

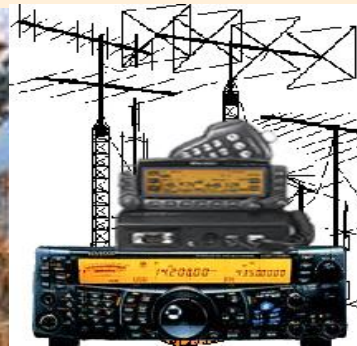
# Presentation

## *All About Amateur Radio*

*By*

**NATIONAL INSTITUTE OF AMATEUR RADIO**

Raj Bhavan Road, Hyderabad - 500 082.



# Amateur Radio

- Amateur Radio is a **Friendly, Scientific, Fun-loving, high-tech** activity and is popularly known as **HAM Radio**.
- Amateur Radio encourages **“self learning, experimentation and inter communications”**
- Any individual above the age of **12** can become an Amateur Radio operator--no matter what age, gender or physical ability.

# Amateur Radio

- Amateur radio is a community of people that use radio **transmitters and receivers** to communicate with other Amateur radio operators
- Amateur Radio operators are licensed by the **Wireless Planning & Coordination wing of Ministry of Communications, Govt. of India** and enjoy a far more privileges of radio operation.

# WHY AMATEUR RADIO ?



AMATEUR RADIO IS A MAJOR CONTRIBUTOR IN HUMAN RESOURCE DEVELOPMENT IN COMMUNICATION & I.T

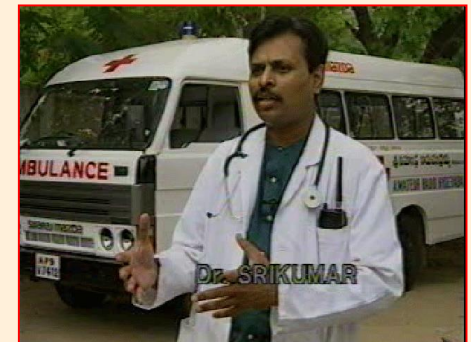


Visual Communicator  
in  
Amateur Radio

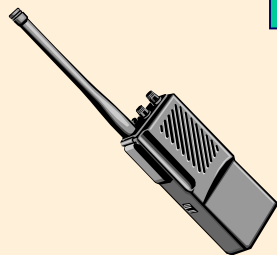


HF for local & long distance  
Voice / Digital connectivity

Amateur Radio is a well known “CATALYST” & Bringing several Innovations in Telecom & I.T as pioneers for Social / Cultural / Scientific Development & Far Reaching Economic Benefits



State of the Art  
Disaster Relief Vehicle  
With HAM RADIO



VHF / UHF can  
Link Amateur Radio  
Satellite



Amateur Radio Satellites

# WHY AMATEUR RADIO ?



Amateur Radio communication includes

Electronics,  
Communications,  
Space

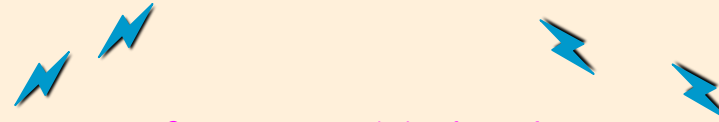
Broadcasting,  
Computers,  
Information Sciences

A host of Voice, Data, Visual & Internet related technologies in Communication & I.T are available to Amateur Radio

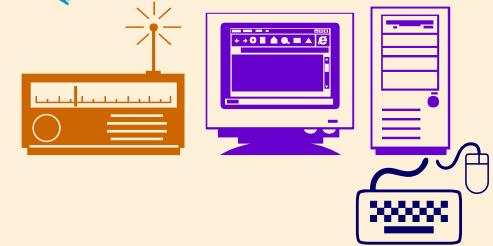
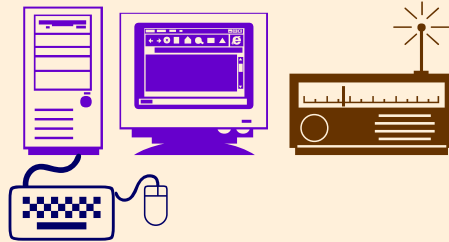
Amateur Radio is a wireless tool available with the common man for exchange of knowledge, information & experimentation.



# Talk around the World



## Information Technology Through Amateur Radio



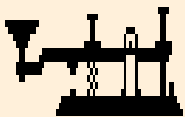
- 👉 **Packet radio** - ham radio operators enjoy a digital network of their own, all without wires!
- 👉 **Amateur television** - It's just like real television because it is real television. **Slow Scan TV** - Send pictures around the world for little or no cost.
- 👉 **Satellite communications** - Hams have their own satellites .. Really! Amateur's satellites are easy to use too.

# Talk around the world : Voice



**VOICE** :It is like a telephone conversation when reception is good, but one station normally speaks at a time.

# Talk around the world : Morse Code



**Morse code:** It is a language of sound. It is a combination of Audio signal transmitted for short duration called **DIT** and a long duration called **DAH** and space. We may use Computer also for this mode.

