INTERNATIONAL TELECOMMUNICATION UNION

Telecommunication Development Bureau (BDT)

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Vice Chairman to the TDAG, in charge of Task Force

FIRST TASK FORCE MEETING, GENEVA, 20 FEBRUARY 2001

1. Introduction

The meeting of the Focus Group 7 (FG7) Task force took place on 20 February 2001 under the chairmanship of Mr. Y KAWASUMI (Japan).
The Task Force was created as a result of the last TDAG meeting which called for a group of interested volunteers to assist the BDT Director in the implementation of the recommendations made in FG7's report, "New Technologies for Rural Applications" (see Annex 1).

The Task Force currently consists of 21 registered members and is expected to be active until the next WTDC in March 2002. The Task Force plans to review and approve a progress report on FG7 recommendations by mid-November 2002. The final version of this progress report will be made available to WTDC 2002.

Twelve participants attended the first Task Force meeting (see Annex 2).

Mr. Kawasumi expressed his interest in having the FG7 Task Force activities, particularly the conduct of pilot projects, included in the BDT's Operational Plan for 2001.

Mr. Touré presented his support to the Task Force. He praised the work of Focus Group 7 and called on Task Force members to ensure that upcoming pilot projects be sustainable in the long-run and develop into large-scale implementation projects.

2. Decisions Made Regarding the Recommendations
The Task Force reviewed the 6 recommendations outlined in the FG7 report. It was decided that all recommendations have a high priority. However, due to the limited timeframe in which the Task Force must operate, the following modifications were made:

- Regarding the **creation of a renewable energy handbook** on small-scale power systems for rural ICTs, it was decided that the BDT could explore the possibility of outsourcing this task.
- Regarding the conduct of **packet-based wireless access infrastructure pilot projects**, the following matters were discussed:
  - An estimated 5 pilot projects will be conducted during the year. Although specific countries have yet to be selected, it was decided that a pilot project would be conducted in each of the 5 BDT regions (Africa, Arab States, CIS, Latin America, and Asia).

- The pilot projects will most likely take place in conjunction with the BDT's telecenter projects. This will enable the pilot projects to be launched relatively quickly and will reduce the amount of funding necessary.
- The criteria for selecting pilot projects were discussed at length. A copy of the discussions points is included in Annex 3.
- An estimated budget ranging from $50,000 to $100,000 per pilot project was discussed (including equipment). This figure is only tentative and needs to be refined, according to population served, applications installed, equipment purchased, and so forth.

- The Task Force reiterated the importance of **maintaining and expanding the FG7 web site** as a facilitator of knowledge sharing and as a showcase for FG7 Task Force activities.
- Regarding the **organization of a symposium on rural telecommunications** , it was decided that a single symposium may not be as efficient as presenting the findings of FG7 during the upcoming WTDC regional preparatory meetings. In addition, it was suggested that demonstrations of new technologies for rural applications could be conducted during the WTDC 2002.

3. Funding

- The Task Force realizes that the implementation of FG7 recommendations will require funding (see Annex 4). It is hoped that some seed funding will be made available from the ITU. However, it is recognized that the bulk of the financing will have to come from other sources such as bilateral organizations, multilateral organizations, or private sector donations.
- Sponsors of human and financial resources, technical expertise and appropriate technologies should be sought from a variety of sources. ITU-D sector members and administrations are good sources of contact information for potential sponsors. Also, multiplier organizations such TIA of the U.S or the ITU association of Japan, and numerous other similar organizations, can promote sponsorship of the pilot projects to their respective members. Furthermore, local chambers of commerce in relevant countries can also be appropriate sources of information regarding possible sponsors of the pilot projects.

5. Documents

- The publication of FG7's report on "New Technologies for Rural Applications" is now completed. The report is printed in 3 languages and will be made available for internal as well as external distribution. There is also a CD-ROM which contains the report in 3 languages and the Case Study library, with approximately 60 case studies.

- The Task Force also received a document describing a system resembling a wireless router in South Africa. Although the technology described in this particular case is not a true wireless router (i.e. a PC acts as the router), the document is an excellent example of Internet connectivity to schools located in rural areas of developing countries. For further information, please refer to the web site address given on the first page of the document: http://www.firstmonday.dk/issues.

