INTERNATIONAL TELECOMMUNICATION UNION

TELECOMMUNICATION DEVELOPMENT BUREAU

ITU-D STUDY GROUPS

Document RGQ10-2/2/002-E
26 May 2006
English only

RAPPORTEUR'S GROUP MEETING ON QUESTION 10-2/2 - GENEVA, 19-20(am) JUNE 2006

Question 10-2/2: Telecommunications for rural and remote areas

STUDY GROUP 2

SOURCE: OSPITEL (PERU)

TITLE: ADDITIONAL INFORMATION HUARAL PROJECT - PERU

For financing of the Project, OSIPTEL (THE PERUVIAN TELECOM REGULATOR) awarded funds of FITEL (FUND OF INVESTMENTS IN TELECOMMUNICATIONS FOR RURAL AREAS – UNIVERSAL ACCESS AND SERVICE FUNDS) to the non-government organization named “Peruvian Centre for Social Studies” (CEPES). This financing is of character of "no reimbursable". The granted financing was used in the implementation of the proposed activities by CEPES, as well as in the acquisition and installation of infrastructure of telecommunications for the information modules of the 14 localities of the Project.

The components of the Project are the following ones:

(i) Software for the Agrarian Information system;
(ii) Management of the Agrarian Information system;
(iii) Technical trainning;
(iv) Acquisition and installation of the infrastructure of telecommunications.

Population:	
* Directly benefited	6,000 hab. (farmers)
* Indirectly benefited	13,700 hab. (students and public in general)

Main obligations of CEPES

- Carry out completely all the stipulated activities of the Project, considering that the development of such activities will contribute to the self-sustainability of the project.
- Economical contribution valorized in US$11,280.39 for affording activities of technical training and the study of evaluation of the environmental impact of the Project.
- To submit quarterly reports regarding the products or results of the activities, within the terms established in the Contract of Financing.

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- To submit reports regarding evolution of indicators of project's impact defined in the profile of the project, within the terms established in the Contract of Financing.
- Before the third year of operation of the Project, to transfer the infrastructure of telecommunications to the local agricultural organization in charge of coordination of using the river's water irrigation resources of the Chancay-Huaral Valley.

Obligations of OSIPTEL (FITEL):

- Carry out the payments of the no-reimbursable financing, in the terms and chronogram defined in the Contract of Financing.
- The financing of FITEL is as described below:

Infrastructure costs and services - OSIPTEL-FITEL contribution:

CEPES-HUARAL PROJECT	
OSIPTEL-FITEL CONTRIBUTION	**US$**
Infrastructure	**119,687.32**
• Payment in advance against the account of the purchases and installations of the network of telecommunications	76,416.00
• Payment against surrender of accounts of the purchase and installation of infrastructure	36,416.00
• Payment for additional infrastructure	6,855.32
Services	**42,407.60**
• First payment in advance	28,991.76
• Second payment	10,355.14
• Third payment	3,060.70
	162,094.92

The infrastructure of telecommunications is for the fourteen (14) localities that the Project comprises.

The detail of the additional infrastructure included in Table shown above, to which FITEL has contributed with USS 6.855,32, is shown below (the balance of USS.500.88 to complete the required total amount of USS 7.356,20, was put by CEPES).

Additional infrastructure costs:

Ítem	Descripción	Cant.	Precio (US$.)
IP Telephone Switch Allti-X	• IP Swith, expandable up to 20 ports. It includes PC. o 12 IP extensions. o 4 CO trunks. • Installation, programming, put into operation and training. • The IP Switch works in Linux and is a software of open code.	1	2,745.50
Telephone adapters (ATAs) and accessories	• 2-ports telephone adapters (ATA.). • Accessories: o Gateway Welltech - 4 FXO ports. o 10 pairs Block. o Protector of trunks R4C1FS • Installation, programming, put into operation and training.	12	2,646.86
HP Server -Proliant ML 110	• Server with 2 Intel Pentium IV processors of 3.2GHz • RAM of 1.25MB. • HD 36.4GB, Ultra 320 SCSI. • LAN card PCI 10/100/1000 WOL Gigabit Etjernet. • CD ROM 48X IDE, 5U tower form factor. • CD external writer Omega 52x32x52.	1	1,963.84
TOTAL	US$ 7,356.20		