E.g.: A =DIT DAH ( . - )

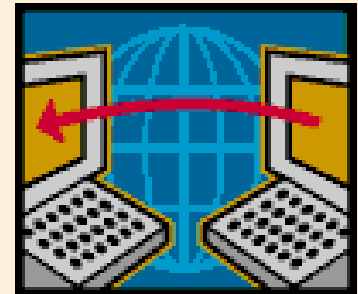
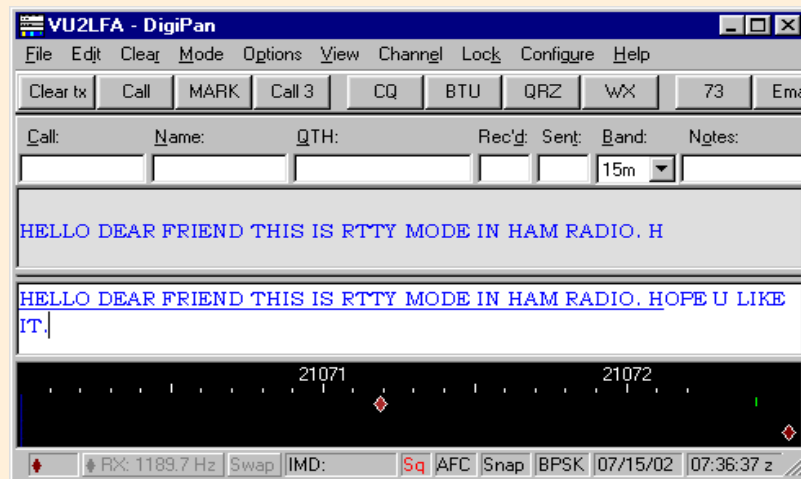
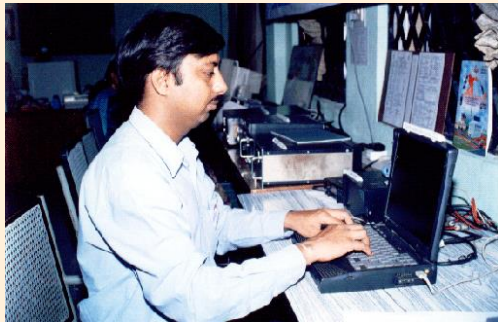


# Talk around the world : Digital

➤ *Don't get stuck in the PAST*

*Explore TODAY's Amateur Radio in 21st Century !*

**RTTY:** (Radio Tele Type) Just chatting in ham radio using computer & HAM Radio.



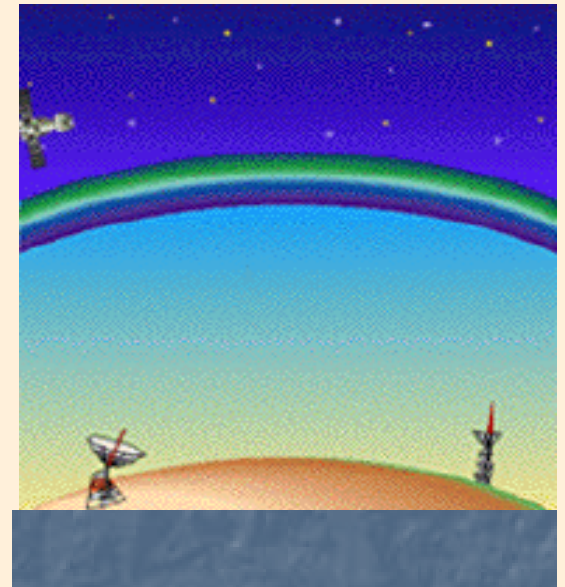
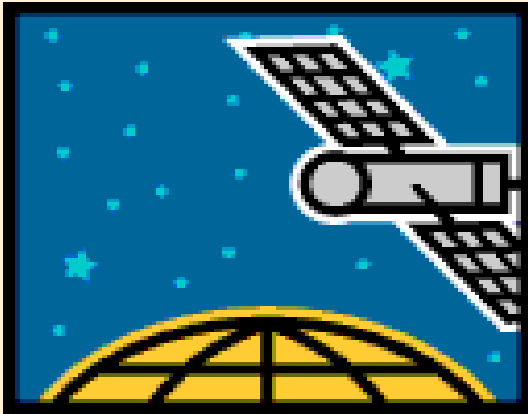
# Talk around the world : Digital

**TELEVISION:** In this mode amateurs can send pictures and receive around the world. **Slow Moving** (Called Slow Scan Television) on HF Generally send Still Pictures two-way.



