



# **Connecting Rural Nepal to the Global Village**

Some Examples, Efforts & Future Plan

Mahabir Pun, Team Leader,  
Nepal Wireless Networking Project

# My Background and Projects



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Community Development Projects

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Goals and Benefits of Wireless Network Project

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Graphical Overview of Villages of Nepal

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Technology Setup

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Wireless Network Project Implementation Phases

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Wireless Network usage

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Electrical Power Management

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Business Model

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Assistance in Other Wireless Projects

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Business Partners

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- Education:
  - K -12 high school. Plan is to build a college by 2015.
- Healthcare:
  - Health training program for the rural health workers.
- Income Generating Programs
  - Yak Farming
  - Poultry, Duck, Rabbit Farming
  - Fishery
  - Bee Farming
  - Cheese Production
  - Camping Grounds/ Tourist Lodge
- Nature Conservation and Environment Protection Programs

# NEPAL WIRELESS NETWORKING PROJECT

- Testing Phase (Year 2002) started with the technical support of foreign volunteers.



- 2 villages were connected
- Project was started without money and technical knowledge
- We had to work on a phased approach with the help of international volunteers.

- Phase I (Year 2003)



- 5 villages connected
- Financial support by Donald Strauss Foundation that came through Mark Michalaski, the undergraduate student of the Univeristy of California at Los Angeles
- Technical support of international volunteers

- Phase II (Year 2005)



- 7 villages connected
- Financial support by the Poverty Alleviation Fund - Nepal (Funded by World Bank)
- Project was implemented at the peak of the political conflict in Nepal



- Current State



- 22 villages connected in Myagdi, Kaski and Parbat Districts

- Education
  - Increase opportunities in community schools by
    - » creating a live tele-teaching program
    - » providing contents in local languages to the students and villagers
- Healthcare
  - establish a tele-hospital in urban area and link it to the district level hospitals and rural health centers
  - provide medical assistances to the villagers through telemedicine program
- Communication
  - increase communication facilities in the isolated rural areas by providing
    - » **VoIP phone**
    - » **video conferencing facilities**
    - » **bulletin board**
    - » **internet services**

- Local e-Commerce
  - help villagers sell and buy their products in the local market through local intranet and internet
- Jobs and Business Opportunities
  - generate jobs for younger generation locally through
    - » remittance services
    - » VoIP phone services
    - » credit card transaction services
    - » secretarial services (photo copy, photo print, document print)
- e-Governance (Future goal)
  - empower local and district governments
  - launch e-governance program by helping district headquarters set up a district data center
  - connect data centers to the local governments

- Nangi Village Altitude - 2,360m Population 780



- Within project areas, Nangi is the hub of wireless network and other community development activities.

- Tikot Village Altitude - 2,250m, Population - 845



- Paudwar Village Altitude - 2,180m, Population – 2,250



- Shikha Village Altitude - 2,145m, Population – 1,200



- Gharamdi Village Altitude – 2,100m, Population – 700





- **2.4 GHz Wi-fi radios (802.11b/g) produced by different manufacturers**
- **5.8 GHz Motorola Canopies for backhaul**
- **19 dBi homemade grid antennas**
- **24 dBi grid antennas**
- **Linksys Routers**
- **Switches of different brands**

- Linux Server in Pokhara with Phillip Mucci, the volunteer



- **Server runs a Fedora Core 6 Linux distribution with additional third party software. Currently, the server runs the following software packages.**
- Asterisk PBX
- phpBB
- Apache and the Intranet Server
- Named - The Domain Name Caching Daemon
- Samba - The Windows File Server and Master Browser
- MySQL
- WebMin

- **PCs and laptops collected from different sources**
- **VoIP equipment such as Sipura SPA – 3000, GrandStream, and Cisco ATA**
- **Network camera such as Axis 214 PTZ and Linksys camera for telemedicine program**
- **Polycom software for video conferencing**

- Power from Main grid line in some villages and some villages have power from micro hydro generators
- Solar Power at the relay stations and five villages
- Wind and bicycle generator at relay stations for back up in monsoon season
- Deep Cycle Batteries for storage

## Electrical Power Management

- Relay Station 1 and 2 at an elevation of 10,500 ft and 11,800 ft
- Operated by solar power



- Bicycle and Wind Generator at the Relay Station
- Used as a back-up power in monsoon





- Putting a grid antenna





- Canopy Backhaul at Relay Station





- Using large trees as relay towers has worked well



- Using large trees as relay towers has worked well



- Healthcare: Tele-Medicine



- Lila Pun, a village worker in Nangi talking to doctor in city hospital



- Communications: Communication Center



Villagers of Khibang reading online newspaper

- Visit local homepage to see some examples of how the villagers are using the network.

