The end of poverty, the ITU[1] and the Navajo nation

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EIGHTY-FIVE YEARS ago, in the midst of the Great Depression, British economist John Maynard Keynes also envisioned the end of poverty in Great Britain and other industrial countries towards the end of the 20th century, and that Keynes, too, was acutely aware of the role of technology in underpinning continued growth.[2]

This same logic can be applied to ending extreme poverty for the two billion people who still earn less than USD2 per day. The United Nations Millennium Project has identified three things that can bring the world's poor to the first rung of the economic ladder: information, communications and technology (ICT). The Navajo nation is using ICT to deliver distance education, economic opportunities, distance healthcare, e-Government and security to its remote communities. For the past five years, the International Telecommunication Union (ITU) has been holding planning and discussion meetings across the world to find out how best use ICT to end poverty.

The Navajo nation

While the UN and ITU have been working on pilot development projects, the Navajo nation has been implementing its own nationwide ICT plan, involving the entire 27,000 square mile nation. The goal is to make ICT available to all Navajo people, not just the ones that are near a phone line and have a power supply.

The Navajo nation has successfully developed connectivity among all local governments (Chapter Houses) and communities, integrating an ICT system for equitable and self-sustainable development, oriented towards special applications including the improvement of distance education and e-learning, health services, telemedicine, creation of economic opportunities, e-Government, e-governance, security and safety ICT systems.

The ITU and the Navajo nation will sign an historic Memorandum of Understanding at the WSIS Tunis Conference in November 2005. The two parties will work together to implement a replica of what is being done in the Navajo nation, starting with other indigenous peoples in the Americas.

The Navajo nation has combined the implementation of ICT with maintaining its values, language and sovereignty. "We were able to provide this connectivity without harming our mother earth," said President Joe Shirley "We did not dig any ditches, nor did we bury a foot of cable. Nothing was done to destroy our

Each Chapter has a number of public access computers that also have high speed, broadband Internet via OnSat satellite services

sacred land to achieve the goal of bringing information, education, health, government and opportunity to our people."

When the Navajo nation began its satellite and wireless technology project a few years ago, 22 per cent of its people had telephones, 15 per cent had computers, and 10 per cent had Internet access. Unemployment was around 50 per cent. Now, satellite and wireless communications connect all the Navajo nation's community centres, other facilities and many homes.

Community centres, called Chapters, give the Navajo nation free access to computers and the Internet for distance learning and communication. Many Navajo nation people are developing new e-commerce opportunities that are in turn creating jobs.

One of the most important developments is that of a two-way communication stream between the people of the Navajo nation and their government. This was achieved despite the fact that some Navajo nation sites are so remote that solar power had to be used.

The Navajo Nation ICT Community Development objectives are:

- Provide a stable telecommunications environment
- Increase the visibility of technology projects in the community and stimulate participation by community members
- Catalyze increasing technology-related activities throughout the Navajo nation
- Provide Chapter staff with the skills and knowledge to make the transition to self-governance
- Provide training in technology-related fields for regional technology professionals
- Establish regional support centres to provide training for Chapter staff and community members in surrounding Chapters
- Form a group of community information gatherers to create a database of community resources and statistics
- Develop and offer leadership and management skills training opportunities for Chapter staff in finance, property management, personnel management, government development, and land use planning
- Retain the skilled workforce on the Navajo nation and spur the emergence of a viable technology job market
- Provide an online business site for local entrepreneurs to market their products
- Promote self-sustainability of technology projects

In order to meet these goals, the Navajo nation Division of Community Development (DCD) understood that it must first establish a single, connected network providing stable Internet delivery services for the Chapters. If some Chapters were connected and others left out, then the digital divide would only widen in the Navajo nation.

The DCD, with the Bill and Melinda Gates Foundation (BMGF), initiated the technology plan by installing at least two computers at each Chapter and establishing seven regional training labs across the Navajo nation. Computers and labs are networked locally and connected to the Internet by the OnSat Native American Service's two-way broadband satellite network. Training was provided by both the DCD and BMGF, to establish or enhance basic technology skills for chapter employees relating to application usage, Internet browsing and searching, e-mail usage, and web site maintenance.

In order to increase visibility and participation, the DCD established web sites for all 110 Navajo nation Chapters, incorporating e-commerce functionality so community members can buy and sell products and services over the Internet.

Navajo nation Head Start

The DCD also entered into a partnership with the Navajo Nation Department of Head Start[3] (NNDOHS), allowing Head Start offices to tap into the OnSat satellite networking system using local loop wireless connectivity. In turn, Head Start installed wireless access points at each Chapter to provide a local wireless loop, enabling Head Start offices and other organizations to access the Internet via the Chapter/OnSat network. Communication possibilities now extend beyond local facilities to the entire Chapter region.