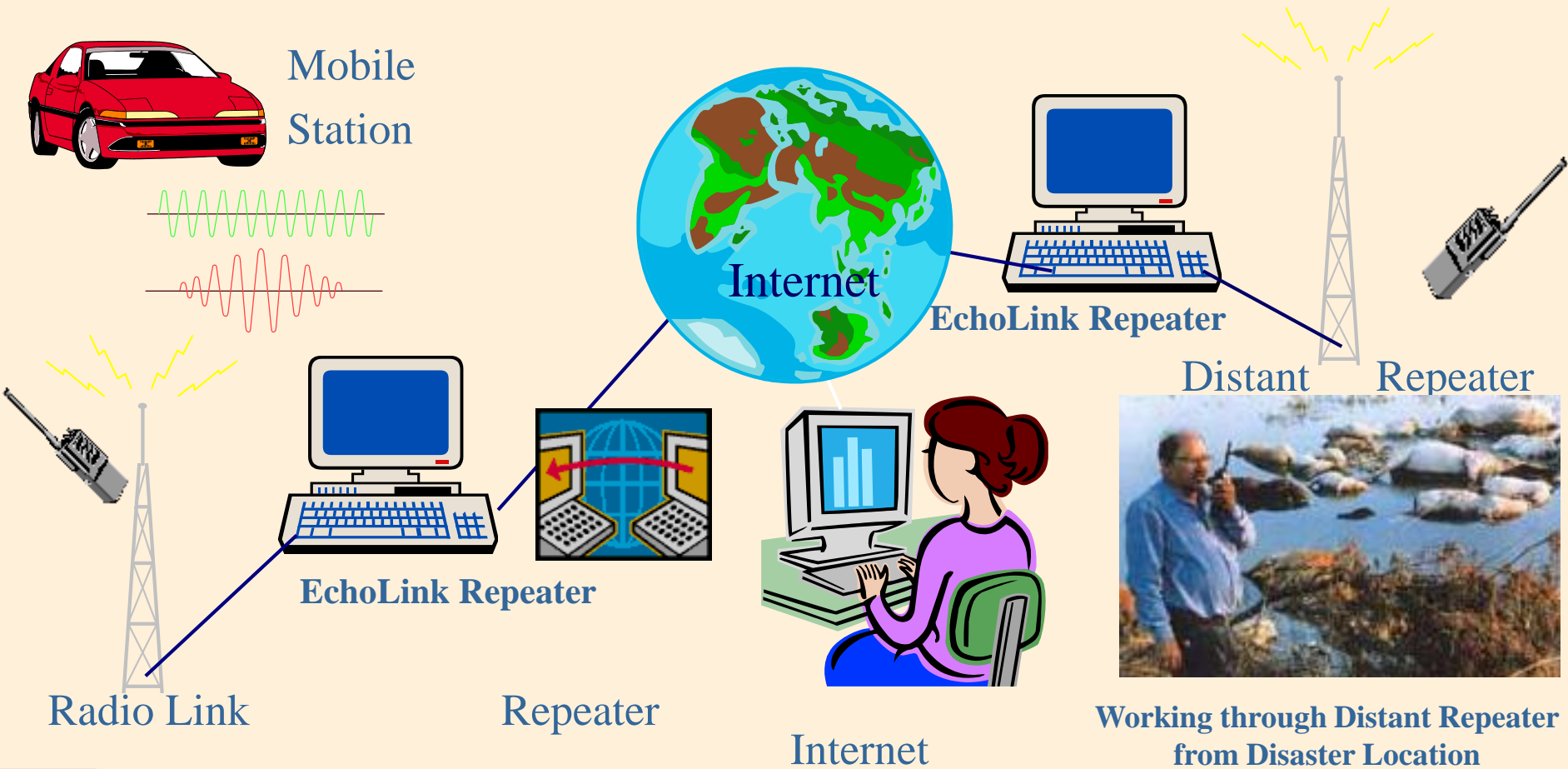
# Talk around the world

**SATELLITE:** Amateurs have their own satellites to communicate



# Talk around the world : Digital

**ECHOLINK** : The Internet is used as a link to connect distant repeaters together.



# *Digital connectivity*

## *Amateur Radio - Internet*

World wide HF / VHF Bulletin Board Service (BBS)



**HF Remote Station**



**HF / VHF Control Room**

e-mail transfer  
Position Reporting  
gps & gis  
Weather & bulletin



**VHF Remote Station**

# ***Digital connectivity***

## ***Amateur Radio - Internet***

- WORLD WIDE HF BULITEN BOARD SERVICE
- ECHO LINK (A form of VOIP)
- E- QSO (Amateur code for contract )
- INTERNET RADIO LINKING PROJECT
- HIGH SPEED MULTIMEDIA RADIO (Latest Development)
- PACKET BULLITEN BOARD SERVICE
- RURAL / REMOTE CONNECTIVITY



## **Earth-Moon-Earth (EME) Communications**

Radio waves are bounced off the moon. Hams can use quite a high-level of technological know-how for the hobbyist.

## **DX Communications with Overseas Stations**

DX communications refer to telecommunications between countries and hams thus contribute to the promotion of international goodwill.

## **TV Communications**

Inter-ham TV communications is becoming quite popular. Some hams use slow-scan television (SSTV), which can transmit stationary images directly to overseas stations and send animation by way of ordinary TV sets.

# Amateur Radio Communications Can be Fun !!



## Mobile Operation

Mobile hams are becoming very common. They install wireless equipment in their vehicles to communicate with stationary or mobile radio stations while driving.

## Contests

Hams communicate with as many stations as possible world wide within a given period of time. Contests of varying scopes, some domestic, some international are happening somewhere in the world every weekend.

