Challenges to Implementing ICT Networks and Services in Rural Areas

Workshop on Rural Telecommunication & Digital Technologies: Energy Options and Issues in Unelectrified Areas

Village Power Conference, 4 December 2000
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Overview of Presentation

1. Introduction to ITU-D Focus Group 7

II. Challenges to ICT implementation in rural areas

III. Focus Group 7 recommendations
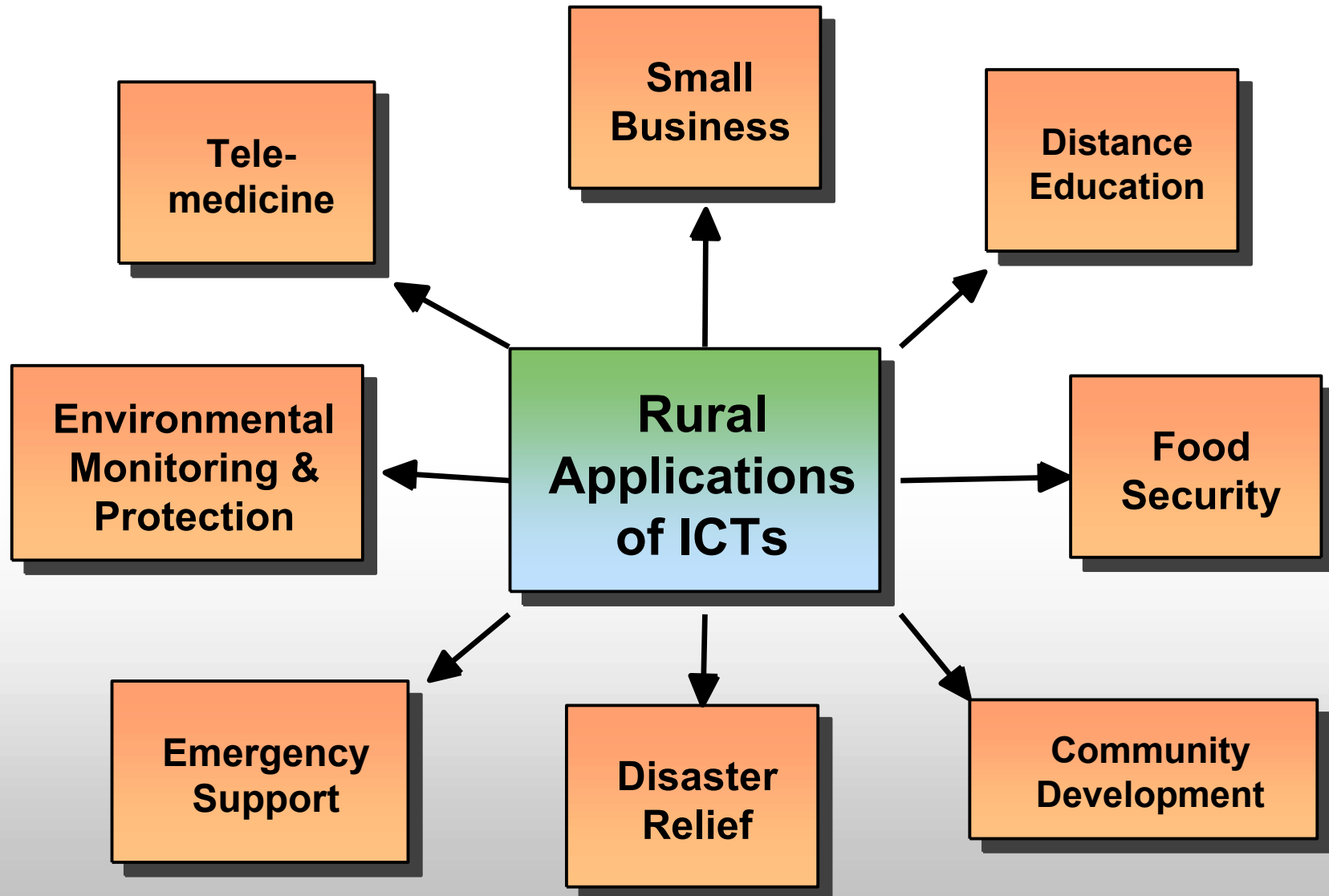
I. Introduction to ITU-D Focus Group 7

Topic of study formulated at 1998 World Telecommunication Development Conference in Valetta, Malta:

