens of the Arctic as they do for all citizens across Canada. As one federal participant noted, the challenges of the North should be accounted for in all federal processes but are often overlooked or ignored.

More field operations

For departments that require connectivity between communities, such as military, Environment, Public Safety, Coast Guard etc, there is a renewed call for improved coverage and bandwidth options for field support activities.

Mobile communications

The increased and ubiquitous use of mobile communications by federal employees in the South necessitates a significant investment in infrastructure for northern employees to keep up. As well, when southern-based federal employees travel to the North, their BlackBerries do not work in the vast majority of the northern communities. This will only get worse with time, as there is no current business case for installing the latest cell network technology in either the larger or smaller centres in the North.

Social networking to reach the public

Finally, a number of northern federal staff raised the need for the federal government to learn to use social networking tools to reach the public. We can expect to see these kinds of initiatives start to occur in the next few years, and there will be a corresponding need for improvements to public networks as the general population connects to these new services.

New federal needs, programs/applications

The following list of possible applications and programs is *not an exhaustive list*. Data was compiled from surveys and comments collected during the visioning workshops. This list is intended to demonstrate the breadth of applications presented by departments at an ACIA workshop or in a survey. Appendix C itemizes some of the specific computer applications planned for the future.

Citizenship and Immigration --- Looking at enhancing and expanding client service by moving to electronic-based services, virtual learning, and options for online self-service. Enhancing accessibility to their applications, allowing people to make electronic submissions, and accessing updates on the status of citizenship/immigration (application) processing.

Canadian Coast Guard --- Must match eNavigation being implemented internationally by all maritime nations, matching how maritime nations offer services to marine industry digitally including the Arctic. They will also have to maintain their legacy systems to ensure ships with older technology can continue to use navigational aids.

Corrections Services Canada (CSC) --- Offenders need to be able to contact their families while away from their community - to maintain their connections to their families. Improvement in videoconferencing is required in Arctic regions. CSC is looking at strategies, like telehealth, to address this need.

Department of National Defence (DND) --- There are many new initiatives being considered. This is a non-comprehensive list.

- Looking at development of a Northern Port. Anticipate expansions in current military locations, including Nanisivik port, Alert, Fort Eureka (shared with link with Environment Canada) Forward Operating Locations in Inuvik, Iqaluit, Rankin, and Yellowknife, and training facility in Resolute Bay. All sites will need increased communication capacity.
- Operation Nanook will be experimenting with implementing a cellular network using equipment installed in balloons (for example to respond quickly in the event of a Major Air Disaster)
- Winter warfare centre is being set up in Nunavut.
- Unmanned Aerial Vehicles (UAVs).
- Real-time maritime surveillance in next 3 to 5 years;
- Polar Epsilon project. uses information from RADARSAT-2 to produce imagery for military commanders)
- permanent ground station in the North (Federal Ground Infrastructure for Satellite missions, like Norway's Svalgaard, location to be determined, allows for monitoring data in real time)
- better support packs for Canadian Rangers.
- Improving ship and aircraft terminals.
- Need to be able to perform (interoperable) ship-to-ship communications.
- Iqaluit, Whitehorse, Resolute Bay sites to have improved communication links back to National Defence HQ.
- Need ability to prioritize service in an emergency.
- HF radio technology is evolving into sites and stations that can be remotely operated. This evolution is generating two types of system connectivity requirements. Inter-site (intra-community) connectivity is required between transmit, receive, and control sites that make up each station (resident in a community such as Yellowknife). New HF radio systems have tighter delay and latency tolerances than previously permissible.
- From Canada Command's perspective, sharing of classified and unclassified information between DND and the other Government Departments, and key stakeholders, in both voice and data forms, is the desired end-state.
- Rangers need better connections to maintain communications with them while on patrols --- with 58 patrols, and 1,000 additional Rangers to be recruited. (Rangers call in using a satellite phone once every 24 hours --- usually around 7 p.m. If that call is missed, usually have to wait 24 hours before the next communication -- too long to wait if there is a problem).
- Need to improve tracking devices. Military units are pushing farther and farther out from communities.
- Looking for smaller communications equipment, capable of communicating over bigger bandwidth, at smaller cost. Looking at transferring information from small

reports to imagery (e.g., photos from a disaster). Cannot afford to lose connections during transmission. Losing connections could mean losing files.

