

Radio Mala

An International Partnership
to Provide Amateur Radio Disaster
Communication Systems for Nepal

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Overview:

Over 10 years ago, on trip to his ancestral home in Nepal, Suresh Ojha recognized that, like his home in the San Francisco Bay Area, Nepal faced devastating earthquakes that occurred on a very regular basis. The population of Kathmandu had come to rely upon mobile phones for communications and, like the Bay Area, that network would be severely strained in the event of a major quake. The wider population of Nepal had many areas that had no reliable communications access.

Ojha had come to Nepal to help open a RF Communications training program at the Tribhuvan University Institute of Engineering. He started to wonder if that program could be used to help create a survivable communications system for Nepal.

Suresh came home and enlisted a group of Amateur Radio experts from the Bay Area to help replicate a survivable communications network (Bay-Net) as the Radio Mala project in Nepal.

Roadmap

This Presentation will Cover:

- ▶ The Value Of Communications
- ▶ Why Amateur Radio
- ▶ The Role of CAN-USA
- ▶ Radio Mala is Born!
- ▶ Relationships and Alliances
- ▶ The Earthquake
- ▶ Disruptive Influences
- ▶ Milestones and Lessons

The Value of Communications

The Earthquake reminded us how much we rely upon communications systems to save lives following a disaster:

Communication Systems:

- ▶ Route Lifesaving Resources Efficiently
- ▶ Move Key Services Quickly to Areas Needing Them
- ▶ Move Populations to Safe Areas
- ▶ Are the Central Nervous System of Post Disaster Response

Communication Systems Have Their Limits...

- ▶ Mobile Phones and Internet were overloaded and worked at reduced capacity in Kathmandu and other areas
 - ▶ Ambulance dispatch runs on the mobile phone network
 - ▶ Had the epicenter of quake been in Kathmandu, these systems might have failed massively
- ▶ Many outlying regions had no communications with the city
- ▶ Most hospitals became “islands” – unable to share resources
- ▶ Nepal continues to face additional disasters; monsoon season floods, landslides, fires etc.
- ▶ Resilient Backup Communication Systems are necessary

The Value of Amateur Radio

- ▶ Completely Independent of Commercial Communication Systems
- ▶ Lifesaving Disaster Communication Systems, 100 years old
- ▶ Built, Maintained, Repaired and Operated by the Amateur Radio community
- ▶ Mature technology globally, but at the very beginning in Nepal
- ▶ The basic concepts are simple and can be learned in a single day.
- ▶ Accessible to almost everyone

CAN-USA Helps Nepal Prepare for Earthquake

CAN-USA Leads the US Diaspora in Helping Nepal Prepare for Earthquake

- ▶ In March 2012, Pays for and Installs Nepal's First Repeater in NSET office.
- ▶ Creates Partnership with Diaspora Organizations to Raise Funds
- ▶ Partners with World-Class Institutions to Transfer Knowledge in Nepal
- ▶ Procures and Ships HF (shortwave) Radio Station to Institute of Engineering

CAN-USA Provides Training



Volunteer Rob Rowlands instructs NSET staff in the use of
Amateur Radio Transceivers - April 2012

CAN-USA Guides Installation



Volunteer Rob Rowlands explains installation of the antenna system atop the NSET facility. - April 2012

Radio Mala is Born!

Inspired by the success of the radio system installation at NSET, CAN-USA launches the Radio Mala project to ring the Kathmandu Valley in a “garland” of Amateur Radio.

- ▶ Suresh Ojha of the Disaster Preparedness team is the CAN-USA Project Leader
- ▶ Dr. Sanjeeb Panday of Tribhuvan University Institute of Engineering is Project Leader in Nepal
- ▶ The goal is to replicate the Bay-Net Amateur Radio System Architecture (www.bay-net.org) and provide complete coverage for the valley and some coverage for the population in the other side of the mountains.