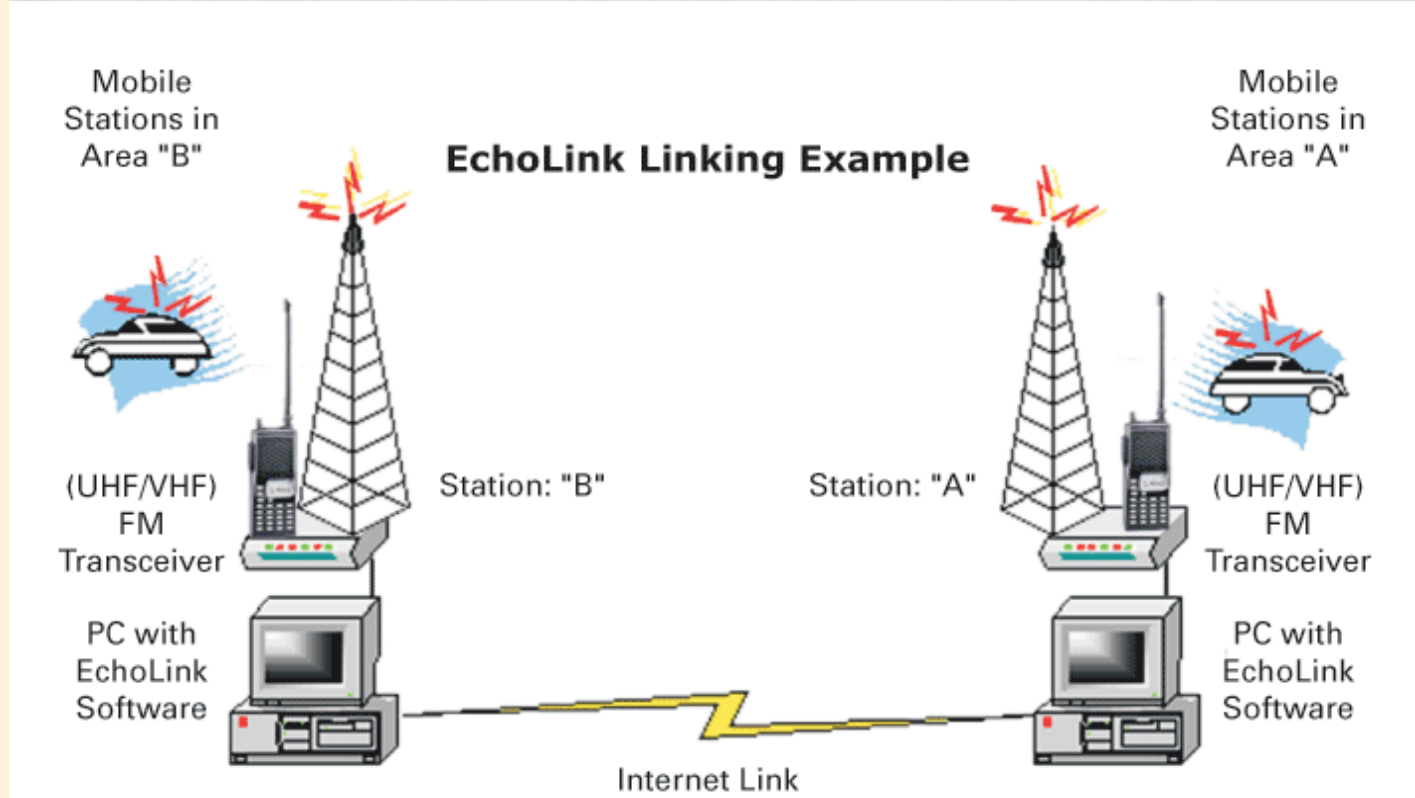
## Awards

After a ham's communication conforms to specified requirements and QSL cards have been collected, he/she is eligible to apply for various certificates. These certificates are issued by Amateur Radio organizations, clubs, and certain individuals.



# Digital connectivity Amateur Radio – Internet

## "EchoLink" A New Revolution in Amateur Radio



## QSL Cards

After two ham stations have established contact, they exchange QSL cards as proof of their communication. Exchanging cards internationally is both interesting and fun.