6. Future Meetings

For the continuation of the work, it is suggested that the Task Force meet again in October, prior to the 6th TDAG meeting. At that time, the Task Force is expected to review a progress report on FG7 recommendations. In the mean time, the Task Force will continue its discussions via a virtual forum and decide if a third meeting is necessary, to be held in the summer of 2001.

7. Concluding Remarks

The Task Force would like to thank Mr. Mano of KDDI who was kind enough to offer a demonstration of the Wireless Router product to all Task Force members as well as BDT staff. The demonstration was very useful in understanding the requirements and capabilities of a wireless router system.

ANNEX 1

FG 7 Report
New Technologies
for Rural
Applications

Recommendations	***Objectives***
Promote the development of low-cost information appliances for rural use	• To raise awareness of the rural information and communication needs of developing countries with the IT industry
Create a renewable energy handbook on small-scale power systems for rural ICTs	•To disseminate information about renewable energy sources which could be used in rural areas for ICT deployment
Increase collaboration with micro-finance organizations to develop communication-based	• To ensure that community-based applications are designed and implemented in rural areas by local actors.
Conduct pilot projects of packet-based wireless access infrastructure	•To evaluate the robustness of this technology in rural areas and its ability to deliver multimedia applications for tele-medecine, long distance education, SME growth etc.
Maintain and expand web-site as facilitator of knowledge sharing and as showcase for FG 7 work	• To provide up-to-date information on technological developments that support multimedia applications in rural areas.
Organise symposium on rural telecommunications	•To disseminate information, answer questions, and present progress reports on pilot projects

ANNEX 2

ITU-D Task Force List of Participants

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ANNEX 3

Task Force Meeting

Feb. 20th, 2001

Preliminary Discussion Points for Pilot Projects

Proposal

Following extensive research by Focus Group 7 (FG7), it was concluded that there was a need for robust telecommunication systems combining low-cost, wireless access technologies with packet-based networks for the possible delivery of multimedia applications in rural and remote areas. Consequently, among the recommendations outlined in the final report of FG7, is for Telecommunication Development Bureau (BDT) to conduct pilot projects of packet-based wireless access infrastructure. The aim of these pilot projects is to confirm the technology's robustness in rural environments and effectiveness dealing with multimedia applications such as long distance education, telemedicine, local business development, and so forth.

1. Background

More than 2.5 billion people_over 40% of the planet's population_ live in rural and remote areas of developing countries. Of the small fraction that has any access to telecommunications, radio broadcasts and voice telephony have traditionally been the main services provided. Today, a wide variety of new services such as e-mail, e-commerce, tele-education, telemedicine, among others, has made access to interactive multimedia services as important_maybe even more important than_voice connectivity alone.

To accommodate these new applications, the focus of new network construction around the world is shifting rapidly from conventional PSTN to IP_based technologies. It is important that developing countries, and rural areas in particularly, not be sidelined during this process.

Focus Group 7 has spent a year researching existing and emerging technological developments that have the potential to support multimedia applications in rural areas of developing countries. It was found that there are an increasing number of technologies that are available to meet multimedia applications at a reasonable cost to rural network operators. However, in some cases, these technologies have yet to be tested in rural areas. This is the case of IP-based wireless access infrastructure.

2. Objectives and Definitions

2.1 Objectives

- **General Objective**

To create exemplary practical examples of the introduction of new technologies; to set-up modern telecommunication applications to facilitate the understanding of the possibilities and benefits of ICT for rural areas in developing countries**.**

- **Specific Objective**

To test the suitability of packet-based wireless access infrastructure for delivering multimedia applications such as long distance education, telemedicine, local business development, and so forth, in rural areas.

2.2 Definitions

Before developing criteria to evaluate potential pilot projects, it is necessary to clearly define the recommendation put forward by FG7: *"to conduct pilot projects of packet-based wireless access infrastructure for multimedia applications in rural areas"*

Rural or remote areas

Rural or remote areas exhibit more than one of the following characteristics:

- Scarcity or absence of public facilities such as reliable electric supply, water, access roads, and regular transport
- Scarcity of technical personnel
- Difficult topographical conditions which render the construction of wire telecommunication networks costly that make critical demands on equipment
- Severe climatic conditions that make critical demands on the equipment
- Low level of economic activity, based mainly on agriculture, fishing, handicrafts etc.
- Low per capita income
- Underdeveloped social infrastructures
- Low population density
- Very high calling rates per telephone line, reflecting the scarcity of telephone service and the fact that large numbers of people relay on a single telephone line.