Link to the Local Homepage is as follows.

- <http://www.nepalwireless.com.np>

- News and Bulletin: Nepal Wireless Local Homepage

Friday, 11 July, 2008 Good Evening !

.. Bookmark ..

## Nepal Wireless

नेपाल वायरलेसको आन्तरिक पृष्ठ

URGENT MESSAGES >> कमल सर

**Village Bulletin Board - Please write your messages here.**  
 ग्रामिण सूचना पार्टी (कृपया तपाईंको सूचनाहरु यहाँ लेख्नुहोस्)

Haat bazaar हाटबजार  
 From Gandaki Engineering College

घोषणा Announcement

कथा तथा कविता Poems, Stories

बालसंसार Children's Stories in Nepali

पाउदरु स्कूलको वेबपेज Paudwar School Website  
 Paudwar High School

ई-पुस्तकालय E-LIBRARY (From OLE-Nepal)

स्थानिय समाचार Local News

जरुरी सूचना URGENT Notice

११ र १२ कक्षाका लागि शैक्षिक सामग्री Prime College  
 Class notes for 11th and 12th Grade Students

ई-मेल बाट साथी Friend by E-mail

.. Local News ..

शक्ति & आशुषि  
 शक्ति र आशुषि भाइ नमस्?...  
 teksir lai...  
 Hello Tek Sir, Kantipur ma Histan ko barema ne...

.. Urgent Messages ..

call  
 mero phon ma paisa chhaina akdam jokhim ma chu jas...  
 nandabir sir lai khopra  
 hello0 jethan pahilako computerko buffalo vanne sa...

.. Nepali News Site ..

गोरखापत्र  
 लोक सेवा आयोग  
 B B C NEPAL  
 हिमालखबर  
 महानगर  
 नेपाल  
 समाचारपत्र  
 काठिपुर

.. English News Site ..

B B C NEWS  
 The Kathmandu Post  
 nepalnews.com  
 CNN.com  
 eKantipur.com  
 HIMAL TIME

.. Education Boards ..

SLC Board  
 TU Board

Done

start SquirrelMail... SquirrelMail... Welcome T... Field Serve... CANUSA\_B... Winrock.ppt Adobe Phot... 11:26 PM

- News and Bulletin: Nepal Wireless Local Webpage

Welcome To Nepal Wireless Project - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://www.nepalwireless.com.np/

Compose Mail - Yahoo! Mail Welcome To Nepal Wireless Proje...

### Some Useful Links

<a href="#">नापतौल रूपान्तरण</a>	<a href="#">विभिन्न भाषा रूपान्तरण</a>	<a href="#">रकम रूपान्तरण</a>
<a href="#">विभिन्न भाषाको शब्दकोष</a>	<a href="#">विह्वलभरको समय</a>	<a href="#">नेपाली क्यालेन्डर</a>
<a href="#">मिति र समय रूपान्तरण</a>	<a href="#">विभिन्न देशका भण्डारहरू</a>	<a href="#">याहुबाट नेपाली फोटोहरू</a>
<a href="#">अन्तर्देश केन्द्र - नासा</a>	<a href="#">अमेरिकन डि.भी.</a>	<a href="#">मदन पुरस्कार पुस्तकालय</a>
<a href="#">छहारी युनिकोड टाइपशाला</a>	<a href="#">बि.सं. र ई. सं. मिति रूपान्तरण</a>	<a href="#">नेपाली - अंग्रेजी - नेपाली शब्दकोष</a>

### Local Advertisements

**General Meeting of Rupse**  
Hello All Shareholders Annual general meeting of Rupse saving & loan co-operative firm limited is going to held on 17 & 18 of Asadh 20 .....