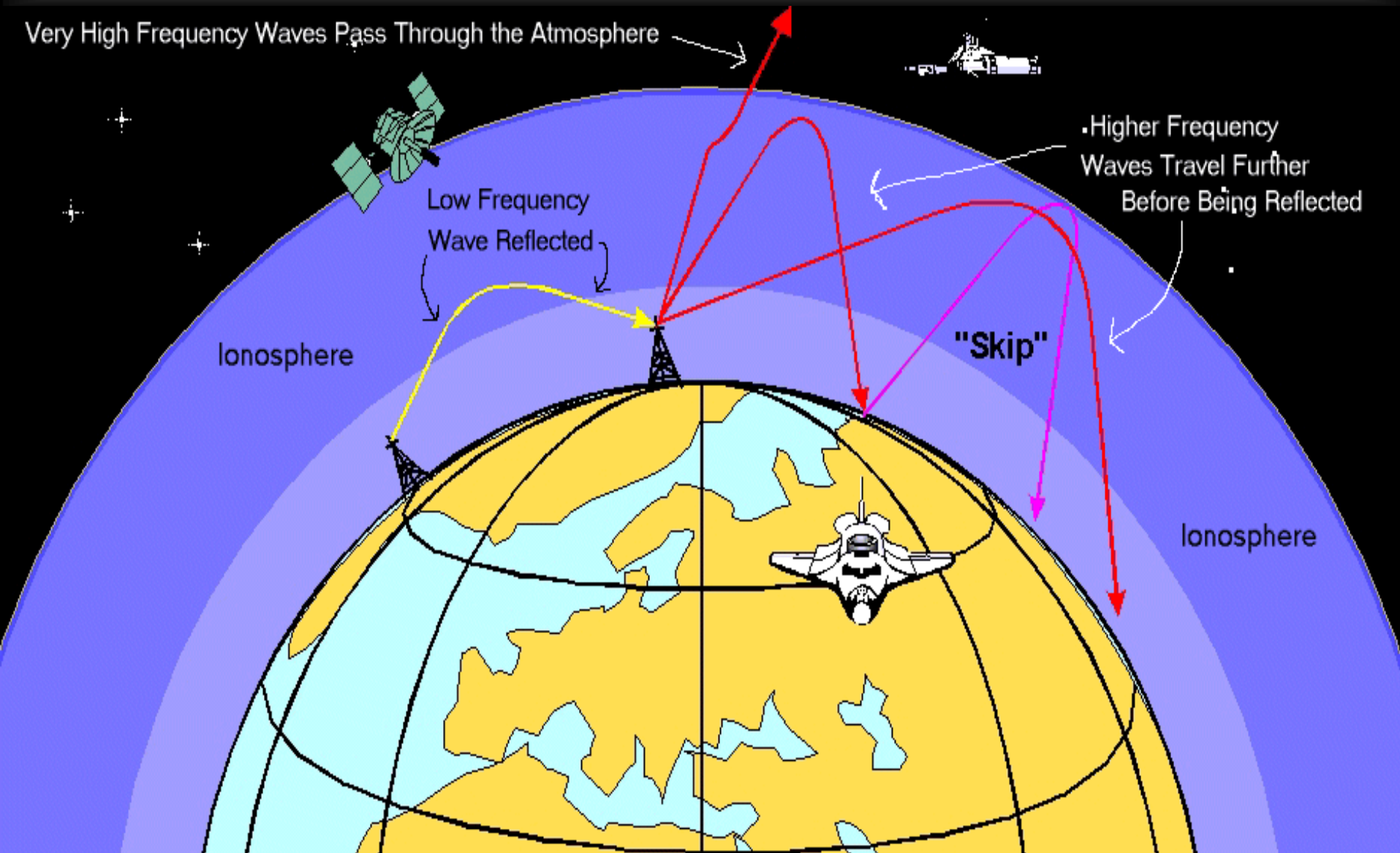
## Repeater Communications

Repeaters have been installed in major cities, on mountaintops and roofs etc. it is possible for hams to communicate with counterparts many kilometers away, done simply by using a portable transceiver.

## Amateur Radio Direction Finding (ARDF)

hams carry portable receivers and search for hidden transmitters, is the popular sports of amateur radio. Every year, National & International competitions are held throughout the world.

# How signals travel in ionosphere



# Dhruv Rebba, KC9ZJX Youngest Ham of Indian Origin



## Limca Book of Records

*National Record*

**Dhruv Rebba** (b April 2, 2004) of Normal, Illinois, USA, was successful in the qualifying technician class exam conducted on July 21, 2013 at Champaign, Illinois, USA under the guidance of Dr Kelly Hall and S Ram Mohan, EVC & Director (National Institute of Amateur Radio, Hyderabad), he. The FCC (Federal communications Commission), the regulatory agency in the USA for amateur radio communication service, issued a call sign – KC9ZJX on July 25, 2013, to make him the youngest amateur Ham Radio operator of Indian origin at the age of 9 years 3 Months 19 days!

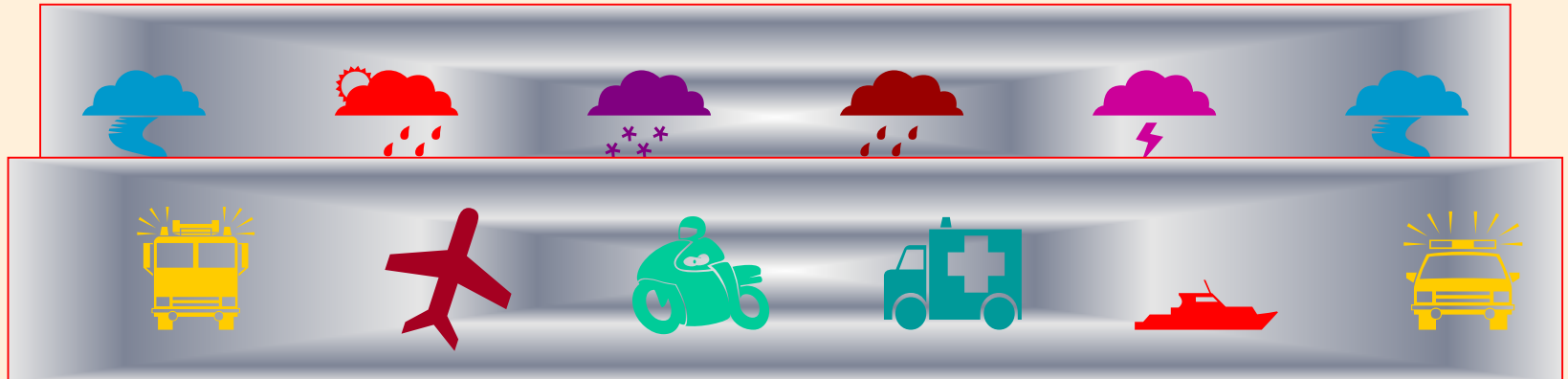
*Vijaya Ghose*

*Vijaya Ghose*  
Editor, Limca Book of Records

# Service to Society



Emergency and other volunteer services - Floods, hurricanes, landslides, earthquakes, ice storms ... when ever `normal' communications fails, hams are ready to use their radios to provide emergency communication services to their communities.