Packet-based network technology

Packet switched networks break up the data to be transmitted and send it in the form of packets along various routes to its destination. *Whatis.com* describes the advantages of packet-based networks as opposed to traditional circuit-based networks:

Breaking communication down into packets allows the same data path to be shared among many users in the network. This type of communication between sender and receiver is known as connectionless (rather than dedicated). Most traffic over the Internet uses packet switching and the Internet is basically a connectionless network. Voice calls using the Internet's packet-switched system are possible.

*Contrasted with packet-switched is **circuit-switched**, a type of network such as the regular voice telephone network in which the communication circuit (path) for the call is set up and dedicated to the participants in that call. For the duration of the connection, all resources on that circuit are unavailable for other users.*

In a relatively short time, packet-based networks have become the platform of choice for new telecommunication networks. For example, US operator, AT&T, announced that it would no longer purchase circuit-based switches, only IP-based routers and servers. The lure of a common platform for voice and data, and the expected cost savings, are strong driving factors towards this shift (*see ITU paper on IP Telephony Workshop, 29 May 2000).*

As developing countries look to build their telecommunications infrastructure, it is important that they chose systems which can are "forward-looking". In other words, an expansion of the network as well as an upgrade of services should be easily provided and at a low cost. Packed-based technology may prove to have the technical, and eventually, financial, flexibility required in new network infrastructure for rural areas.

Wireless Access Infrastructure

Wireless refers to telecommunication in which electromagnetic waves, rather than wires, carry a signal over the communication path. According to *Whatis.com*, wireless infrastructure can broadly be divided into 4 categories:

1. Portable wireless: refers to the operation of autonomous, battery-powered wireless devices or systems. These devices are used in the office, home, or vehicle but have a limited range of mobility.
2. Mobile wireless: refers to the use of wireless devices or systems aboard motorized, moving vehicles or while walking in the streets. Examples include the cellular telephone.
3. Fixed wireless: refers to the operation of wireless devices or systems in fixed locations such as homes. These devices usually derive their electrical power from the utility mains, unlike mobile wireless or portable wireless which tend to be battery-powered.

4. Infra Red wireless: the use of devices that convey data via **IR** (infrared) radiation. This is employed in certain limited-range communications and control systems (example of infrared communication between Personal Digital Assistants (PDA).

Wireless technology is rapidly evolving and is currently viewed as one of the most important tools to reduce the digital divide. Wireless infrastructure provides faster roll out times, lower maintenance costs, and greater network flexibility. Through case studies and ITU research, FG7 identified 10 types of wireless access systems, illustrating existing and emerging access options for rural communities.

→ The FG7 final report identified, among others, two types of packet-based wireless access infrastructure technologies which have yet to be tested in rural areas.

- **IMT-2000**

Commercial IMT-200 systems are expected to go into operation beginning in the spring of 2001 in Japan, in the summer of 2001 in Europe and with much of America following in 2002. However, a number of factors make it unlikely that IMT-2000 technologies will be deployed in rural areas of developing countries before 2005.

- **Wireless routers**

It is technologically possible, using available products, to establish an access network in rural and remote areas using routing technology (as opposed to circuit-based technology). When combined with wireless technology in the local loop, such a network may provide an affordable solution for rural areas, particularly when the primary services delivered over the network will employ multimedia.

3. Selection Criteria

FG7 will need to clearly define its requirements for the upcoming pilot projects. While further detailed works needs to be done for developing project documents, the pilot projects are expected to be guided by the following criteria:

. Location

Natural Environment

- Rural or remote area, preferably in a LDC country.
- The presence of a mass of needy users
- The presence of telecom-related infrastructure elements needed
- Appropriate geographical and meteorological conditions for the equipment to be installed.

General Context

- A favorable regulatory environment
- An identified demand (existing or potential) for telephone service, as well as multimedia applications such as long-distance education, tele-medicine, environment monitoring, and so forth.
- The socioeconomic impact of the pilot project on the rural community (the pilot projects should be developed to have the widest developmental impact, including support for education, health, small business development, governance and poverty reduction).
- The level of commitment from the government, local authorities etc.

B. Equipment

- As described in the FG7 recommendations, the technology to be installed is expected to be packet-based and wireless.

4. Shared Facilities

The pilot projects will most likely take place within a shared-facility such as a university extension center, hospital, post office, etc. The exact configuration of such telecentres has yet to be worked out and will vary according to the local environment. However, most telecenters are expected to offer phone, fax, e-mail, and Internet services.