**Long vacation**  
Gharamdi prathamik bidhalayema jilla sikshako calander anasar 12 gate bata sawan 11 gate samma lamo bida hune kura jankari gareka chhaun sathai h .....

**Tikotma School Asar 18 bata khulne**  
Tikotma School Asar 18 bata khuldaichha.Kitabko samasyale garda summer vacation agadi nai gariyeko ho. Yes patakko vacation 31 days matrai thiyo.Tehi a .....

**Mela In Khibang...**  
Hello All..... Yahi Jesth 23 gate dekhi khibang ma mela start hune bhayakole sampurna kheladi sathi haru samayamai samparka rakhnu hola me .....

**hello sir**  
kasto samasya ho ra ? i am hari from khibang. tapaile beni bata kaile aunu huncha ? .....

Click to view the large image of Nepalwireless Network

**बचत तथा ग्रहणको लागि छँदै छफ्फे बचत तथा ग्रहण सहकारी सं. लि. भुसुङ तातोपानी लाई सम्भन्डोस्!**

Click Here: Radio, Computer, IP Phone, Router haru ko IP address yahan diye ko chha. Yo Excel ma chha ra computer ma Save garera tesai anasar IP address haru milaunu. Ke ke IP address rakgyo malai pani khabar garnu.

Contact [paudwarhs@nepalwireless.net](mailto:paudwarhs@nepalwireless.net) for cheese produced in Paudwar

Done

start SquirrelMail... SquirrelMail... Welcome T... Field Serve... CANUSA\_B... Winrock.ppt Adobe Phot... 11:28 PM



- Existing Revenue Streams of the village centers for sustainability
  - Internet usage fee on hourly basis
  - Monthly fee to the teachers and students
  - Telephone call fees
  - Photocopying, photo printing etc. fees
  - Remittance service fees
  - Computer training fees in some villages
- Revenue Streams for the project
  - ~10% to 15% additional charges for the tele-centers telephone bill
  - Monthly fee to the rural tele-centers for Internet connectivity; current charges range between \$10 to \$25 per month per village
  - Remittance and credit card transaction services fees

- Some of the jobs created by the project
  - Project has created some full-time and part-time jobs as well as some volunteer opportunities
  - Business opportunities for wireless equipment, computer and accessories