Radio Amateur Civil Emergency Services (RACES)  
Network of NIAR has committed team of volunteers throughout the country to serve in any type of disaster.

# NIAR Services during Major Disasters in the country

- ❖ 2015 Nepal Earthquake
- ❖ 2014 Cyclone Hud Hud
- ❖ 2013 Uttarakhand Flood relief operations
- ❖ 2009 Cyclone Aila emergency communications, West Bengal
- ❖ 2007 Cyclone Sidr Communication Relay Response for Bangladesh
- ❖ 2004 Tsunami emergency communication, A & N Islands
- ❖ 2001 Gujarat Earthquake Relief operations.
- ❖ 1999 Orissa Super Cyclone Relief operations.
- ❖ 1996 Amarnath Yatra calamity near Srinagar.
- ❖ 1993 Latur Earthquake.
- ❖ 1988 Bihar Earthquake - Dharbanga, Madhubani, Munger.
- ❖ 1982 Amreli floods in Gujarat.
- ❖ 1977 Diviseema Tidal wave in Krishna District., AP

# Nepal Earthquake 2015



# Cyclone Hud-Hud Emergency Communications by NIAR 2014 in Visakhapatnam & Srikakulam, Andhra Pradesh





Film star Nagarjuna interviewing  
about Ham activity during  
Hud-Hud cyclone on television.





# Tsunami Emergency Communication

NIAR alerts Amateur Radio stations all over the world about a severe earthquake in Andaman & Nicobar Islands immediately after disaster.



Amateur Radio operators informed raising sea level in the Islands after the earthquake on 26<sup>th</sup> December 2004 in Andaman & Nicobar Islands.

# Tsunami Emergency Communication



Emergency Communication Centers established in three different locations in Port Blair to support local administration.



Left: Mus Jetty in Camicobar

Amateur Radio operators with equipment were air dropped to remote Islands severely effected by Tsunami

# Tsunami Emergency Communication



Communication centers established at Deputy Commissioner Office, Andaman Public Works Dept., Nehru Yuva Kendra, Govt Polytechnic College in Portblair



Top: Mobile Operation in Jetty, Portblair



Communication centers established at Deputy Commissioner Office & Mus Jetty in Carnicobar Island

# Tsunami Emergency Communication



Communication centers established at Ramakrishnapur Relief Camp & APWD Guest House in Hutbay, Little Andaman

Communication centers established at Airport & AC Camp Office, APWD Guest House in Campbell Bay



# Tsunami Emergency Communication



Amateur Radio provided necessary information for effective Disaster Management



Communication center established at Asst Commissioner Camp Office, in Theresa Island



# Gujarat Earthquake Relief Operations - 2001

NIAR alerts all its  
RACES members by  
12:00 noon on 26th  
January, 2001



First batch of  
Amateurs with 20  
HF & VHF Wireless  
equipment reach  
Ahmedabad next  
day early in the  
morning



# Gujarat Earthquake Relief Operations - 2001



A team of two with HF/VHF sets reach Bhuj in the CMs convoy and establish Communication links by 27th Morning

Amateur Radio Stations were set up in CMs Residence, Secretariat, Civil Hospital, IIM Ahmedabad, Bhuj, Patan



# Gujarat Earthquake Relief Operations - 2001



Amateur Radio operators  
Team from Mumbai,  
Bangalore took position in  
Bachau, Anjar, Gandhidham



**Co-ordination, Co-operation & Communication  
Amateur Radio in Public Service**

# Orissa Super Cyclone



## Radio Amateur Civil Emergency Services

Team of N.I.A.R reach Bhubaneshwar,  
Orissa By 30.10.1999



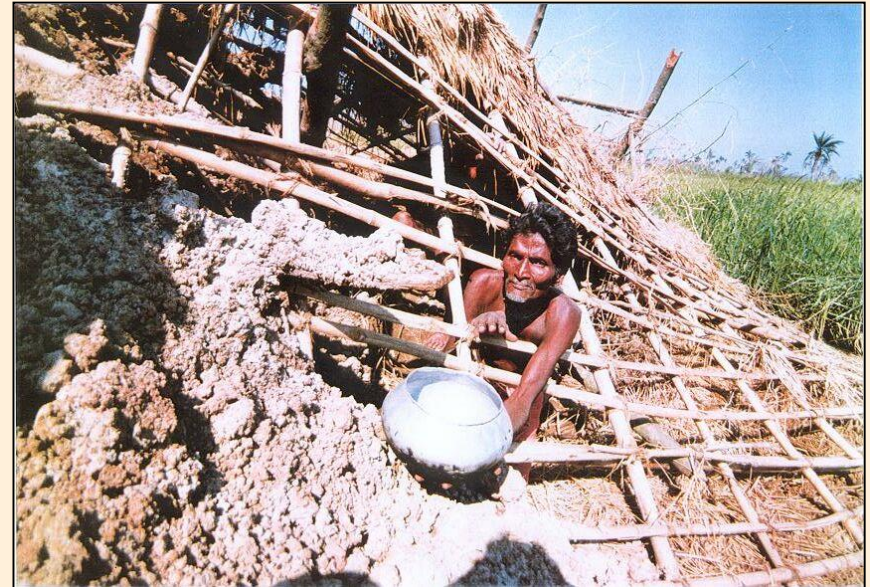
Communications  
were established with  
outside world in just  
one hour