Costs summary

Concept	Amount US$
Infrastructure and services (OSIPTEL-FITEL)	$ 162,094.92
Additional Infrastructure (OSIPTEL-FITEL)	$ 6,855.32
Computers (CEPES)	$ 11,280.39
Additional Infrastructure (CEPES)	$ 500.88
Total:	$180,731.51

Installed telecommunication equipments:

a) Central Point: Huaral premises

Were installed the following equipments and accessories:

- 04 Grid semi-parabolic antennas of 24 dBi 2.4GHz
- 05 radios (AIRNET Bridge 11 Mb WATERPROOF/POE High Power)
- 01 multipoint antenna of 12 dBi 2.4GHz
- Cables and accessories

Tower is pole type, 39 meters high.

b) Typical terminal: for example, of the Chancayllo Premises

Were installed the following equipments and accessories:

- 01 Grid semi-parabolic antenna of 19 dBi 2.4GHz
- 01 radio AIRNET Bridge 11 Mb WATERPROOF/POE High Power
- Cables and accessories.

Tower is pole type, 30 meters high, mounted on the roof of a building next to the shelter of equipments.

c) Typical repeater: for example, of Laura repeater

Were installed the following equipments and accessories:

- 02 Grid semi-parabolic antennas of 24 dBi 2.4GHz
- 02 radios AIRNET Bridge 11 Mb WATERPROOF/POE High Power
- Cables and accessories.

Tower is pole type, 36 meters high, mounted on the roof of the building where the equipments are sheltered.

Description of IP Network and Voice over IP

The technology of VoIP digitizes the voice analog signal and compresses it to 5.3 / 6.3 kbps (G.723), 8 kbps (G.729), 64 Kbps (G.711), etc. The equipments has been configured to use the algorithm of G.723 compression to 6,3 kbps by voice channel.

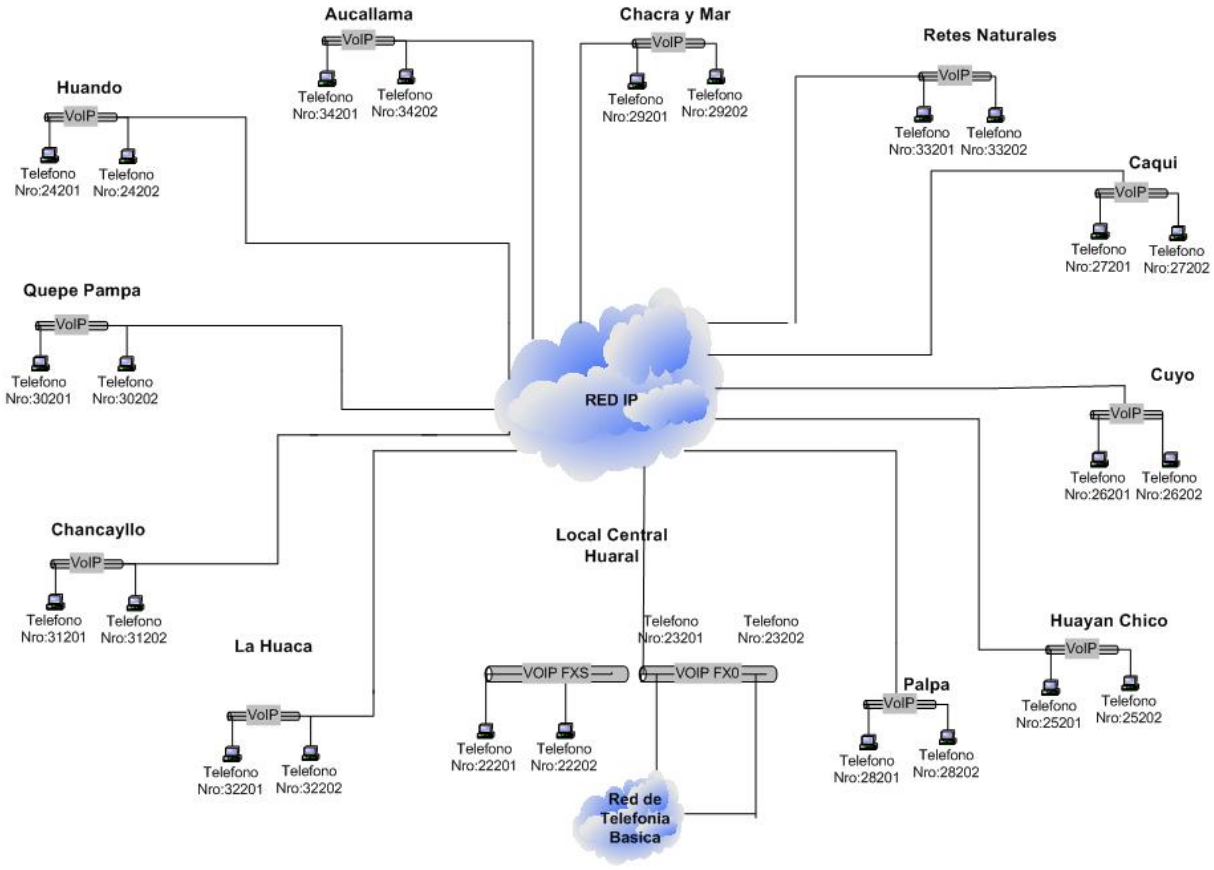
Gateways of voice used can be administered locally (console port) or remotely (telnet).