"Study various mechanisms by which to promote the development of new telecommunication technologies for rural applications"

- Focus Group Topic 7, Valetta Action Plan

I. Introduction to ITU-D Focus Group 7

Small Business

Tele-medicine

Distance Education

Environmental Monitoring & Protection

Rural Applications of ICTs

Food Security

Emergency Support

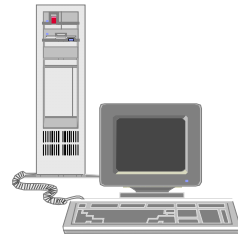Disaster Relief

Community Development

I. Introduction to ITU-D Focus Group 7

FG7 found a wide variety of communication-enabled electronic devices used in rural applications

Videophone Telemedicine in Indonesia

PC-based Telemedicine Workstation

Personal Computer

African Virtual University classroom at the Ethiopian Civil Service College

Electrocardiogram monitor that transmits patient data over a regular telephone line

II. Challenges to ICT Implementation in Rural Areas

Challenge #1 (in no particular order): Equipment Installation

Wireless local loop tower in a remote village in South Africa

Source: Telkom SA

- Installation is risky, time consuming and expensive.

- Compared to laying cable, wireless technologies can simplify installation in remote locations.

- However, wireless systems require a local power supply.

- In South Africa, telecom operator Telkom reports a major problem of theft of solar panels installed to power wireless local loop equipment.
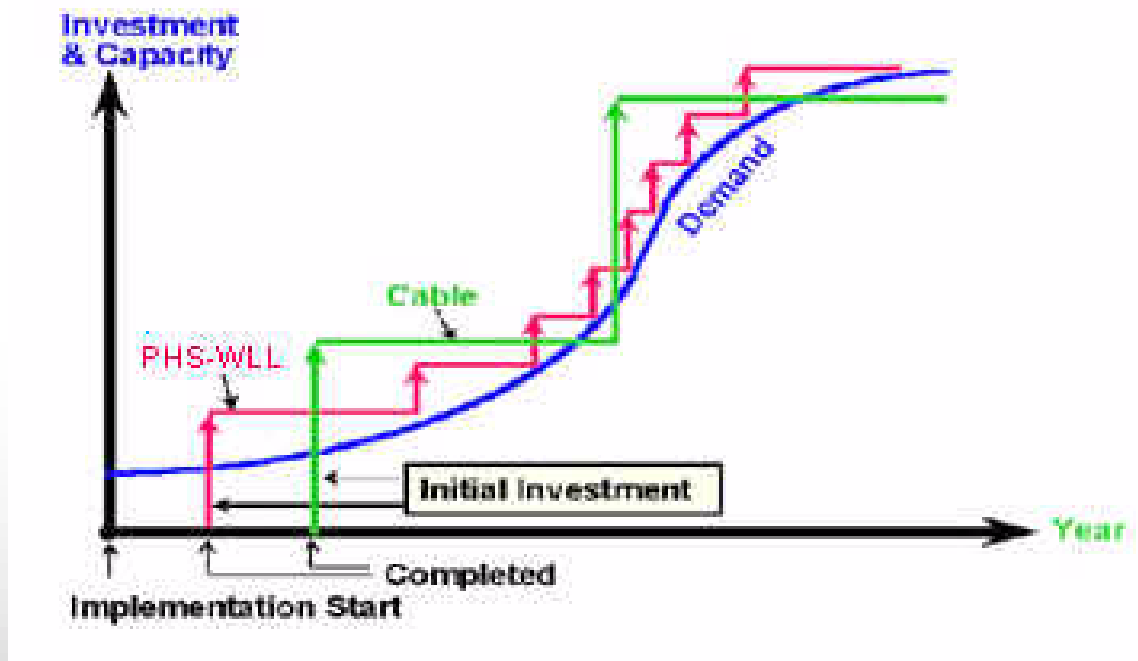
II. Challenges to ICT Implementation in Rural Areas