Environment Canada --- Examples of some future initiatives include:

- Implementing an Environment Emergency Management System (E2MS) into a northern site. E2MS should provide one common set of tools for regional environmental emergency teams, one system for recording information, and be able to leverage data and services of participating organizations (e.g., the Canadian Geospatial Data Infrastructure (CGDI) and the Open Geospatial Consortium, (OGC). Data included in system should include incident data, imagery, thematic data, and model data, presented as layers. They are also looking at engaging in remote sensing for scientific and other purposes, which would involve small packets of data transmission.
- Need to collect more data re. weather and other information from the field for communities and for resource companies. (Weather and land are more unpredictable than in the past; hunters and trappers need more weather predicting between communities, not just in communities).
- Iceberg tracking, using beacons.
- Collaborating with DFO on a new geological navigation and weather program.
- Coordinating with Canadian Space Agency.
- Collaborating with DND and Coast Guard in areas of environmental emergency, especially in Beaufort Sea (e.g., oil and gas).
- Staff in the field need to be able to access information from centrally-located websites.

Fisheries and Oceans --- This department plans to implement office conferencing/collaborating tools, complemented by (electronic) document management as a means to reduce paper and the number of servers required. They also have a GIS project on the horizon.

Human Resources and Skills Development Canada --- In order to answer the obligation to deliver services in remote locations, currently have employees traveling to remote locations have to set up temporary offices in local facilities like communal centres using the local ISP (when available) and VPN. There is a need to find a transportable solution --- wireless, satellite or other, that would be fast, cost effective, and offer a two-way network performance that allows corporate applications to run efficiently.

Indian and Northern Affairs Canada --- Some examples of future plans and needs include:

- Would like ability for citizens to access application forms online.
- "status cards" coming into effect within communities --- will need ability to process/provide support at community level.

- would like to be able to use social media and cell phones as a means to reach youth.
- Is developing a map-staking application. (Would like to make this application available/accessible for use anywhere in the world.)
- Development/installation of a Canadian High Arctic Research Station (new hub) in Cambridge Bay within the next 5 years.

Industry Canada --- Like many federal departments, Industry Canada is providing more online services, and want to ensure northerners can utilize these services equally. They also want to ensure companies in the North participate in spectrum auctions.

NavCanada --- Planned improvements to management of weather data collected in collaboration with Environment Canada include many projects, such as:

- installing 100 new weather observation sites, and need the ability for this information to be received at various sites, independent of Environment Canada.
- The Human Weather Observation Service (HWOS) will increasingly be automated, to be completed in 5 years. Human resources will continue to be used to report on cloud height and visibility.
- NavCanada will add their equipment to DND's 38 air surveillance sites.
- NavCanada is installing cameras in numerous sites (when it's dark out, they don't see anything; in daylight can see the runway). Need communications to transmit camera data.
- Installing cameras at AWOS (Automated Weather Observation System) locations. Where there is human presence, cameras are not planned to be installed. Because of the limited daylight in some communities, not necessarily a business case to install cameras everywhere.

Public Safety Canada --- The Arctic Regional Office new initiatives and needs include:

- Need deployable option so that hotspots could be created in remote areas for emergency management personnel. New hardware, like the Canadian Space Agency Ka-band dish, is small enough to be transported easily, and offers sufficient bandwidth to supply a team with both voice and data. Combined with technology like Voice over IP, DMVPN routers and wireless equipment, a hotspot could be created with all of the essential services, including connectivity back to the home department, internet access and BlackBerry data and voice communications.
- Thin client web based applications like Citrix and OWA should be used when possible to conserve bandwidth. Need to ensure remote accessing equipment can utilize these applications in all three territories.
- The office-to-go kits maintained by the EMNS offices should be re-evaluated, and the equipment updated. As well, new equipment that would give basic communication ability, configurable without the aid of an IT technician, should be added.