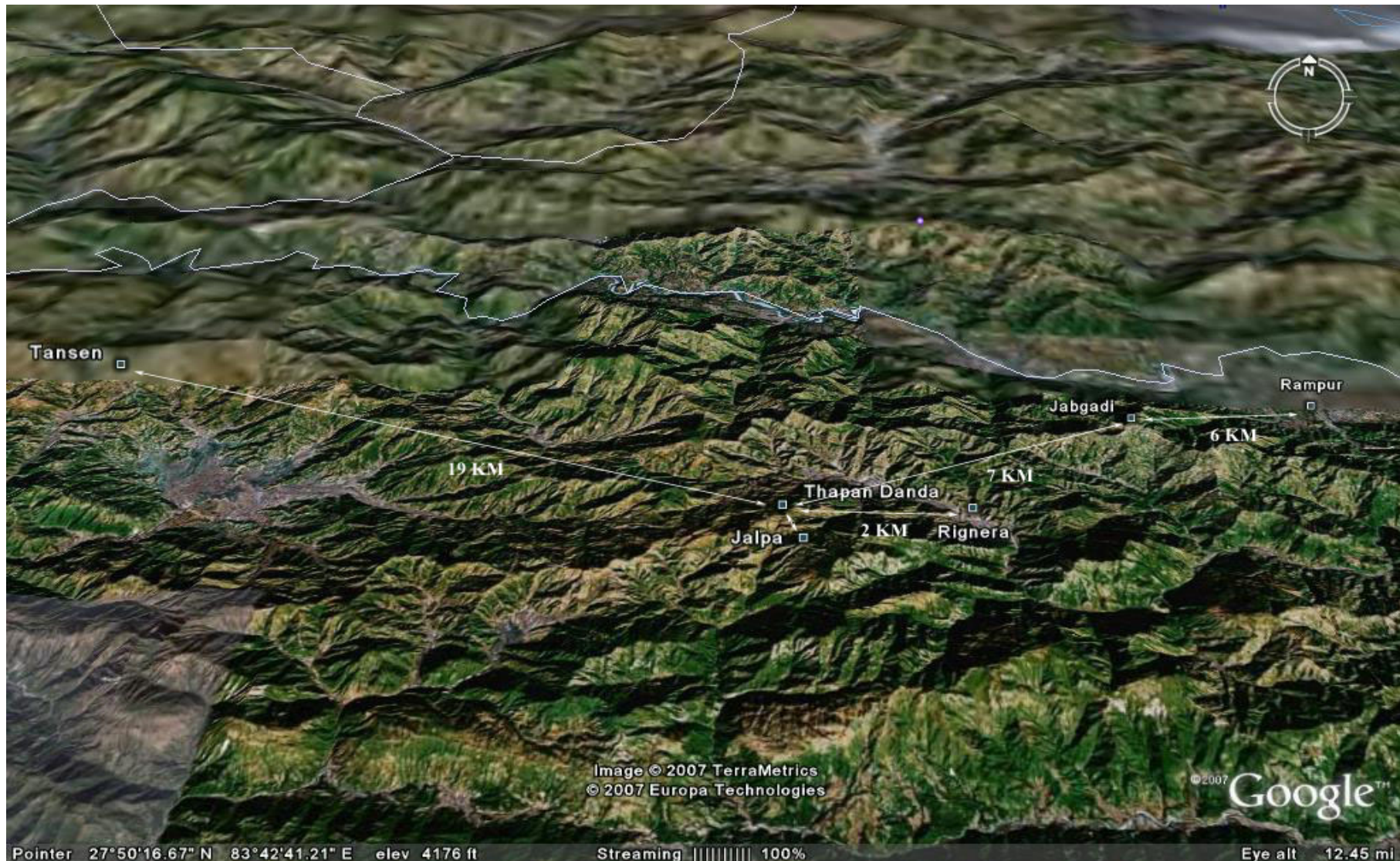
- **Project helped other wireless projects in different parts of Nepal**
  - Makawanpur Network financially supported by the District Government and the Member of Parliament.
  - Dolakha Wireless Network supported by Katmandu Model Hospital
  - Palpa Wireless Network financially supported by Winrock Internationals
  - Bajhang Network Supported by Poverty Alleviation Fund – Nepal
  - Imja Wireless Network supported by Keio University – Japan for monitoring Imja Galcial lake.



- Makwanpur – Kathmandu – Dolakha Network



- Palpa Network from Tansen for Winrock Internatioal





- Imja Galcial Lake Monitoring Network from Imja Lake to Namche Bazaar for Keio University Japan



- Chhukung Relay at 5,100m near Imia Lake





- Field Server at Imja Lake that sends data of the climate around the lake that includes near real times photos





- Link to the Field Servers in Imja Region and Namche Bazar region to see near real time photos of the lake and Namche Bazar. You can also see the data of the climate collected by the field servers.

<http://fsds.dc.affrc.go.jp/data4/Himalayan/>

- Open Learning Exchange Nepal (OLE – Nepal)
- Major partner for developing educational contents in local language
  - Develops Interactive Digital Content in Local language
    - » Based on national curriculum
    - » Enhance self-learning and self-assessment
    - » Fun
  - Creates Digital E- Library
    - » Full Text Documents
    - » Accessible via local network and Internet
    - » Encourage/facilitate independent inquiry





- 130 OLPC Laptops in Classrooms Distributed by OLE - Nepal in 2 Schools



# Future Project



- Immediate next phase of the proposed project

## Kathmandu to Pokhara Broadband Information Highway ~170km



# ONE DOLLAR A MONTH

TO BUILD WIRELESS BROADBAND INFORMATION HIGHWAY ACROSS NEPAL

Wireless Technology for :

- ❖ Education
- ❖ Health care (telemedicine)
- ❖ Communication (telephone/ email)
- ❖ Local business
- ❖ Access to news and information

Contact:

**Mahabir Pun**

**mahabir@himanchal.org**

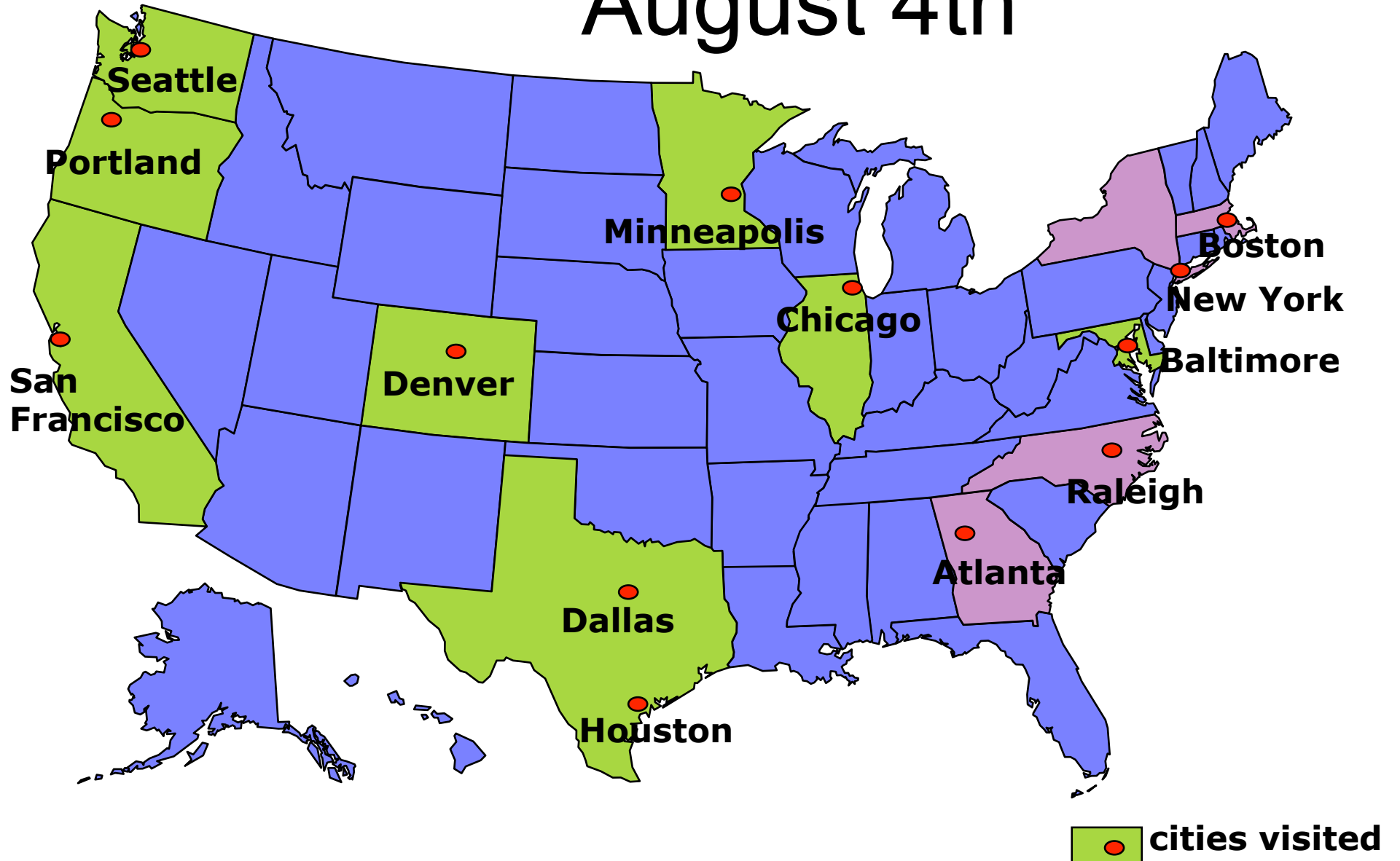
Visit and Donate:

<http://www.himanchal.org>

<http://www.nepalwireless.net>

<http://www.nepalwireless.thamel.com>

# My Trip 2008: July 2nd – August 4th



We are running this campaign around the globe

- **What is it?**

- This campaign is about connecting remote villages of both Mountain and Terai regions.
- This campaign is about helping to bring economic revolution.
- This campaign is not only about raising money, it is about showing the unity of Nepalese for a good cause no matter where we live, no matter what ethnic background we have and no matter what political affiliation or religious faith we have.
- I am begging \$1 a month on behalf of the people of Nepal – not for myself.



