

White Paper. Closing the Digital Abyss: Options for Arctic Telecom. Workshop Report to the Arctic Council Information and Communication Technology (ICT) Conference Akureyri, Iceland, October 2003.

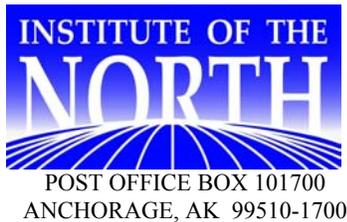
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White Paper
Closing the Digital Abyss: Options for Arctic Telecom
Workshop Report to the Arctic Council Information and Communication
Technology (ICT) Conference Akureyri, Iceland, October 2003

The purpose of the Circumpolar Infrastructure Task Force (CITF) workshop held in Anchorage, Alaska, September 3 - 5, 2003, was to evaluate the state of telecommunications infrastructure and service availability throughout the eight Arctic nations. Participants from the United States, Greenland, Russia and Norway discussed options for international cooperation to expand Arctic telecom capability and to focus on technical and “human” infrastructure. The group identified barriers within their own countries and collectively proposed solutions to bridge the digital divide.

Most rural Arctic communities in the circumpolar region are underserved. The lack of basic services does not allow these regions to remain active and competitive in the global market. Service is often only available to rural areas if government subsidies are available. CITF’s vision of a “connected Arctic” would build sustainable communities capable of affording high bandwidth data, secure voice communication, mobile communication and mass media, which may be able to reduce these subsidies and lower service cost. Assets are needed to support distance learning, improved health care and sustainable economic development. Higher capability at lower costs is feasible with cooperation across national borders.

Populations range from 56,000 to over 2,000,000 people in each of the eight Arctic nations. With the exception of the Nordic countries (Norway, Finland and Sweden), approximately 1,500 communities are located off road and rail systems in the United States, Canada, Russia, Greenland and Iceland.

Far East Russia, Northern Russia and Siberia experience poor phone service. Russia lacks appropriate federal policy for infrastructure in local communities. The Universal Access legislation was passed in 2003 to guarantee one telephone line and one web access line in each community in Russia. Today, 40,000 communities in Russia still do not have telephone access. Land mobile service is poor in all countries with the exception of the Nordic Arctic and Iceland.

Broadband data is not available in Greenland, Northern Russia, Far East Russia or Siberia, and is spotty in Northern Canada and Alaska. 1% of Finnish schools are connected with modems, but have limited use. 30% - 40% of Finnish homes are connected to the Internet, but most are slow modem lines. Russia's radio and television access is limited. In order to run their video TV for movie demonstrations, they have to use special power sources such as gasoline-powered generators and sun batteries.

Video-based telemedicine is used frequently and successfully throughout the Nordic countries and the United States. It is spotty throughout Canada and is non-existent in Russia. Public access to simple, reliable Internet is not available to Arctic Russia and Greenland. They have no means of utilizing E-commerce or connecting with the outside world that heavily relies on Internet to run their businesses and manage their daily lives. Public access is insufficient in small communities in the United States and Canada. Greenland has a monopoly over telecommunication components, which causes prices to skyrocket and no pressure to improve carrier quality.

Basic infrastructure could serve as a platform for telemedicine, distance education, science and environmental monitoring, resource development, aviation safety and protection of cultural heritage. The integration of Arctic communities in the global economy can be obtained with the right information and communication technology. Three telephone lines and three television channels have been extended to 50 small villages in the Chukotka Autonomous Okrug in the last two years. Dial up net access is available in Anadyr and the eight regional centers: Anadyr, Beringosky, Bilibino, Zgnekino, Providenya, Cape Schmidt, Pevek and Lavrentia. Wireless is available in Anadyr, the capital. Service is provided on two satellites of the Satellite Communications Corporation of Russia. There is not enough capacity on these two satellites to provide more service than identified above.