- Create an IT working group to further investigate technologies that can be used in times of emergency, as most of the standard equipment used by Public Safety won't work during an emergency due to local infrastructure being insufficient or unavailable. Equipment should be picked for its ability to tie into a variety of underlying infrastructures, as each region supports a different set of technologies. Further, shipping equipment is costly and unpredictable, so small, mobile technologies that can be moved with the responders should be used whenever possible.
- Create capabilities for a Virtual Emergency Operations Centre (VEOC) in order to utilize latest communications technology for timely and efficient operations with emergency management partners. Many federal partners do not reside in the North –therefore many events are coordinated and responded from a distance from northern and southern locales. Robust, deployable equipment is required to ensure that we can stay connected in an environment where communications infrastructure is fragile.
- Utilize Geographic Information System (GIS) related technology to increase situational awareness, risk assessment, planning, logistics, operations and communications efficiencies.

RCMP --- The RCMP is working to upgrade their mobile telephony in all communities. New initiatives include:

- High-Speed Downlink Packet Access (HSDPA), an enhanced 3G mobile telephony communications protocol to help have higher data transfer speeds and capacity.
- a digital radio architecture that will allow RCMP to add encryption, better meet policy, and meet members' needs.
- Working on Multi-Protocol Label Switching (MPLS) upgrade to high speeds in many areas, as a means to speed up the flow of traffic on their network by making better use of available network paths. Switching all to Cisco VoIP systems. Security will be video over IP.
- Doing a full switchover from Novell to Microsoft, including modern server upgrades in all communities, server virtualization, adding senior radio personnel and looking at bringing back more senior radio people.
- Requires more cell coverage with latest technologies.
- Infrastructure funds would be available if the RCMP installs a dedicated satellite connection for the VOIP project.

Canada Space Agency

- Assessing installation of an imaging station (110 Mb/s continuous to Yellowknife, Inuvik, and all uploaded to E2MS. (Canadian Centre for Remote Sensing, Canadian Space Agency, and other agencies involved.)

- Polar Communications and Weather (PCW) Constellation Mission (with Environment Canada and international organizations) --- to help imagery needs for latitudes 55 to 90 degrees, to provide reliable communication and navigation services to ensure security, sustainable development, safety of air and marine navigation, and Arctic science, and to provide meteorological data.
- Canadian Centre for Remote Sensing --- Implementing new dishes in Inuvik satellite facility. One antenna can bring down half a terabyte of data a day. Need a communication link (at least a 500 Mb fiber link) to bring data south. Fiber link must not be subject to Patriot Act (i.e., not flow through U.S.) Some of the data is time-critical. Non-critical data is shipped now through Canada Post.
- Experimenting with portable KA-band dishes.

6.2 Yukon

A robust tourism industry, a relatively developed road infrastructure, and a largely terrestrial communications infrastructure all help to define the next few years of communication needs and investment in Yukon.

The majority of the population in Yukon live in Whitehorse, along with government workers, yet participants in the Assessment made it clear that communication services to communities need to be increased in order for everyone to properly benefit.

This listing of trends are focused on showing what is unique about Yukon, but certainly many of trends listed in NWT and the federal agencies also apply to Yukon.

Better connectivity along the roads

Yukon has cell phone service in all of its communities today, but not between communities. With a great deal of road traffic (tourists, community members, students on school buses and government workers such as home care providing support to the smaller communities), there is an increased need for cell service along highways for safety purposes. They also collect data from telemetry stations installed along the highways, with ice sensors, wind, and weather data being collected and fed back to a 511 service for real-time weather and road conditions.

Better continuity of service between communities and backbone

There is a great deal of concern around improving continuity of service after fiber cuts and other terrestrial failures in the middle-mile infrastructure linking communities to the Internet backbone. It is likely that Yukon will be investigating fail-over services and redundant link options to develop back-up options to their largely single-line terrestrial system, as they become more and more dependant on advanced communication services.