- What is it?

- Above all, it is about **helping create**

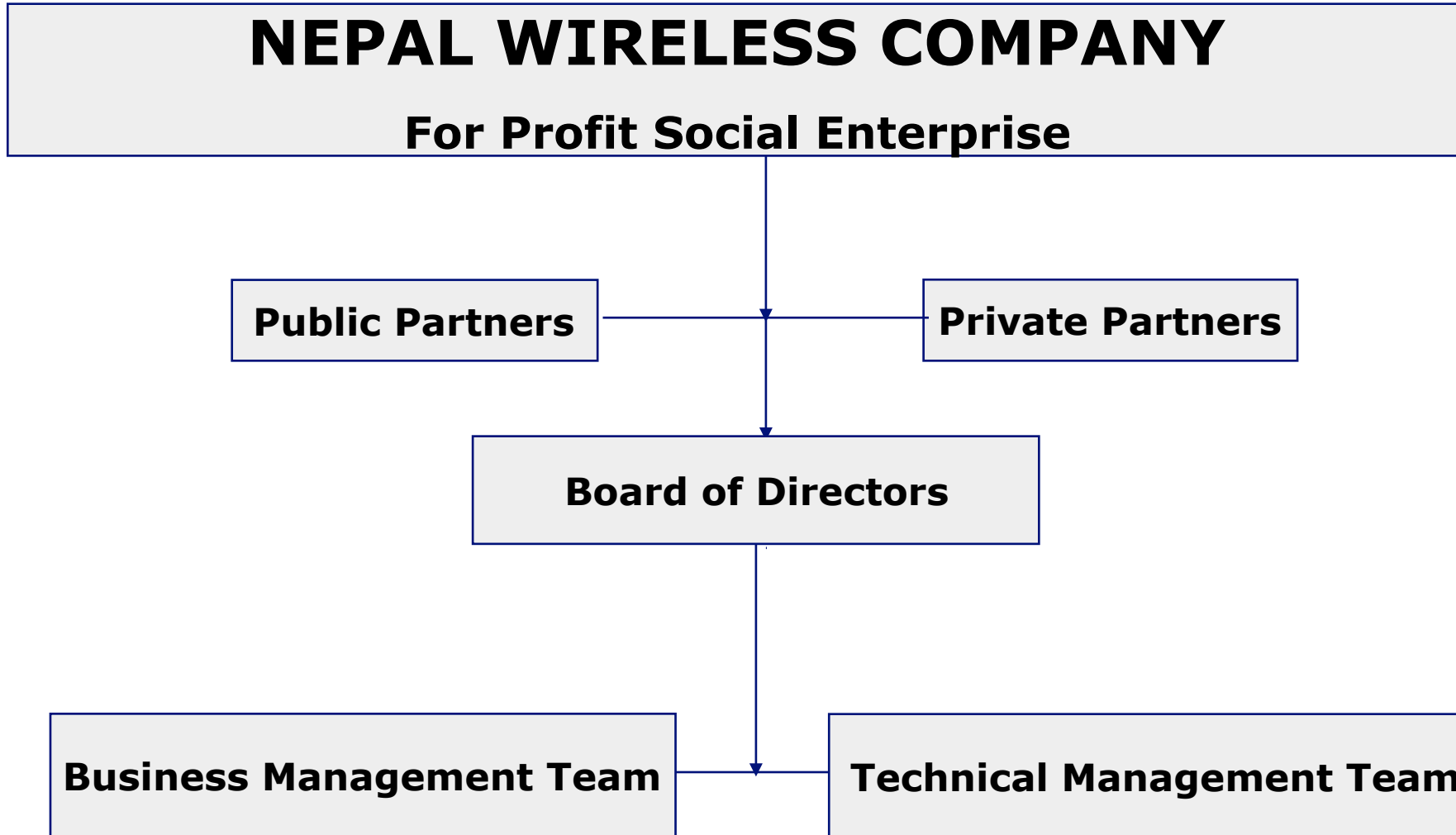
- “Freedom of Opportunities”**

- In Nepal**

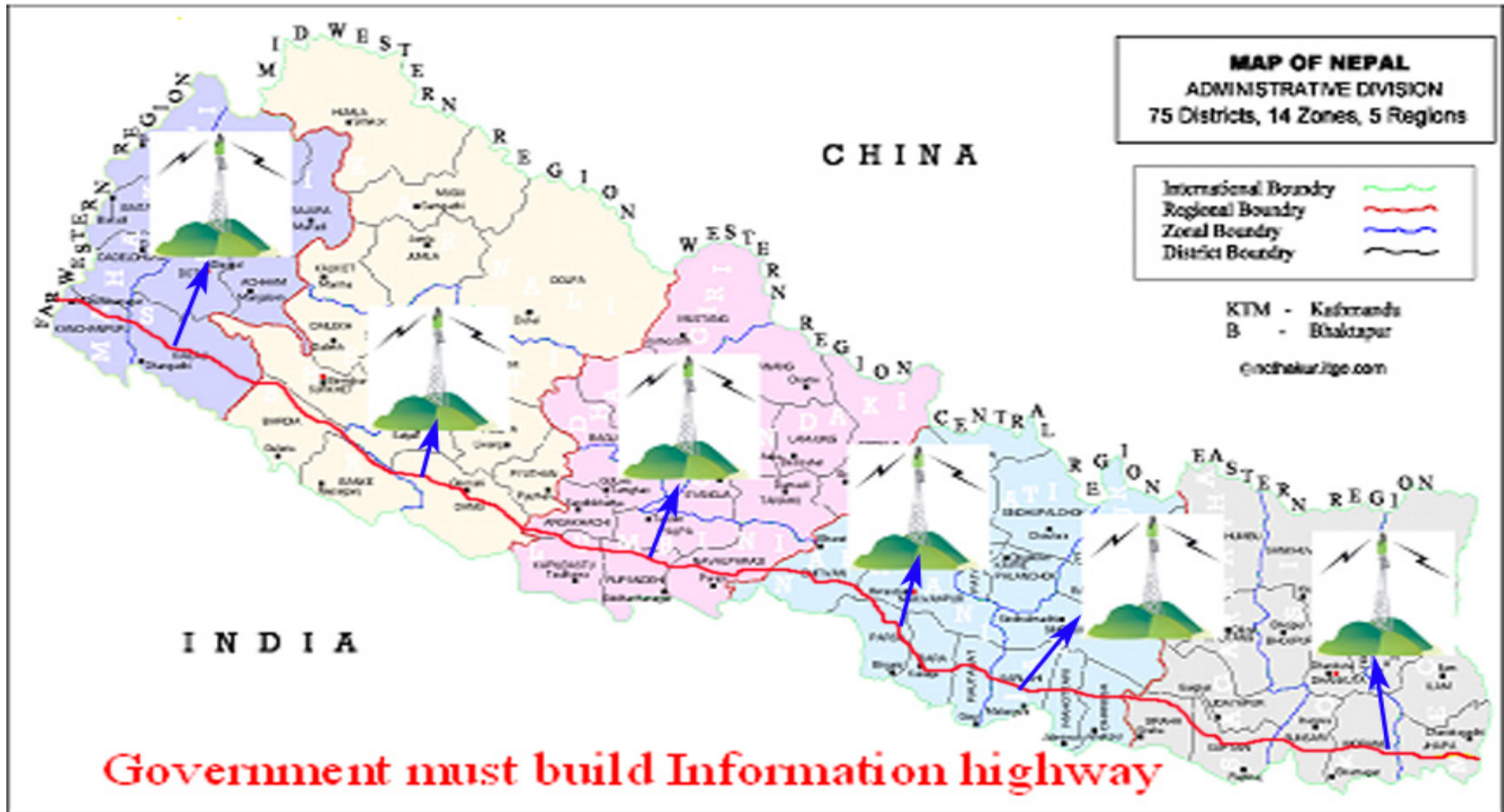


- High Level Project Plan
  - Build 4 major relay stations, on average, in each district
  - Build about 8 regional base stations and a central control station with servers to monitor and maintain the network
  - Provide services to rural schools, hospitals, local governments and businesses.
  - Build a central data center to provide local languages contents in
    - » **education**
    - » **healthcare**
    - » **agriculture**
    - » **e-commerce**
    - » **e-governance**
  - Introduce VOIP phone services and remittance services in the villages.
  - Encourage local entrepreneurs to become rural ISPs.