# Orissa Super Cyclone



RACES teams spread to interior places like Cuttack, Jagathsinghpura, Kendrapara, Bhadrak, Paradeep etc.,

Amateur Radio remains the only communication available for next 25 days for Relief & Rehabilitation activities.



# Orissa Super Cyclone



Very High Frequency (VHF) Base Stations & Walkie-Talkies were setup at important locations in Bhubaneswar for providing local communication.

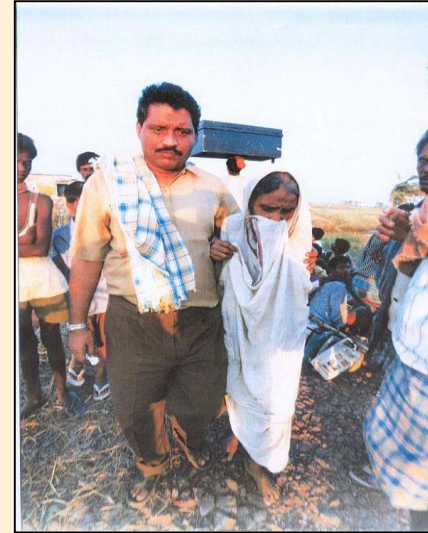


High Frequency (HF) Sets were used for long distance communication with districts and other remote locations.

# Orissa Super Cyclone



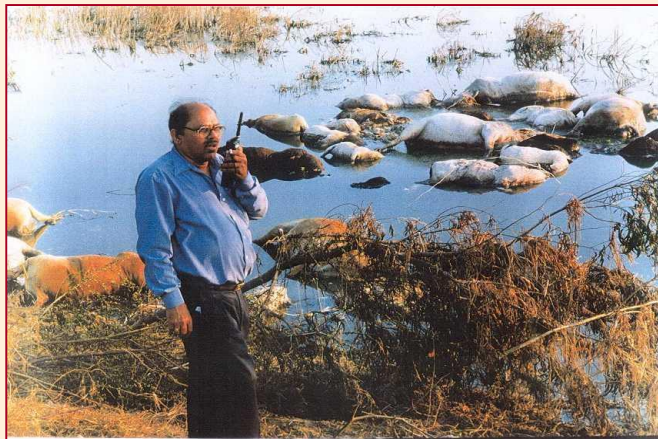
Amateur Radio Volunteers are people from all walks of life, even the S.V.P. National Police Academy sent its staff to work with NIAR RACES teams.



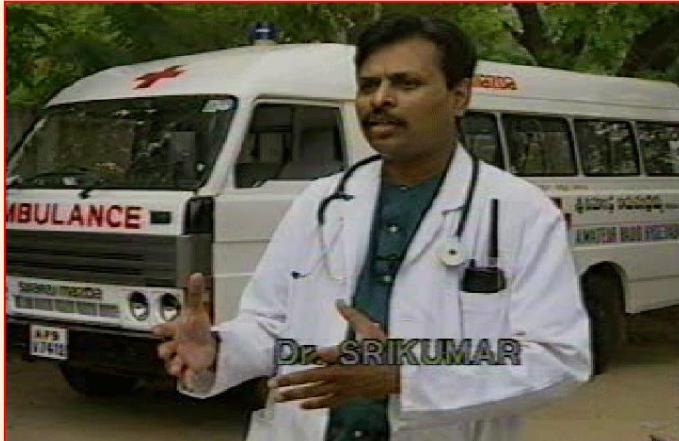
consistent professionalism,  
unstoppable determination and  
unfailing optimism even in the  
face of overwhelming  
challenges.