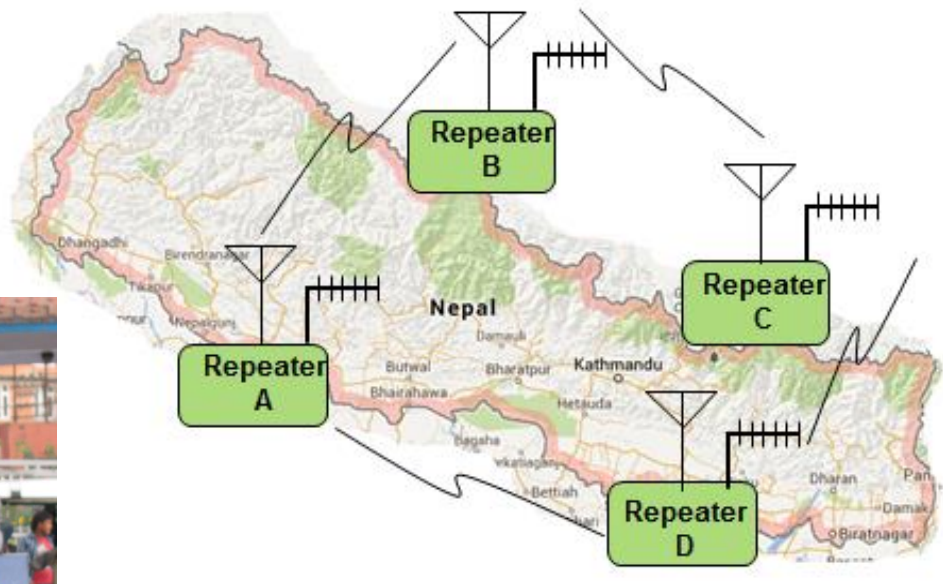
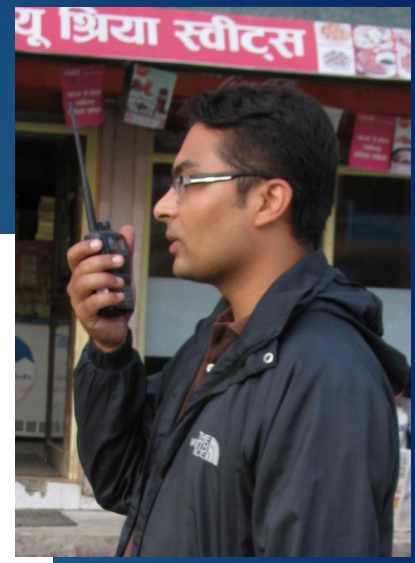
Pre-Quake Support

Long before the earthquake, the Diaspora started raising funds to support the Radio Mala project.

Major donors included:

- ▶ Association of Nepalese in the Americas (ANA)
- ▶ Association of Nepalese in Midwest America (ANMA)
- ▶ Greater Charolette Nepali Community

Radio Mala is Technology!



Radio Mala is Relationships!



GLOBAL
NEPALI
DIASPORA

Nepali
Community
Members

Nepali
Organizations

American
Individuals
and Clubs

DONORS

BAY-NET

CISCO
SYSTEMS
(CSARC)