- For long term sustainability
  - Setup a business enterprise that includes public and private stakeholders
- Potential Public Partners
  - Local Governments
  - Community Schools
  - Local Clubs
  - Rural Clinics
  - Ministry of Education
  - Ministry of Health
  - Ministry of Local Development
- Private Partners
  - Local Business Persons
  - Local Entrepreneurs
  - Other Investors



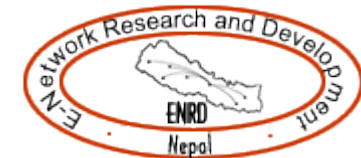
- Fiber Cable Information Highway on Southern part of Nepal



- How is it possible to Build Information Highway Through One Dollar a Month Campaign?
  - 2 millions Nepalese live in more than 36 countries  
(*Source – NRN Association*)
  - 5% of 2 Million is 100,000, which is our goal to have them enroll in the campaign
  - We are asking for help from the friends of Nepal, who are not of Nepali origin
  - We will run this program in Nepal as “Fifty Rupees a Month” campaign
  - We will request the government and donor agencies to provide matching funds
  - **We will invite private investors to invest**

- Implementing Partners So Far

- Himanchal Higher Secondary School
- Open Learning Exchange - Nepal
- E-Network, Research and Development
- Nepal Research and Education Network
- Kathmandu Model Hospital
- Om Hospital, Pokhara Nepal
- Thamel.com
- IT and Engineering Colleges in Nepal
- UC Berkley Group



**Any organization and institution can be partner of the project.**

- **How can you help?**

- Enroll in **ONE DOLLAR A MONTH** Campaign
- Bring as many friends as possible of both Nepali and non-Nepali origin
- **Be a business partner by investing money**
- Collect equipment
- **Support OLE – Nepal** by providing resources and technical supports to develop contents in local language for students and villagers
- Support for tele-medicine and tele-training program by providing video conferencing equipment



- How can you help?
  - **Donate \$12 a Year** - <http://www.himanchal.org/contribute-one-dollar-a-month.html>
    - » *(set up an annual recurring charge of \$12 instead of having 12 separate monthly transactions of \$1 each)*
  - **Donate \$1 a Month** - <http://www.nepalwireless.thamel.com>.
  - **Donate Cash** - please collect money through your local community organization and contact us at [contact@himanchal.org](mailto:contact@himanchal.org). We will assist you to send the money to our bank account through [thamel.com](http://thamel.com).
  - **Donate using Check** – send a check earmarked as "For One dollar campaign" to - Himanchal Education Foundation, c/o Dr. Leonard Skov, 5610 Avenue N, Kearney, Nebraska 68847, Phone: (308) 234-1243, Email: [skovl@unk.edu](mailto:skovl@unk.edu).
  - **In Nepal, Donate Rs. 50 a Month** - through schools, colleges and local organizations. Please let us know about your interest through email or by mobile at 9841592361 or 061 - 530612 ext. 2999.

- **How will this campaign help Nepal?**
  - You will become poorer by **ONE DOLLAR A MONTH**
  - Nepal will become richer by hundreds of thousands and eventually by millions of dollars a year.

Therefore we request all of you to add one more dollar to what you have already been donating.

- There are 8,000 villages in Nepal with more than 15 million people living in rural areas of Nepal.
- So far we have connected:
  - 35 villages in 7 Districts
  - Approximate population of 60,000
  - 20 High Schools with about 4,500 Students

**There is a long way to go...**

**WE ARE WORKING TO CONNECT ALL THE  
VILLAGES IN NEPAL.**

**Private Partners are Highly Welcomed.**

- **For More Information**

- Please Visit:

- » <http://www.himanchal.org>
    - » <http://www.nepalwireless.net>
    - » <http://www.olenepal.org>
    - » <http://www.enrd.org>
    - » <http://nren.org.np>

- Contact:

- » [mahabir@himanchal.org](mailto:mahabir@himanchal.org)
    - » Phone: 977 9841592361 (mobile in Nepal)