Keeping pace with southern networks

A vibrant expanding economy, increasing consumer wealth and demographics that mirror southern Canada, Yukoners are looking to engage in rich content and video capabilities, just as urban dwellers in southern Canada. This expectation of parity to the south is important for realizing educational, economic and lifestyle opportunities for the residents of the territory. This expectation will help to drive attempts to deliver better services that help the territory achieve service parity with the South.

Increase services for all

New government services enabled by technology need to be available to all communities - particularly in health, education, and justice. There are also calls for more self-service, where citizens are able to effectively interact with government services no matter where they live.

Improved emergency response

Fire, land, wildlife and emergency services in Yukon are continuing to improve their emergency response capabilities via improved communications options. This trend is expected to continue as the Yukon government focuses on preparations for large-scale emergencies such as earthquakes.

New Yukon needs, programs/applications

The following list of possible applications and programs is *not an exhaustive list*. Data was compiled from surveys and comments collected during the visioning workshops. This list is intended to demonstrate the breadth of applications being considered by various departments in the Yukon that submitted their thoughts to the Assessment team either at as workshop or in a survey. Appendix C itemizes some of the specific computer applications planned for the future.

Education --- The department is working to integrate more communication tools into the education system, with initiatives such as one (computer) device per child, interactive whiteboards, and wireless for the Department and services it provides. A list of some of the newer initiatives includes:

- Interactive whiteboards on the network (new)
- Wireless for staff on YESnet network Whitehorse (18 sites) and the communities (13 sites)
- Wireless capacity for Dept. of Ed Administration (near future)
- Student wireless for YESnet network (near future)
- Remote desktop support with video and voice (YESnet, video only for Ynet)
- Labour Market Development Assistance project is moving forward (to be completed by March 31, 2012)
- New school bus system (implementation over the next 6 months. Ultimately will allow for parents/students to view bus routes on web site)

- New school, (FHC school construction in 1 or 2 years)
- 1 device (iPad/laptop) per child (near future)
- Student Financial Assistance - systems upgrade to a web app (near future)
- YG SharePoint (near future)
- Podcasting of educational content

Emergency Measures Organization --- They plan to improve their ability to manage fire emergencies from remote (central) location, and need the ability to link all responders in an emergency/catastrophic situation, improving disaster management through communications enhancement.

Health and Social Services --- This department relies heavily on communications infrastructure for many services in social services for income support, alcohol and drug services, home care, patient safety, emergency medical services including the extension of hospital services to smaller communities, by relying on the transfer of digital data. Some new services include items such as:

- eHealth Project - Interoperable Electronic Health Record (iEHR) supporting all Yukon Communities:
- Lab, Drug, Diagnostic Imaging Information Systems
- Point of Service Integration (Infoway HIAL model), Patient Health Record Viewer
- Client and Provider Registries
- Physician & Community Nursing Electronic Medical Records
- Two new Hospitals in Watson Lake and Dawson City
- Advanced Hospital Clinical Systems Project:
- Bedside Medication Verification, electronic Medication Administration Record, positive patient ID/clinical barcoding
- Electronic Clinical Documentation, Provider Order Entry
- Surgical Services Management, Emergency Department Management
- Integrated case management system to support social service program delivery
- Panorama Health record system

Intergovernmental Affairs -- Ability to meet without need for distance traveling; interest in use of Skype-like applications. Ability to connect and exchange information with other countries.

Justice --- There is an opportunity study underway to assess Video Conferencing requirements over the 1-5 year timeframe. Video conferencing could add significant new services throughout the territory such as video remand court, video visitation (inmates), case conferencing, JP training, etc. Court Services has used video conferencing for the past decade but there is a growing need for improved and additional services. Also, with

the advent of the new jail in Whitehorse, there is a large expectation for VC services for that program.