AT&T Alacom provides service to Anadyr for more service than identified above. A&T Alascom provides service to Anadyr for the Air Traffic Control network via one of their satellites, which is a great model of international communication sharing. There are three telephone companies in Sakhalin to serve

a population of 600,000 people. Out of 200 communities, 51 are reported to not have telephone service. The present oil boom will generate more satellite capacity and extension of fiber optic cable networks to serve the industry and present a larger international network-sharing opportunity.

Existing infrastructure, which serves as models of international cooperation include: Anadry/ATT; Globalstar Pilot Project; bilateral links at international gateways; U.S./Canada microwave; and the Pacific Transit Agreement. Aggregate demand throughout the eight Arctic nations reflect strong need for a low-latency satellite network. How can we achieve this?

There are many opportunities to close the digital divide in the Arctic. International joint planning of fiber networks and joint investment is necessary for deployment of CITF's vision. Installing more fiber creates less stress on satellite systems yielding a low latency system. Satellites would cover areas fiber couldn't reach. A proposal has been put forth by the University of Cincinnati and the University of Alaska to implement an international Information Communication Technology (ICT) test bed. This test bed would be appropriate for testing new Arctic technologies. Companies such as @CONTACT are in the final stages of approval of permission to use Ka band and Middle Earth Orbit (MEO) satellite networks. This constellation is capable of providing 45 megabits per second of bandwidth anywhere in the world and serve as the backbone for long-line, data and mobile service throughout the Arctic.

Participation from the Arctic Council, Northern Forum, federal regulatory representatives, international space agencies (NASA, RSA, ESA, JSA, etc.) and the aerospace industry (TRW, Raytheon, Boeing, Lockheed Martin, @CONTACT, etc.) would create a strong foundation in which to serve the eight Arctic nations. The vision needs to be defined and distributed to ensure proponents reach national leaders and commercial interests with one voice.

Possible funding sources include International Financing Institutions (IFI), European Bank for Reconstruction and Development, World Bank, Global Environmental Fund (GEF), International Monetary Fund (IMF), European Inter-regional Fund (EIF), Barents Cooperation Fund (BCF), Nordic Atlantic Cooperation (NORA) and donor countries.

New infrastructure creates its own demand. Economic benefits to carriers are plentiful. Risk decreases through international cooperation and multiple government subsidies. The aggregate demand includes important anchor tenants such as the government, military, extractive industries, education and medical facilities. Broadband will increase current customer usage and stimulate a new

customer base. International participation will reduced fixed costs and allow new businesses to enter the open market. There are multiple physical, human and governmental infrastructure opportunities available to aid the world in bridging digital gaps.

Potential barriers include cost of bringing quality service into low population density areas. It is important for political leadership to understand the Arctic's situation and their need to be connected to the rest of the world to improve their quality of life and build sustainable communities. The deficiency of uniform standards, lack of competition, possibility of providers arguing over areas of responsibility and international political leadership issues need to be resolved.

After identification of a common goal, a call for convocation of Arctic telecom companies and regulatory authorities must implement the vision. The establishment of a test bed would be beneficial in the pretrial period while a specific goal is set to implement the strategies. Planning for joint infrastructure will require consultation between providers and authorities as new infrastructure is permitted and constructed with potential to advance the circumpolar vision.

The CITF was created September 2000, to identify opportunities of international cooperation to advance circumpolar infrastructure including aviation, maritime, land and telecommunication linkages. CITF is a program of the Northern Forum and the Arctic Council, with secretariat at the Institute of the North and Alaska Pacific University (APU). CITF is financed by the United States Department of Transportation (DOT), the Northern Forum and the United States Arctic Research Commission.

“With the emerging digital economy becoming a major driving force of our nation’s economic well-being, we must ensure that all Americans [and the rest of the world] have the information and tools and skills that are critical to their participation. Access to such tools is an important step to ensure that our economy grows strongly and that in the future no one is left behind.” – Secretary William M. Daley, Department of Commerce