The ITU's Telecommunication Development Bureau (BDT) is in the process of establishing pilot projects of telecenters in several developing countries. The overall aim of the MCT pilot project programme is to provide access to telecommunication and information services to rural communities and engage them in the process of learning for development and ascertaining accessible models that can later be replicated at other sites.

In its first year of activities, FG7 will explore the possibility of installing a packet-based wireless access system in ongoing and upcoming telecenter projects. It can be expected that 5 pilot projects will be conducted within 2001 in different regions of the world. A progress report of these pilot projects will be presented at the WTDC Conference in 2002.

5. Project Proposal Process

There are various ways to proceed with the selection of pilot projects. The following option suggests one way of moving forward:

1.The Task Force clearly defines the criteria for establishing pilot projects (as discussed above). These criteria should be based on objective, transparent, and where possible, quantitative data.

2. In conjunction with the BDT's Universal Access group, a list of countries is prepared where pilot projects could possibly be conducted. The list would be based on an identified demand for multimedia applications as well as an adherence to the criteria above. It is expected that 5 countries will be selected, in different parts of the world, for the conduct of pilot projects.

3.With a list of countries identified, the BDT could submit a tender, inviting companies to bid for the implementation of one or more of the pilot projects, in conjunction with the ITU. The tender should be widely advertised in various channels such as ITU press releases, notices to all ITU-D members, and possibly advertisements in a few IT and communications magazines. The aim would be to outsource the implementation of the pilot project, rendering the company responsible for equipment selection, design and construction of the network, and installation of appropriate local applications.

6. Companies submitting a proposal should include information such as technology to be used, population served, services delivered (including applications), and possible financing. We will explore the possibility of donations from the private sector for part of the equipment.

7. The BDT will undertake a transparent and objective evaluation of the proposals (commercial and technical).

8. Depending on the proposals, the BDT will most likely need to look for further funding (possible sources include the ITU, bilateral funding, multilateral organizations, etc.). Sponsors of human and financial resources, technical expertise and appropriate technologies should be sought from a variety of sources. ITU-D sector members and administrations are good sources of contact information for potential sponsors. Also, multiplier organizations such TIA of the U.S or the ITU association of Japan, and numerous other similar organizations, can promote sponsorship of the pilot projects to their respective members. Furthermore, local chambers of commerce in relevant countries can also be appropriate sources of information regarding possible sponsors of the pilot projects.

ANNEX 4

Budget Estimates for Task Force Activities to be Reflected in Operational Plan

1) In support of the goal of promoting the development of new telecommunication technologies for rural applications, Focus Group 7 (FG7) recommends the conduct of pilot projects of packet-based, wireless access infrastructure for multimedia applications.

During discussions at the first FG7 Task Force meeting, it was decided that 5 pilot projects using technologies described in the FG7 final report should be conducted during the year. Although specific countries have yet to be selected, it is hoped that a pilot project could be conducted in each of the 5 BDT regions (Africa, Arab States, CIS, Latin America, and Asia).

The pilot projects will most likely take place within the BDT's existing telecenter projects. This will enable the pilot projects to be launched quickly and will reduce the amount of funding necessary.

An estimated budget ranging from $50,000 to $100,000 per pilot project was discussed (including equipment). This figure is only tentative and needs to be refined, according to location, population served, applications installed, equipment purchased, and so forth.

Below is an example of a budget figure for a pilot project with a central station connected to 10 locations (hospital, schools, local administration, libraries, business associations, and so forth).

Preliminary Budget Estimates for One Pilot Project
(in USD) 2001

Budget Line	**Amount**
Pilot Project	
1. Feasibility study	25,000
2. Telecom access equipment (including energy source)	40,000
3. Electronic equipment (PCs, printers, photocopies etc.)	15,000
4.Training of local staff and maintenance	10,000
6. Evaluation	5,000
7. Miscellaneous	5,000
Total	**100,000 USD**

2) Handbook on renewable energies: Outsourcing Costs estimated at 20,000 USD

3) Presentations at regional WTDC Conferences: Budget estimated at 5,000 USD

4) Recruitment of Research Officer (April 2001 to March 2002) estimated at 45,000 USD

Total: 5 pilot projects (at high end of the range) and other recommendations = **570,000 USD**