The NNDOHS is one of the largest Head Start organizations in the US today, with five agency offices. The central administration is located in the heart of Navajo land at Window Rock, Arizona. Currently, 4,013 children aged between three and five years are enrolled in 205 Head Start centres and Home Base programmes. Each year the birth-to-five-years population increases, and with it the need to increase the number of accredited, technically capable teachers and facilities providing Head Start and Early Head Start services.

NNDOHS is taking on several initiatives to improve services to children, families, and communities. The I Care Curriculum aims to involve parents in the classroom as volunteers as well as in the home; the Fatherhood Initiative aims to empower the role of fathers in families; STEPS Literacy is a curriculum designed to enhance language and literacy skills and improve teaching performance in the classroom; Positive Child Outcomes is a framework intended for Head Start programmes to design ongoing assessments throughout the child's enrollment in Head Start. The Head Start Family Information System (HSFIS) is a set of tools via the Chapter/OnSat satellite and wireless network, which aid the NNDOHS in monitoring and assessing the progress of each enrollee. The entire Dine' College Curriculum is undergoing revision to incorporate these initiatives.

NNDOHS is working with staff and parents in Early Childhood Development classes at Dine' College, University of New Mexico, San Juan College, Highlands University, Coconino Community College, Northern Arizona University, Fort Lewis College, and Northland Pioneer College. But staff and parents seeking to benefit from higher education programmes face the major issues of transport, financial aid and family support.

A collaborative process among the Navajo nation's schools system identified literacy as the most vital area in need of improvement. The Department of Head Start served 6,436 Head Start families, of which 515 were identified as needing education or literacy assistance. Fathers in the STEPS programme are being encouraged to read to their children regularly.

Professional development is also a critical need in many schools. Teachers have begun to create individualized, three-year professional development plans. The Department of Head Start's 2000-2001 Programme Information Report indicated a total of 167 teachers, 369 teaching assistants and 58 home-based teachers. But only 33 teaching staff had associate degrees in early childhood education, while 128 staff members had Child Development Associate (CDA) credentials, and many others are working towards a CDA or intend to do so. A high percentage of NNDOHS teachers' assistants are also young parents, and it is imperative to improve their qualifications without them having to leave their children in order to attend classes that are often over four hours' drive away.

Next steps for Head Start

NNDOHS has dedicated its energies over the past two years to closing the digital divide, committing more than USD1 million to providing broadband connectivity and satellite technology to all Head Start sites. This would have cost over USD10 million had

they not been able to leverage the existing Navajo nation Chapter/OnSat network. NNDOHS is now ready to close the educational divide that has existed due to the low economic status and rural isolation of its population.

Head Start is seeking grants that will use the existing satellite and wireless infrastructure to prioritize several challenges:

- Most NNDOHS teachers are not fully accredited. Many are studying for degrees but are challenged by distance and financial problems, among others. More pre-service teachers need to become fully qualified
- All Head Start programme centres have computers and high-speed satellite Internet connections, but many teachers have had little or no training in using or teaching with technology
- Much student assessment is done via routinely filled out paperwork. Many teachers do not know how to use available software or interpret results
- Because of the remote locations, teachers need to be able to communicate through technology to form a supportive and collaborative community of learners
- With many programme houses situated miles from possible centres of learning, colleges, and each other, alternative professional development options are needed
- Turnover of teachers on the programme is high. A technology-based professional mentoring and support system would help retain those working in remote locations.

Significance of the NNDOHS project

Excellent, credit-bearing, teacher-preparation Internet courses could become one of the most significant applications of networking and support systems in the Navajo nation. e-courses can be created and delivered to remote centres at any time. The technology capacity will offer new content and educational programmes to all pre-service teachers.