\* \* \*

**Amateur Radio & NIAR in  
service of Society**



# MPLAD Scheme to promote Amateur Radio



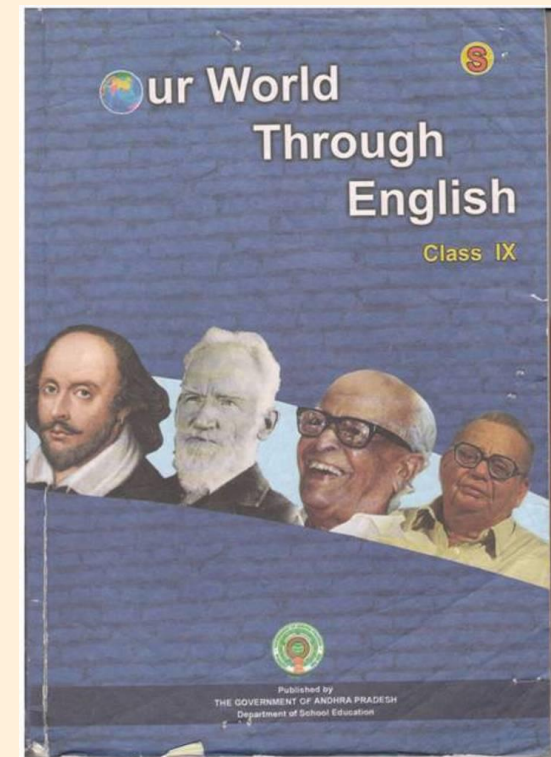
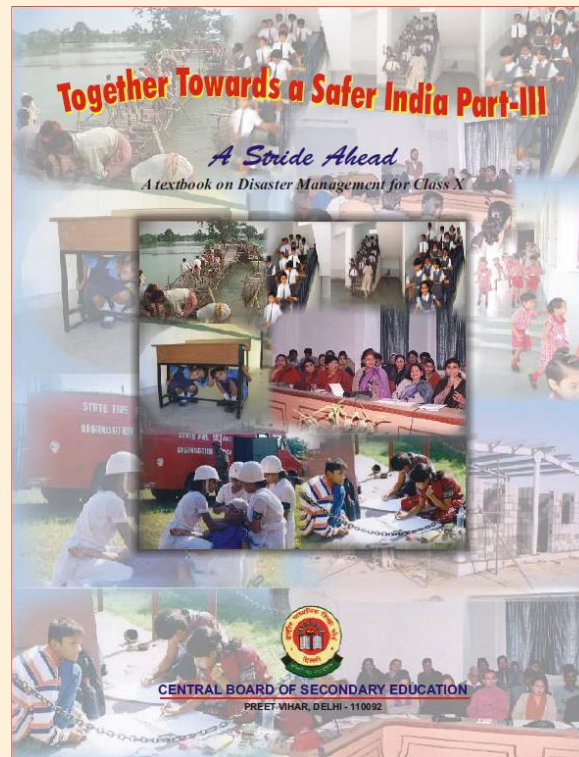
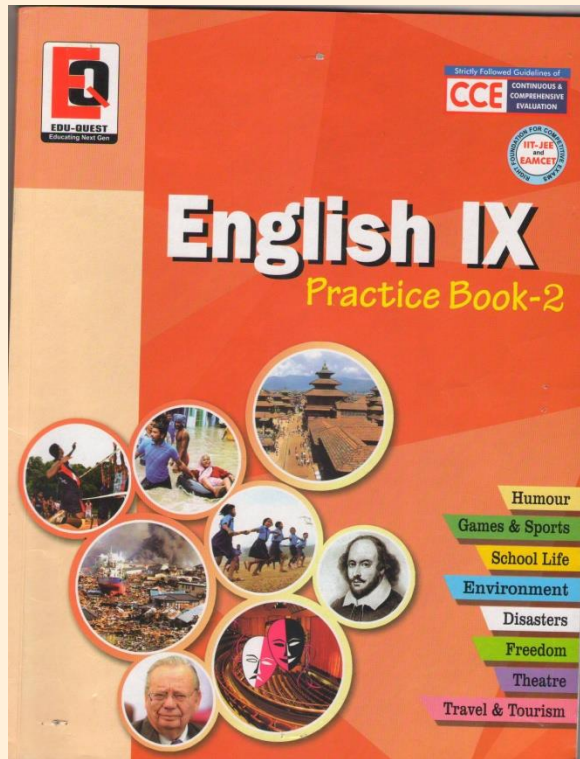
As per the guidelines of  
**Member Parliament Local  
Area Development Scheme,**  
Amateur Radio Clubs can be  
established in High Schools



NIAR has implemented an  
innovative scheme to provide  
Health services and Amateur  
Radio Communication through  
**Disaster Relief Vehicle** under  
MPLADS

# Ham Radio Taught in Schools

Class X CBSE,  
Class IX Telengana & AP





# How to become an Amateur Radio Operator

Any individual above the age of **12** is permitted to appear for **Amateur Station Operator License Examination** conducted by Ministry of Communications.

There are two categories of licenses.

1. Restricted Grade
2. General Grade.

One should qualify a simple test conducted in three subjects namely :-

- i) **Basic Electronics.**
- ii) **Communication Procedure**
- iii) **Morse Code (for General Grade only)**

# A word about NIAR



**National Institute of Amateur Radio (NIAR), Hyderabad** was established in the year 1983, It has evolved as a unique institution for promotion of Amateur Radio in the country.



## A word about NIAR

The institute conducts regular training programs to train people for the Amateur Station Operator License examination.

NIAR is fully equipped with men and material to assist the local administration in any kind of Emergency/ Natural / Manmade Calamities.



NIAR assists Schools/ Colleges/ Individuals to form their own Amateur Radio Clubs.


## A word about NIAR

- ✓ The Technical wing of the institute encourages Amateurs to construct their own home made transceivers.
- ✓ QSL bureau with callsign VU2 APR, is very popular all over the world which does excellent work of mail forwarding.
- ✓ NIAR has an excellent collection of books/ Journals on Wireless Communication. The books ranging from hobby kits to satellite communications.

# Promoting People's Participation in Communication & Information Technology & Disaster Management

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