Wireless
Communications
Alliance

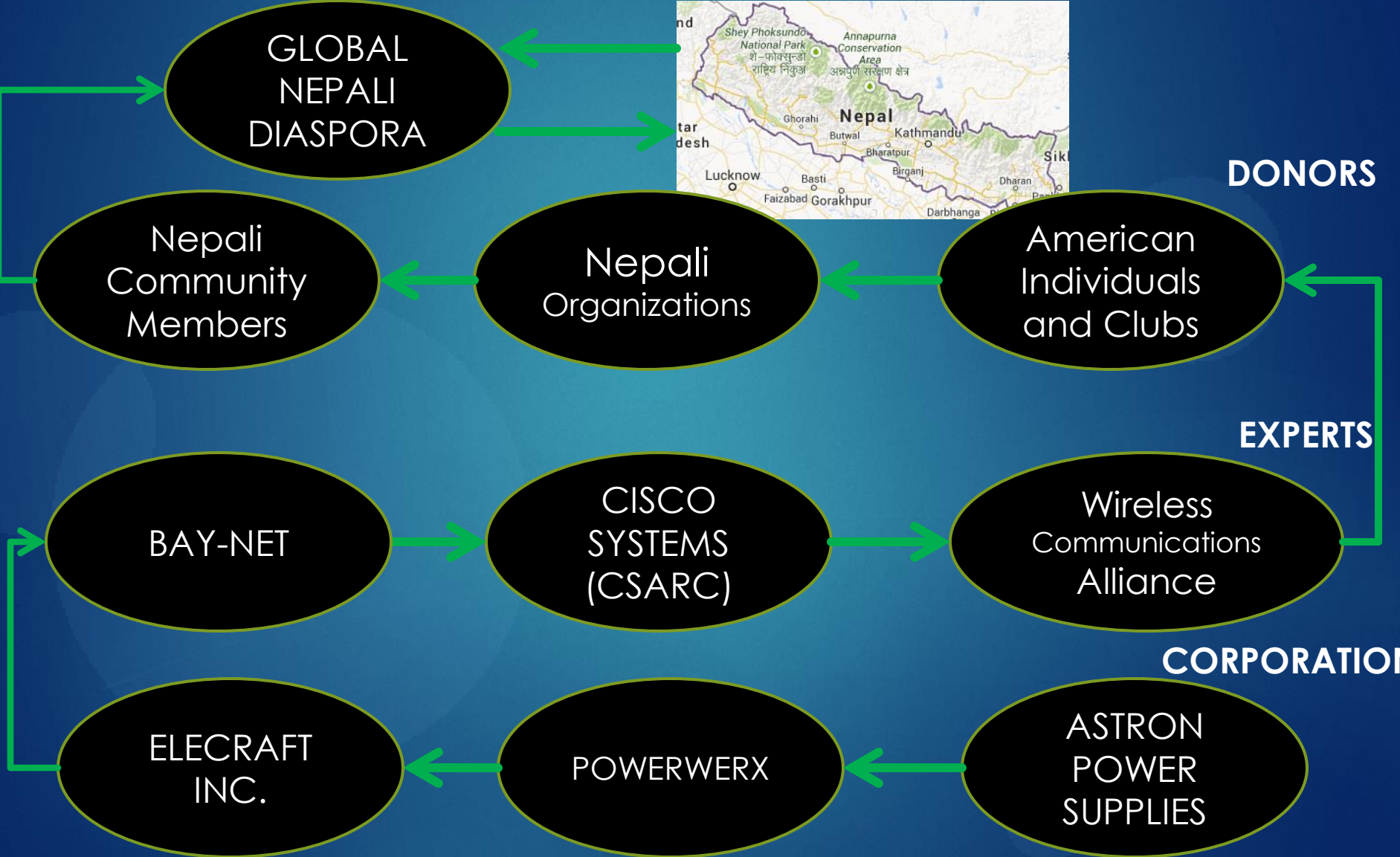
EXPERTS

CORPORATION

ELECRAFT
INC.

POWERWERX

ASTRON
POWER
SUPPLIES



Institutional Alliances

CAN-USA reached out across the Diaspora to build institutional alliances in Nepal and abroad.

- ▶ Tribhuvan University Institute of Medicine (IOM)
- ▶ America Nepal Medical Foundation (ANMF)
- ▶ Carnegie-Mellon University, Silicon Valley Campus
- ▶ Cisco Systems Tactical Operations
- ▶ National Instruments
- ▶ Wireless Communications Association (WCA)
- ▶ US Diaspora Leadership

Military Alliances

Significant credibility and support was gained when Dr. Panday was included by the United States Pacific Command (PACCOM) and the Military of Nepal in the Pacific Endeavor Exercises.

- ▶ Pacific Endeavor Exercises
 - ▶ Nepal Participates 2012,2013,2014
 - ▶ PE 2014 Held in Kathmandu, Scenario is Massive Earthquake in Kathmandu
 - ▶ Dr. Sanjeeb Panday Participating Now in Manilla 2015

Pacific Endeavor 2012



**Dr. Sanjeeb P. Panday, Tribhuvan University
Lt. Col. Riddhi Narsingha Rana, Nepal Military
HF Communications Exercise in Changi Naval Base, Singapore**

Second System Donated

The Radio Mala team secured donations of equipment and funding to purchase and ship a second radio system to Nepal to expand Amateur Radio coverage. The equipment was packaged and shipped in early March.

- ▶ System shipped by CAN-USA to Tribhuvan University Institute of Engineering arrives in the Nepal and is placed in Nepali Customs March 15, 2015
- ▶ The system is placed in “Customs Hold”
- ▶ April 25th, First Earthquake Devastates Nepal
- ▶ Repeater still sitting in Customs (more on that later)

Nepali Radio - April 25, 2015

- ▶ Radio Mala System at NSET is active immediately Following First Earthquake
- ▶ Multiple Operators active on Various High Frequency (shortwave) Bands
- ▶ Repeater Donated by CAN-USA in 2012 is the only active repeater in Nepal.

A Serious Situation Develops

Amateur Radio is a very community oriented endeavor with people around the world always anxious to help. One operator in Nepal caused turmoil across the globe.

- ▶ A Nepali Amateur operator announced that international Amateurs may not operate in Nepal unless they are part of Government Of Nepal (GON) response;
 - ▶ Indian Amateurs waiting to cross the border to provide communications resources stop.
 - ▶ International Amateurs are confused
- ▶ The operator was not authorized to speak for the GON
- ▶ The next day, the ARRL reports that GON clarifies that international Amateurs can operate in Nepal

Still in Customs

The day after the earthquake – 6 weeks after it's arrival in Nepal, CAN-USA started using the relationships it had established to try to get the radio system out of customs so it could be put to use serving the people of Nepal.

- ▶ Contacts at the U.S. State Department are implored to assist
- ▶ Washington Contacts US Embassy in Kathmandu
- ▶ US Embassy is overwhelmed but Agrees to Help
- ▶ CAN-USA Calls on Everyone to Help Release Repeater

Government Engagement

On May 4, 2015 discussions started with the Nepali Ministry of Information and Communication (MOIC)

- ▶ The Office of the Minister of Information and Communication is contacted by Mr. Roger Adhikari, President of Association of Nepalese in America (ANA)
- ▶ The Minister of Information and Communication Personally, Honorable Minendra Rijal, Contacts Dr. Panday (9N1S) and offers his help in removing repeater
- ▶ Dr. Panday meets a former student who happens to work at the Customs House. Hours of paperwork and a substantial fee later, Dr. Panday has the radio system in hand.