In order to make simpler the task of memorizing the ips of each of the organizations of water irrigation, an identifier has been used (from 22 to 34 , each corresponding to the telephone number of each place).

The “user” and “password” of the VoIP router, are: "eitg" and "huarcep ##" (# # corresponds to the identifier assigned to the organizations of water irrigation), respectively.

VOICE OVER IP DIAGRAM - HUARAL

DIAGRAMA DE VOZ SOBRE IP HUARAL



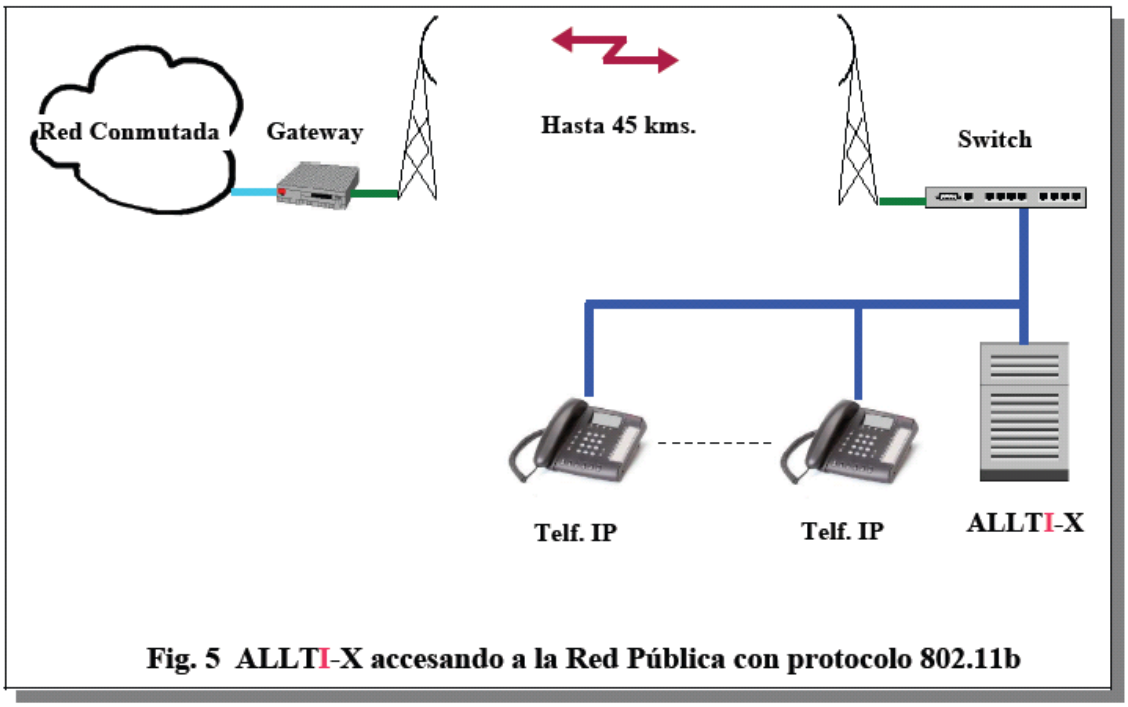


Fig. 5 ALLTI-X accesando a la Red Pública con protocolo 802.11b

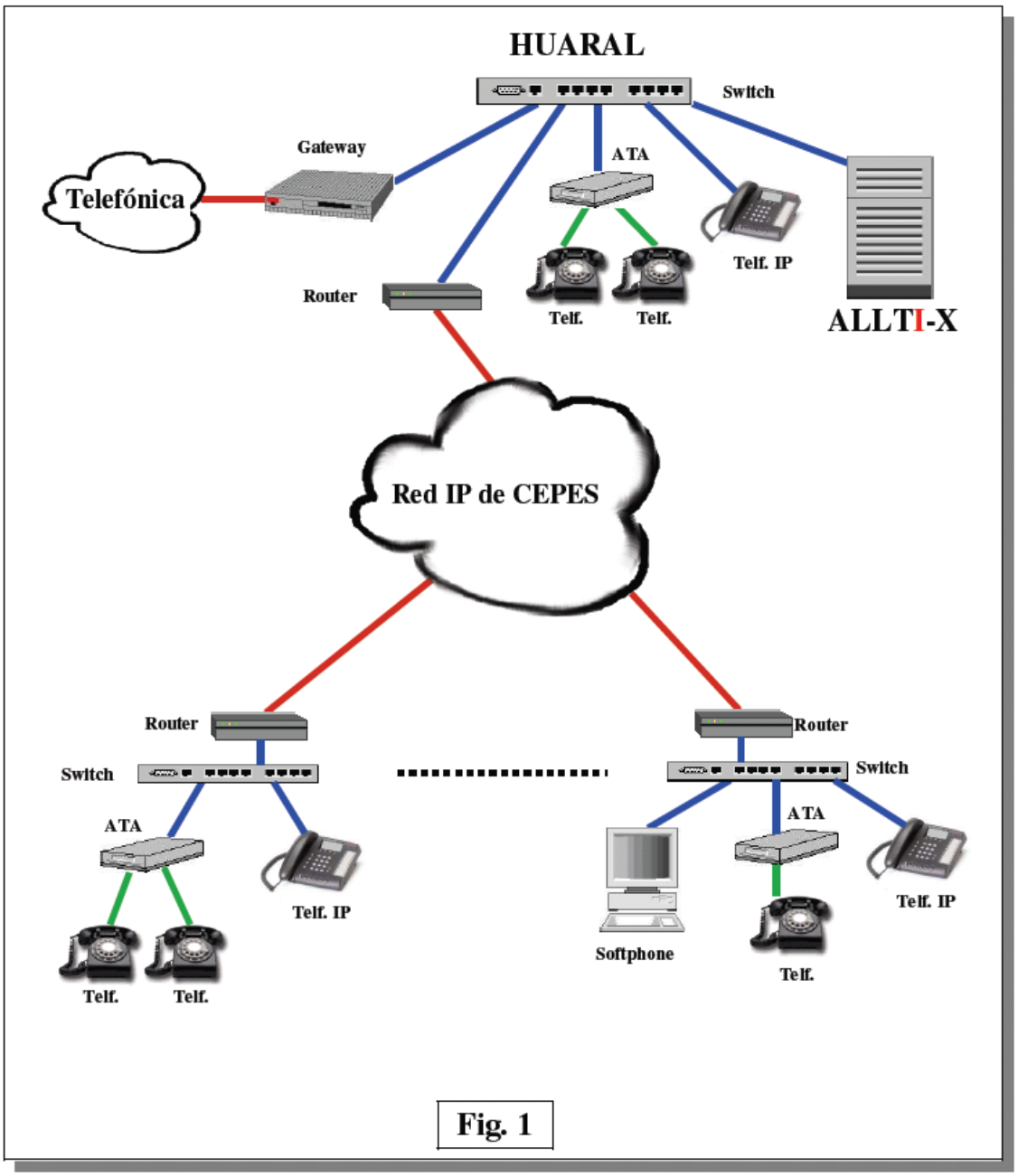


Fig. 1

CODECS SUPPORT

Supplier : Local dealer "Telecomunicaciones Computación y Control S.A.."

The Switch ALLTI-X supports the following codecs:

GSM

G.729 (optional)

G.723 (only transport)

G.711 A-Law

G.711 Mu-Law

ILBC

LPC-10

MP3 (decoding only)

SUPPORT OF PROTOCOLS IP

The Switch ALLTI-X supports the following protocols:

H323

SIP

IAX

IP Switch ALLTI-X – User Manual

Supplier : Local dealer "Telecomunicaciones Computación y Control S.A.."

MGCP

Notice. - Although system ALLTI-X can support these protocols, TCC S.A. only offers SIP and IAX in its standard configuration.

TELEPHONE INTERFACES

Switch ALLTI-X works with the following interfaces of telephony:

FSX: FXO: For connection to a power station E&M: For connection to systems of transmission T1: For digital connection of 24 E1 channels: For digital connection of 30 channels PRI: For connection ISDN of 30 channels BRI: For connection ISDN of 2 channels

FSX : For connection to an analog telephone

FXO : For connection to a telephone Switch

E&M : For connection to systems of transmission

T1 : For digital connection of 24 channels

E1 : For digital connection of 30 channels

PRI : For connection ISDN of 30 channels

BRI : For connection ISDN of 2 channels

The standard configurations are as follows:

AlltiX20 20 ports

AlltiX32 32 ports

AlltiX64 64 ports

AlttiX128 128 ports

Description of some obligations of CEPES

Software para el Sistema de Información Agraria (SIA)

CEPES has been responsible to carry out the activities for the elaboration and beginning of operation of the data base and the program that will administer the agrarian information and will provide information through Internet to the agriculturists of the organizations in charge of water irrigation. In addition, CEPES has developed software components additional to the required with the purpose of facilitating the tasks of the administrators of the Telecenters.

Scope:

A system of registry for the Telecenters was designed, which will facilitate the invoicing processes, handling of promotions and administration in general. This software allows:

- Statistical data of the use of the Telecenters and its services.
- Controlling the access to the PCs and to Internet.
- Storing and administering the profiles of users.
- Preliminary information of incomes.

The handling of this software is simple, generally through the presentation of graphs; is escalable (control of 100 or more PCs), being able to be remotely controlled.

At the moment this software is being tested in five (05) Telecenters: Palpa, Retes Naturales, Chancay Bajo, Chancay Alto y Boza-Aucallama.

Technical training (324 hours of training at Huaral).

CEPES carried out the activities for the training of the administrators and operators of the network, most of which are personnel of the organizations in charge of water irrigation. Emphasis in the training of Radio equipments was put, thanks to which the costs of maintenance of these equipments will be eliminated because the organizations in charge of water irrigation and its personnel previously trained will assume them.

Covered points:

Qualification of Administrators

CEPES fulfilled the dictation of three (03) courses.