Challenge #2: Lack of mains power supply

Device	Typical power consumption (watts)	Typical use per day (hours)
Black and white TV	12 - 18	2 - 6
Colour TV	40 - 120	2 - 6
Video casette player	20 - 40	1 - 4
Radio cassette player w/speakers	5 - 80	2 - 12
Desktop computer and monitor	350 - 500	4 - 8
Laptop computer	20 - 40	4 - 8
Two-way radio (standby)	5 - 10	12
Two-way radio (transmitting)	40 - 50	0.5 - 3
Fax/answering machine	30 - 60	continuous

Source: World Bank. *Users' Guide to Off-Grid Energy Solutions.*
http://www.worldbank.org/html/fpd/energy/off_grid

II. Challenges to ICT Implementation in Rural Areas

Challenge #3: Lack of funds for initial capital investment

Source: PHS MoU

Responses: modularity and scalability

II. Challenges to ICT Implementation in Rural Areas

Challenge #4: Operation and Maintenance

Strategy of GVT Peru to reduce operation & maintenance costs:

- card-operated payphones eliminate need to collect coin boxes in remote areas

- telephone equipment with fewer breakable parts is less prone to mechanical failure

- low power consumption of approximately 40 watts per 3-channel VSAT reduces energy costs

- VSAT network in a star topology uses a network management system to control operation of the entire network from a centralized control center

II. Challenges to ICT Implementation in Rural Areas

Challenge #5: Affordable coverage

- Rural areas often lack the subscriber density to make telecom infrastructure economically feasible

- A few operators have found profitability in areas of spillover coverage from cellular networks.

MTN's GSM coverage in southern

Source: MTN Uganda, www.mtn.co.ug

II. Challenges to ICT Implementation in Rural Areas

Challenge #6: Lack of Technical Support and Computer Repair Facilities

IT skill modules taught by PEOPLink.org enabling community-based artisan producer groups to market crafts on the internet:

- Capturing high quality digital images including contrast, lighting, background, etc.

- Editing and compressing digital images

- Organizing folders for ease in managing large numbers of files

- Including text information about the crafts in the files

- Uploading new and updated HTML and image files directly to the Internet

II. Challenges to ICT Implementation in Rural Areas

Challenge #6: Lack of Technical Support and Computer Repair Facilities (continued)

To install a pre-configured email appliance:

- insert batteries
- plug in telephone line
- turn on machine

To install PC-based email:

- connect hard disk drive, monitor, keyboard and mouse
- plug computer & monitor into 110/220 AC outlet
- boot up the hard drive
- navigate the file management system
- install email software
- configure dial-up access number, modem rate, SMTP server, etc.

II. Challenges to ICT Implementation in Rural Areas

Challenge #7: Multiple players in ICT design & implementation

- Public telecommunication operators

- Internet service providers

- Government ministries of education, health, etc.

- NGOs

- UN Agencies: UNESCO, UNDP, FAO, WB, etc.

A response: standards compliance

III. ITU-D Focus Group 7 Recommendations

- Promote the development of low-cost information appliances for rural use.

- Create a renewable energy handbook on small-scale power systems for rural ICTs.

- Increase collaboration with microfinance organizations to develop communication-based rural businesses and applications.

- Conduct pilot projects of packet-based wireless access infrastructure for multimedia applications.

- Maintain and expand FG7 web site.

- Hold a symposium on new technologies for rural applications.

THANK YOU

Focus Group 7 case library:
http://www7.itu.int/itudfg7

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