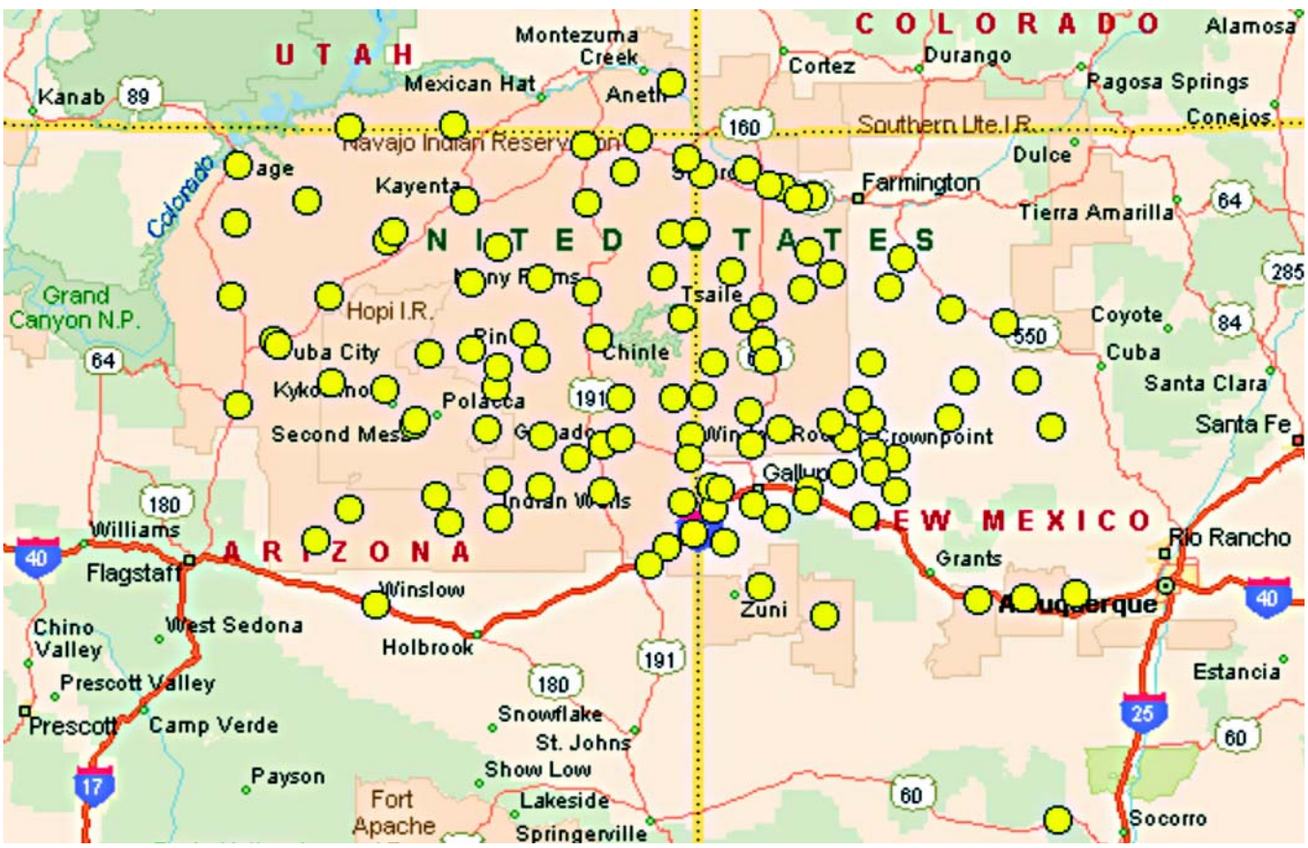
The success of the OnSat technology has potential impact far beyond the Head Start community. Schools will be able to expand course options for students and professional development opportunities for teachers.

The local government and other factions of the Navajo nation are pushing for Navajo language and customs to be taught in schools. By building courses and programmes that take into account the 'Navajo factor,' the Navajo nation promises to lead the way in supporting education while validating the importance of cultural heritage. The Navajo Head Start Organization plans to produce a daily, live video broadcast programme to be distributed worldwide over the Internet. The programme will be a Native American-style Sesame Street that will teach language, traditions and values alongside the standard curriculum.

The Navajo Nation Web Warrior Programme

The Navajo creation story tells of the Navajo people being destroyed by monsters, and how two warriors used tools and weapons to defeat them. Today, a new set of monsters is hurting the people, among them poverty, lack of education, lack of hope, lack of jobs, drink, drug, and other health problems. Defeating these monsters calls for new tools and weapons, and for new warriors.

The Office of the President and Vice President is working with the Division of Community Development, the Division of Dine' Education, the Division of Public Safety and the Boys' and Girls' Club to create a joint programme that will help Navajo youth to become the new 'Web Warriors' by leveraging computers and Internet connectivity to help others learn these skills. They will



The Navajo nation

help others to sell arts and crafts to the rest of the world, using computers in their own Chapters. They will help the Navajo nation to obtain funding for scholarships and grants, and will themselves learn new skills that enable them to compete in a global market place without having to relocate.

Building on the Bill and Melinda Gates Native American Access to Technology Programme, and now the Navajo Nation Library Consortium, the Navajo nation is working to implement the Web Warriors programme at all 110 Chapters and the Window Rock Library, where Gates-granted computers and broadband satellite Internet are operational. The Web Warriors programme will hire two high school students to help others at the computer centres.