Public Libraries --- Libraries predict that in the coming years, Wi-fi connections will become the dominant mechanism used by library patrons to access the web in all community libraries. Libraries will also be bringing in more eResources such as e-books, database access, social networking and media (growing demand). They also provide access throughout Yukon to their library database and related functions (circulation system to loan materials).

Yukon College --- The Distributed Learning Department utilizes a wide variety of educational technologies and media to provide convenient access to College programs and services, regardless of a student's location, schedule or other commitments. They will continue to expand distance learning, making use of computer conferencing technologies such as Adobe Connect, Teleconferencing, Video-conferencing and email and on-line portal and Learning Management Systems available through student desktop computers, laptops and portable communications devices.

6.3 Northwest Territories

While many of the trends in the NWT are similar to Yukon and federal agencies, we have focused on trends that were raised in the workshops and surveys unique to the NWT.

With 10 fly-in communities that rely on satellite and uneven access to communication services within the territory, it is not surprising that many of the departments expressed an interest in finding ways to use communication technologies to improve access to all kinds of services that can be enabled by better communications.

More services to the edge

From being able to pay your water bill online, to registering your hunting licence, departments want to improve access to the very edge of the public network, providing interaction with government services right to people's homes, particularly in communities outside of Yellowknife.

More parity among communities to access programs

Many communities need much better access to take advantage of programs and services that rely on better connectivity to operate, from health care initiatives and access to specialized education courses for youth, to adult training programs targeted to municipal workers. With devolution on the horizon, the urgency to address parity of access for all communities to learning, services and opportunity only increases.

"Substitution" using technology to link to necessary human resources

With an actual physical shortage of people to do specialized jobs, NWT departments are implementing various communication services that link specialists to provide a service that would traditionally be done infrequently in person at huge costs. They see

communication technology as a tool that can help to drastically improve access to all manner of services into the more remote communities in NWT, and this trend promises to increase as they realize success with programs like Telespeech, analysis of digital x-rays and distance education initiatives.

Using communication tools to offset travel costs

Many government employees travel long distances by road or air at significant costs simply to attend a meeting that could be done effectively by videoconferencing.

Land and resource management

With devolution, the GNWT will be required to take an increasingly larger role in the management of the land and resources. The collection and dissemination of data collected in the field, and safety for those operating in the field are just some of the issues to be tackled as the GNWT gradually assumes additional land and resource management responsibilities from the federal government.

Human capacity in Yellowknife versus communities

Participants look to better communication networks as a fundamental requirement to enable needed training, support and options for those living in centres outside of Yellowknife, as they take on new and important roles in managing the future of their communities and regions. With over half the population of the NWT located outside of Yellowknife, there is a need to increase capacity-development opportunities for those living in communities.

New NWT needs, programs/applications

The following list of possible applications and programs is *not an exhaustive list*. Data was compiled from surveys and comments collected during the visioning workshops. This list is intended to demonstrate the breadth of applications being considered by various departments in the NWT who submitted their thoughts to the Assessment team either at as workshop or in a survey. Appendix C itemizes some of the specific computer applications planned for the future.

Aurora College --- The College would like to increase their capability to offer distance education in the smaller communities, and to communicate with southern partners through software programs such as elluminate. They also wish to better connect with students who are on practicums located outside of Yellowknife.

Education, Culture and Employment --- ECE is planning an SIS program to be delivered over Internet and thin client, with up to 8,000 users expected, to be launched in 2011. Because of latency and bandwidth challenges in satellite served communities, ECE has two standards they deliver via network, Internet or telecommunications. They are continually exploring alternatives such as upgrading hardware using thin client and virtualization, replication of databases, mobile apps and other options as they become

available. Education IT see challenges in satellite-connected communities as the single biggest issue they have in developing new services.

Health and Social Services --- They are actively implementing new technology that aims to improve service delivery to patients throughout NWT at lower costs. Some examples include (to name a few):

- increased telehealth for specialist connections;
- better electronic record management through PACS (Picture Archiving and Communication System);
- increased computing radiography rolled out in all communities; plus
- Telespeech projects in schools that link students by videoconferencing with speech therapy services for all communities.