Scope:

For the Administrators of the Telecenters was deepened the knowledge of:

- Intranet of the Agrarian Information system
- Voice over IP (VoIP)
- Free Software and proprietary software

Qualification of Operators

CEPES fulfilled with the dictation of three (03) courses.

Scope:

For the Operators of the Telecenters was deepened the knowledge of:

- Intranet of the Agrarian Information system
- Voice over IP (VoIP)
- IP Switch

AGRICULTURAL PROJECT HUARAL – PERU, January 2006

Agricultural Information Project for Farmers of the Chancay-Huaral Valley

The pilot scheme in the Huaral Valley, 80 kilometres north of the capital Lima, aims to offer the valley communities up-to-date **information on agricultural market prices and trends.**

The Agricultural Information Project for Farmers of the Chancay-Huaral Valley **also provides vital links between local organizations in charge of water irrigation, enabling them to coordinate their actions.**

The non-government organisation Cepes (Peruvian Centre for Social Studies) led the $200,000 project, also backed by local institutions, the Education and Agriculture ministries, and European development organisations.

One of the institutions which supported the project was the Agency for supervision of private investments in telecommunications, in spanish the ORGANISMO SUPERVISOR DE LA INVERSION PRIVADA EN TELECOMUNICACIONES known for short as OSIPTEL. This Agency manages the Fund for Investment in Telecommunications – FITEL which is dedicated for telecommunication developments in rural areas and those of social interest.

The communities comprehend more than 13,000 rural inhabitants, as well as 18,000 students in the region, that also benefit from the telecommunication infrastructure.

The 14 telecentres uses only free open source software and affordable computer equipment and was officially inaugurated in September 2004.

Summary: HUARAL VALLEY NETWORK

- 14 telecentres: Two in the city, with ADSL link to the national network
- 12 interconnected through **Wi-fi equipment**.
- Radios: AIRNET Bridge 11 Mb WATERPROOF/POE High Power. Band: 2.4 GHz.
- Wi-fi aerials built locally
- One high-spec server in each centre
- IP Telephone Swith Allti-X
- Telephone adapters (ATAs) and accessories
- HP Proliant ML 110 Server
- Average five low-spec computers in each centre
- Training as a key factor for the success of the programme

The Board of Irrigation Users which runs the computer centres, aims to make the network self-sustainable within three years, through the cash generated by using the telecentres as internet cafes.

One of the key elements of the project is the Agricultural Information System, with its website http:\\www.huaral.org, where farmers can find the prices for local products, as well as information on topics ranging from plague prevention to the latest farming techniques.

The system also helps the inhabitants of the Chancay-Huaral Valley to organize their vital irrigation systems. Water is the main element that unites them all. It is a precious element in Peru's coastal areas, because it is so scarce, and therefore it is necessary to have proper irrigation systems to make the most of it.

The information network also allows farmers to look beyond their own region, and share experiences with other colleagues from the rest of Peru and even around the world.

The involvement of the farmers has been key in the project's success. Throughout the last years, the people have provided a vital thrust to the project; they feel it belongs to them. The community training sessions, attended by an equal number of men and women, have been the perfect showcase for their enthusiasm. There was an excellent response, mainly from young people. However, there was also a great feedback when training 40 or 50-year old women, who were seeing a computer for the first time in their lives.

So far, the Huaral programme promoters say the experience has been very positive, and are already planning on spreading the model among other farmers' organisations in Peru.

This is a pilot project, and organizations responsible are thinking of its replication in other places.