May 5, 2015

- ▶ Dr. Sanjeeb Panday (9N1SP) confirms that VHF Repeater is released from Customs and at Tribhuvan University
- ▶ <http://www.arrl.org/news/view/amateur-radio-repeater-from-us-clears-customs-in-nepal>

Second System to Be Installed



As the team was trying to install the second system, a magnitude 7.3 aftershock rocked the area. The team was forced to flee and return when the structure was declared safe to occupy.



Important Milestones

- ▶ Dr. Panday and the IOE Team are the only ones in Nepal to install infrastructure in the midst of the disaster
- ▶ Dr. Panday and IOE Team Successfully Conduct Test of New System across Kathmandu Valley
 - ▶ <https://www.youtube.com/watch?v=p1zjS4salgM>
- ▶ Government of Nepal Shows its Gratitude to Team Radio Mala
 - ▶ Without Fanfare or notice, GON makes a donation to the TU Amateur Radio Club for the complete amount paid in removing the Radio Mala Repeater from Customs

Growing Pains

The Earthquake brought some issues to light

- ▶ Existing Customs regulations are excessive and time consuming.
- ▶ Confusion resulted due to the absence of an official GON spokesperson for Amateur Radio
- ▶ In Nation of nearly 30 million people less than 100 are licensed operators
- ▶ The reach and affordability of Amateur Radio to average citizens in Nepal is highly limited
- ▶ Intense factionalism asserted among some during a time of crisis (later if we have time)

Recommendations to GON

- ▶ The Ministry of Information and Communications should have an employee designated to speak for Amateur Radio in Nepal
- ▶ The MOIC should work with the International Telecommunication Union (ITU) to best apply international Amateur Radio practices to Nepal
- ▶ Work to make Amateur Radio more accessible to average citizens;
 - ▶ Allow equipment to be sold in retail stores in Nepal
 - ▶ Remove Morse Code Requirements
 - ▶ Lower Costs of Licensing Exams
 - ▶ Offer Exams multiple times of the year and outside of Kathmandu

Radio Mala: Future Goals

- ▶ Radio Mala shall continue to deploy Amateur Radio infrastructure to service the entire Kathmandu Valley and many of the remote regions in Nepal as fast as funding permits.
- ▶ The Radio Mala Team will continue to work with the government of Nepal, international regulatory agencies, and experts around the world to make Amateur Radio assessable to the Nepali people.

Acknowledgements

- ▶ Government of Nepal
- ▶ Dr. Sanjeeb Panday, Tribhuvan University, Institute of Engineering
- ▶ Dr. Pradeep Vaidya, Tribhuvan University, Institute of Medicine
- ▶ Dr. Gauri Adhikary, America Nepal Medical Foundation
- ▶ Mr. Roger Adhikari, President Association of Nepalese in the Americas

Supplemental Material

- People Behaving Badly

The “Entitled” Operator

Remember that Amateur operator who went on the air and told other Amateurs they could not operate in Nepal? Well, that is not all he did:

- ▶ *“Dr. Panday has been charged with fraud, arrested and his equipment confiscated by the government!”* This completely untrue statement was made by the same operator on a HF disaster net to an American operator and substantiated in news feeds and Internet forums.

Access Denied and Restored

The first repeater CAN-USA installed at the NSET building was actually illegal for all but the most privileged Amateur operators to use for many months when somebody got the Amateur operator licensing rules changed:

- ▶ UHF and VHF frequencies become illegal for Novice Operators (Nearly all Nepali Amateurs) to use
- ▶ No public announcement or discussion
- ▶ No one seems to know by whom or why

Dr. Sanjeeb Panday (9N1SP) brought together a diverse coalition including CAN, CAN-USA, ANMF, TU and the WCA to restore the rules to the international standard so the system could be used by all licensed Amateurs in Nepal.

Supplemental Material

- A True Leader

Dr. Sanjeeb Panday

Dr. Sanjeeb Panday (9N1SP) has been a true leader in Amateur Radio in Nepal. Not just a technical leader, Dr. Panday has, at great personal and professional risk, been the face of Radio Mala in Nepal. Sanjeeb-dai:

- ▶ Held classes and radio licensing sessions to introduce a new generation to Amateur Radio
- ▶ Installed the first HF station at the university
- ▶ Installed the first Internet Radio Link Protocol node to tie the systems in Nepal to the rest of the world
- ▶ Risked his life to operate during the period after the quake and through the aftershocks
- ▶ Put up his own funds to pay Customs Fees
- ▶ And much, much more.