Environment and Natural Resources and Industry, Tourism & Investment --- Initiatives and needs include:

- Would like to offer self-service online to consumers, such as applying for and receiving hunting and fishing licenses, online renewal of licenses, applying for ITI grants and contributions, and applying online for funding for small business. Would like to use data collected online to evaluate the effectiveness of ITI grants and contributions.
- Have an initiative underway related to information consolidation and management associated with land management and resource management, intended to help “tear down” the information silos and provide greater support to decision-making. This initiative will require large data sources to move over the networks, and land management decision making tools (to help understand future impacts, cumulative effects, regulatory, government position as to whether a diamond mine should go in or not.) This is not about asset management, as it is more about economic development, sustainable development, wildlife, forestry impacts, etc. GNWT has a small role in these areas, but with devolution, it will have a bigger role in land management.
- Would like to increase the use of videoconferencing as a means to offset travel (and travel costs), to allow government to be in greater touch with regional operations, and improve communications without the travel costs.
- Needs to improve collection of environmental field data toward a research ability to move away from paper-based studies and field notes (i.e., collect and load data at source instead of paper-based while in field).
- Need to be able to move “rich” content (e.g., GIS web mapping, video, consolidated information holdings) to decision-makers and the public (clients) in a timely fashion.

- Bioresearch taking place in the field is likely to occur in between communities. The hope here is to have the ability to capture that information in the field and transmit it (i.e., collect at the source, store, and upload; or, cache and forward when returning to a community base). Most of this information is not critical, other than that collected during emergencies.
- Pipeline: near shore/off shore - need infrastructure to respond to an event like the oil disaster that occurred in the Gulf of Mexico. How do we protect ourselves, by having the telecomm infrastructure to monitor and respond to pipeline activity and to support emergencies.
- Satellite receiving station: Inuvik has a satellite receiving station - if it is going to grow, there will be a significant upgrade required for data transfer.
- Remote data collection will increase. Increases in development activity will increase potential for major releases of contaminants into the environment (e.g. oil spills). Gathering information on these events and planning and coordinating responses will require reliable and robust communications systems. Bandwidth will be necessary to stream data and video, linking to remote locations, and capacity to maintain such systems.
- Would like to allow for social networking to engage public for conservation education and wildlife management issues, and allow the public to apply for wildlife research permits online and receive recommendations back from communities on the permits.

Municipal and Community Affairs --- MACA needs to be able to deliver modular training online to community government staff to assist in community capacity development, and to engage the department's clients in remote communities more actively. Looking forward to the day they could offer online university training to people in communities.

Public Works and Services --- One of their goals is to facilitate general public access to their government account statements so that people in all communities can make online payments for goods and services rendered.

Transportation --- Need to provide additional connectivity in remote areas, especially along highways. Using cellular or satellite is required for improving highway maintenance as well as for public safety. Need to access applications for managing highway construction.

6.4 Nunavut

There are many unique features to Nunavut that means that some of the communication trends are unique only to Nunavut. Some of these features include:

- A decentralized government;

- a uniquely young population;
- many Inuktitut-speaking residents;
- a widely distributed population across the territory (with 11 communities having more than 1,000 people - large by Arctic standards);
- no roads, and 100% reliance on satellite;
- an upcoming boom in mining that through Inuit Impact and Benefit Agreements must strive to provide real jobs to local residents;
- the impending government switch to a new communications service provider.

These realities in Nunavut help to define the communication trends in the future.

This listing of trends are focused on showing what is unique about Nunavut, but certainly some of trends (more services to the edge, access for all communities etc) listed in NWT, Yukon and the federal agencies also apply to Nunavut.

Common future needs identified in the workshops in Nunavut include:

Decentralized government operations improvements

The GN's move to a newer communications system will allow them to implement more bandwidth-hungry applications that were purchased or customized for Nunavut. The future trend is for more applications to be implemented for internal government operations that in the past would not work well on an older architecture. Because of weather and traveling challenges, Nunavut will likely see more meetings/collaboration through video conferencing, and messaging --- especially in emergencies.