Web Warriors will maintain the Chapter web sites and will help to input important community data for the DCD. They will also function as communications specialists in the event of an emergency. In order to remain a Web Warrior, students must adhere to a code of values and maintain good grades in school.

The Web Warriors programme aims to allow longer hours of public access, so local members can access distance learning courses over the Internet at the Chapter outside normal hours. An adult supervisor will be hired for the Chapter, who will take online training classes and help adults with Internet skills.

The DCD and the Division of Dine' Education, as part of a technology consortium, jointly applied for funding for continued telecommunications services for the Navajo nation library and Chapters as extensions of the library system, helping to ensure the continued Internet access at the Chapters.

GIS and project management

The DCD is also implementing a project management and Geographic Information Systems (GIS) integration system to help provide better tracking and management of all construction projects and to migrate all project data into an electronic database with standardized fields so it can be integrated with geographic map data.

The interface is user-friendly, and software and data are structured to make the system extensible and able to be integrated with other projects. The Design and Engineering Services Department, Community Development Block Grant Programme, and the Capital Improvements Office are spearheading this project.

DCD Capital projects are mainly funded through allocations from the three States (New Mexico, Arizona and Utah), various Federal Government funding entities, and Navajo nation appropriations. Each of these sources has its own set of reporting requirements that includes the monitoring and accountability of allocated funds.

Today, Navajo communities are increasing their skills and benefiting from sound planning that includes the following:

- Teaching people to contribute to the community's decision-making processes
- Developing the Navajo nation Infrastructure Capital Improvement Plan, an important step toward rational, long-range capital planning
- Teaching the community to use the web-based database provided by the Navajo nation to create a planning document that can be printed for presentation to funding entities
- Developing data that can be forwarded to the Navajo nation and to the New Mexico State, Local Government Division for publication in the Infrastructure Capital Improvement Plan (ICIP) web site
- Teaching communities to publish planning priorities on the Navajo nation ICIP web site, adding credibility to a community's bond rating and funding opportunities.

Public safety

The Navajo nation Division of Public Safety (DPS) is leveraging the Chapter/OnSat wireless and satellite system to provide the policy framework for successful utilization of technology to improve public safety. The system connects all users to a reliable, secure, private network that allows users secure connection to DPS data and information, regardless of location.

Officers have wireless, video-capable and upgradeable ruggedized laptops, and can take advantage of video conferencing and distance education programmes. Users' technology skill levels and academic achievement will be assessed on an ongoing basis. Staff will have lifelong learning opportunities and the scheme will build on the established base of DPS access connectivity to local, state, regional, national and worldwide resources. A comprehensive technology disaster recovery plan will also be developed.

Overall ICT goals

This is just the beginning of leveraging ICT to bring self-sustainability to the people of the Navajo nation. The overall goals are:

- Maintain established, reliable, secure communications with all communities (not just the ones with a phone service)
- Educate Chapters on what technology is available and how to use it
- Build technical support within the local community
- Develop a community inventory including human and physical assets
- Implement the Local Governance Act which returns local control to the communities
- Open the Navajo nation to the world. Since trade and investment are the real engines of economic growth, the Navajo nation is working to open its society to commerce and investment while using technology to maintain its culture, language, values and sovereignty.

Working with other communities

The Navajo nation is working with other communities to bridge the digital divide. The Observatory for Cultural and Audiovisual Communication (OCCAM) in Italy has agreed to establish an office at the Navajo nation in Window Rock, Arizona. OCCAM is an international non-governmental organization with a vision of utilizing culture and ICTs for development and to fight poverty with the support of the Infopoverty Network System. The agreement will help give voice to Navajo and indigenous issues on a global basis.

In October 2005, the Navajo nation will sign an historic agreement with the indigenous people of Brazil, the Indigenous Culture Nucleus (NCI) and GRUMIN/Indigenous Communications Network, aimed partly at promoting regional dialogue, exchange of experiences, adoption of best practices, community-driven sustainability, spirituality, sovereignty, respect for languages, values, traditions, habits, culture and the environment.

The agreement will address Millennium Development Goals by dedicating itself to ICT projects in Brazil, including sourcing financial funding and using models to achieve self-sustainability in the benefited communities. The projects will support education, health, technology transfer, electronic government, security, micro-credit, territorial management and access to international financing and cooperation for self-sustainable development.

Through funding provided by ITU, OCCAM, the Brazilian Government and other organizations, the Navajo nation will provide the same type of ICT services that it delivers to it own communities via satellite and wireless. While helping others to become sustainable, the Navajo nation will improve its own sustainability.