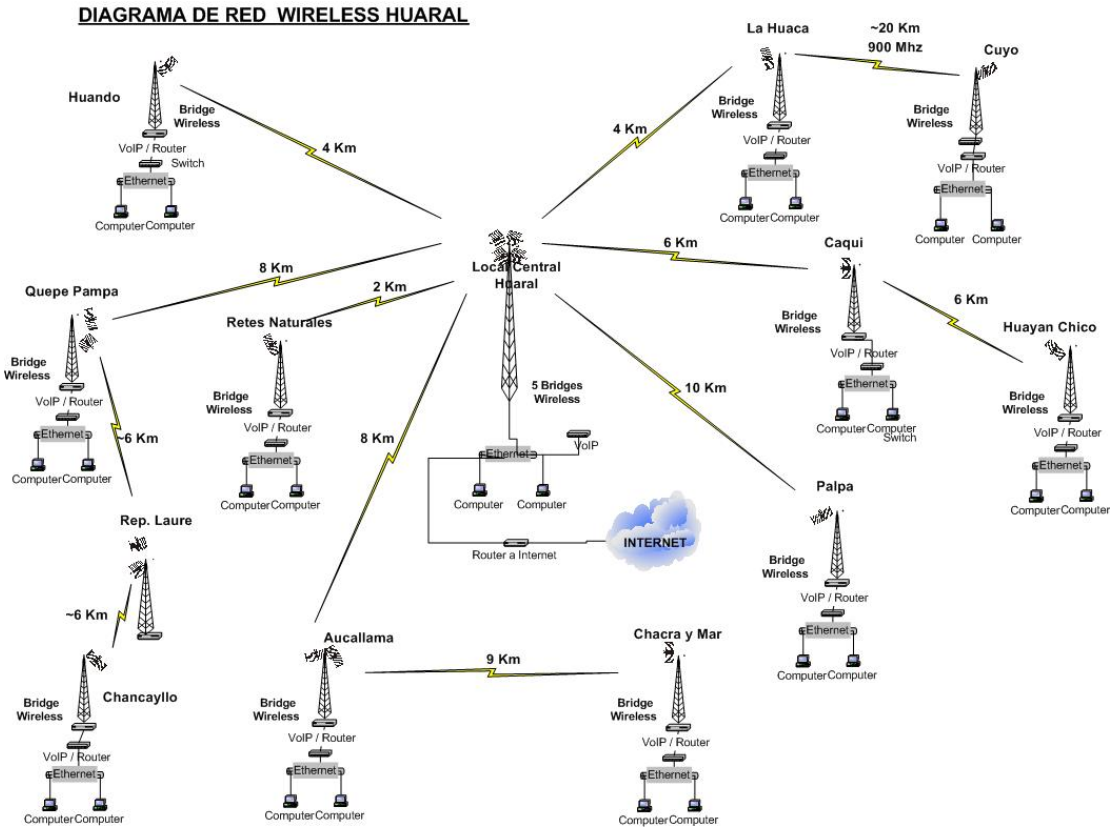
As another development worth of mention arose as a necessity of one of the localities included in the project, named Cuyo, a 50-family community with no electricity, it was necessary to build a mini hydroelectric system in order to generate 2kW worth of power for the computers, the communications equipment and the cabin lights.