Distance education, health, justice connections

From E-health records and Grade 12 biochemistry, to bail hearings and counseling, government departments are planning for a more robust communications system that can support videoconferencing-style communications to provide services that are either not available or only available intermittently at huge costs by flying people around.

Commerce in communities

Tourism, the arts industry, film, and businesses of all kinds are encouraged and supported by various Nunavut governmental agencies in efforts to help stimulate the private sector in all Nunavut communities. We can expect to see continued efforts from government to help support commerce in communities through new communication tool initiatives.

Language needs

Relatively recent efforts to develop online Inuktitut language tools (such as the Tusaalanga online Inuktitut learning site at <http://www.tusaalanga.ca/>) and learning materials will continue to flourish as Nunavummiut push for Inuktitut and Inuinaqtun language services. All government departments also need to access and collaborate with

translators online to help translate documents into Inuktitut, Inuinaqtun, English and French, necessitating robust connections to the homes of people living all over Nunavut. There will be a need to ensure computer programs of all kinds can support Unicode for the effective use of Inuktitut syllabics.

Connecting to southern services

With a clear shortage of human resources in Nunavut, and a close relationship with federal funding (over 90% of the Territorial budget is from Ottawa), and a data centre based in Ottawa, Nunavut hopes to take advantage of shared-services with federal agencies and other provinces where appropriate.

Nunavut new needs, programs/applications

The following list of possible applications and programs is *not an exhaustive list*. Data was compiled from surveys and comments collected during the visioning workshops. This list is intended to demonstrate the breadth of applications being considered by various departments in Nunavut that submitted their thoughts to the Assessment team either at as workshop or in a survey. Appendix C itemizes some of the specific computer applications planned for the future.

Community Government Services --- The LAN/WAN project, initiated in 2007, aims to create smooth, fast, reliable and effective communications and connectivity between the communities and government agencies. Through a bid process, a contract was awarded to Broadsky Communications Ltd., (a wholly owned subsidiary of SSi) to assist GN in implementing a new network with the following capabilities:

- Better stability, reliability and faster communication across the territory.
- Seamless email and data communications.
- Reliable and secure Internet access for all government agencies.
- Multi-layer video conferencing between major government agencies across major southern cities.
- Voice over IP as a potential Phase 2 implementation.
- GN switch from NWTel to SSi.
- Relative large WAN upgrade will be using satellite technology to connect the 25 communities.
- Main data centre will be hosted in Ottawa.

Culture, Language, Elders and Youth--

- every document needs to be produced in all four official languages used in the territory, requiring robust communications with translators located in many different communities from their homes;
- There is an increasing need to transfer files, with files getting larger, so bandwidth must increase proportionately;
- Need to facilitate collection of information from the public through online means.

- Need to create a repository/database of Inuktitut and Inuinaqtun terms used for standard communications across Nunavut;
- Need to develop an online cultural repository that can be accessed from all communities.

Economic Development --- Need ability to market and provide services to visitors through online communications. They also need more opportunities to enhance the arts and crafts industry, which has global interest and presents a significant opportunity for economic development. With banks in only three communities, there is a need for improved online commerce and communication for business.

Education --- The Department plans to use distance education tools to provide a broader range of academic courses to smaller schools, and to offer professional development for staff across the Territory.

Health and Social Services --- An eHealth project is in progress, with one community piloting a rollout. eHealth is a very important project for the communities due to the lack of physicians and cost of travel. Health is also in the process of moving to electronic health records (EHRs)

Human Resources --- HR needs to move to an online self-service system with a direct tie to Payroll system for internal employees.

Nunavut Arctic College --- Further development of distance learning (from/to 3 main campuses of Nunavut Arctic College, plus facilities in every community). They need a repository for education material, including materials on curricula, professional development, language development, with a need for access to this information in all communities.