References

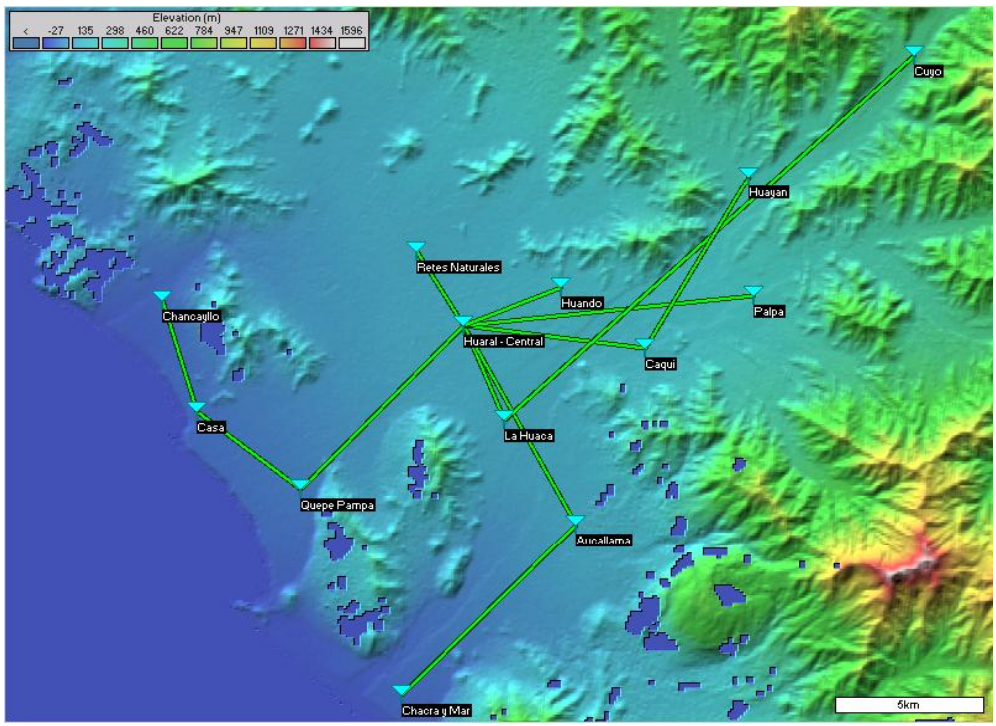
1) FITEL Project documents

2) “Wi-fi web reaches farmers in Peru”, by Roberto Belo, BBC News website technology reporter, BBC News world edition (Web), 15 December, 2004, 09:26 GMT

WIRELESS NETWORK DIAGRAM – HUARAL



Satellite sight:



Source: Report of Netkrom Technologies SAC, Lima, 2004

Comments posted in Weblog – January 2006

Study Group 2 Q10 Discussion Forum

Jorge Mesía – Perú

Topic 3 : Rural technology for Social infrastructure
Facilitator: SANZ CABRERA Julian, julian@telan.co.cu

Topic 5: Technologies for Rural Telecommunications - Sustainability/Reliability/Effectiveness
Facilitator: SHARMA Sapna, sapnatrai@gmail.com

Topic8B: Community participation in infrastructure
Facilitator: HECTOR Paul, phector@uneca.org

Topic 5:

In Peru VSAT technology has been so far the most used technology for expansion of telephone service and Internet access to remote rural areas. However, for some particular requirements of communities of certain regions, other technologies as Wi-fi are suitable. As an example I am submitting to the Facilitator **Mr. SHARMA Sapna,** a summary of the Agricultural Information Project for Farmers of the Chancay-Huaral Valley (80 kilometres north of the capital Lima), using Wi-fi technology, which offers the valley communities up-to-date information on agricultural market prices and trends. This pilot project also provides vital links between local organizations in charge of water irrigation, enabling them to coordinate their actions for using this important resource.

Topic 3:

In Peru VSAT technology has been so far the most used technology for expansion of telephone service and Internet access to remote rural areas due manly the sparse an isolated small rural towns all around the country. However, for some particular requirements of communities of a certain region, other technologies as Wi-fi are suitable, for creating social-economical infrastructure for the development of communities. As an example I am submitting to the Facilitator **Mr. SANZ CABRERA Julian**, a summary of the Agricultural Information Project for Farmers of the Chancay-Huaral Valley (80 kilometres north of the capital Lima), which offers the valley communities up-to-date information on agricultural market prices and trends. This pilot project also provides vital links between local organizations in charge of water irrigation, enabling them to coordinate their actions for using this important resource.

Topic 8B:

As an example of projects with Community participation in infrastructure I am submitting to the Facilitator **Mr. HECTOR Paul**, a summary of the Agricultural Information Project for Farmers of the Chancay-Huaral Valley (80 kilometres north of Lima, the capital of Peru), using Wi-fi technology, which includes a very close participation of the benefit communities for solving their agricultural requirements. The project offers the valley communities up-to-date information on agricultural market prices and trends. This pilot project also provides vital links between local organizations in charge of water irrigation, enabling them to coordinate their actions for using this important resource.

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